Alaska Community Action on Toxics • Breast Cancer Prevention Partners • Center for Environmental Health • Clean Cape Fear • Clean and Healthy New York • Community Action Works • Defend Our Health • Delaware Riverkeeper Network • Environmental Working Group • Merrimack Citizens for Clean Water • Natural Resources Defense Council • Safer Chemicals Healthy Families • Sierra Club • Social Science Environmental Health Research Institute, PFAS Project Lab, Northeastern University • U.S. PIRG • Zero Waste Washington

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Submitted via www.regulations.gov

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Re: Preliminary Effluent Guidelines Program Plan 15, EPA-HQ-OW-2021-0547

Dear Dr. Flanders,

We, the undersigned organizations, submit these comments on the *Preliminary Effluent Guidelines Program Plan 15* ("Preliminary Plan 15").

Contamination from the class of chemicals known as per- and polyfluoroalkyl substances, or PFAS, is an urgent public health crisis. The use of PFAS across multiple industries is ubiquitous, and experts have identified more than 1,400 individual PFAS in over 200 use categories.[1] A recently published peer-reviewed analysis identifies a staggering 41,862 potential PFAS dischargers.[2] The Environmental Working Group has identified 2,854 sites contaminated with PFAS chemicals in 50 states,[3] and estimates that more than 200 million Americans may have PFAS in their drinking water.[4]

For more than 50 years, facilities have manufactured, processed, used, and disposed of PFAS with impunity. Once discharged into the environment, PFAS are highly mobile and do not break

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[1] Juliane Glüge et al., *An Overview of the Uses of Per- and Polyfluoroalkyl Substances (PFAS)*, 22 ENV'T. SCI. PROCESSES 2345 (2020), https://pubs.rsc.org/en/content/articlepdf/2020/em/d0em00291g.
[2] David Andrews et al., *Identification of Point Source Dischargers of Per and Polyfluoroalkyl Substances in the United States*, AWWA Water Science 1252 (2021), https://doi.org/10.1002/aws2.1252
[3] *See* ENV'T WORKING GRP., PFAS CONTAMINATION IN THE U.S., https://www.ewg.org/interactive-maps/pfas_contamination/ (last updated Oct. 4, 2021).
[4] David Q. Andrews & Olga Naidenko, *Population-Wide Exposure to Per- and Polyfluoroalkyl Substances from Drinking Water in the United States*, 7 ENV'T SCI. &TECH. LETTERS 931 (2020), https://pubs.acs.org/doi/10.1021/acs.estlett.0c00713.

down – thus leading to the designation of PFAS as "forever chemicals."[5] Today, PFAS contaminates ground and surface water used for drinking water. PFAS pollutes the water used to irrigate crops and sewage sludge used to fertilize farmland.[6] PFAS builds up in animals like fish, deer, and cows exposed to PFAS-contaminated water or feed. In some cases, residents have been warned not to eat fish[7] or deer[8] and some farmers have had to euthanize their cattle because of PFAS contamination.[9]

As a result, Americans are exposed to PFAS every day – through our food, water, air, dust, carpets, clothing, and cosmetics. PFAS are in the blood and organs of nearly every living being, and experts estimate that 25 percent of Americans have troubling levels of PFAS in their blood serum.[10] Because PFAS can have a long half-life in our bodies, they can stay in our blood and organs for decades. PFAS are associated with serious health effects, even at very low amounts.[11] In particular, PFAS exposure has been linked to kidney and testicular cancer, preeclampsia,

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[5] Joseph Allen, *These Toxic Chemicals are Everywhere—Even in your Body. And They Won't Ever Go Away,* WASHINGTON POST (Jan. 2, 2018), https://www.washingtonpost.com/opinions/these-toxic-chemicals-are-everywhere-and-they-wont-ever-go-away/2018/01/02/82e7e48a-e4ee-11e7-a65d-1ac0fd7f097e_story.html.

[6] *See, e.g.*, Rosella Ghisi, Teofilo Vamerali, & Sergio Manzetti, *Accumulation of Perfluorinated Alkyl Substances (PFAS) in Agricultural Plants: A Review*, 169 ENV'T RESEARCH 326 (2019), https://www.ncbi.nlm.nih.gov/pubmed/30502744.

[7] Michigan Dep't of Env't, Great Lakes, & Energy, PFAS in Fish, https://www.michigan.gov/pfasresponse/0,9038,7-365-86512_88987_88989---,00.html (last visited May 16, 2021).

[8] Michigan Dep't of Env't, Great Lakes, & Energy, PFAS in Deer, https://www.michigan.gov/pfasresponse/0,9038,7-365-86512_88981_88982---,00.html (last visited May 16, 2021).

[9] *See* Amy Linn, *This Has Poisoned Everything—Pollution Casts Shadow Over New Mexico's Booming Dairy Industry*, THE GUARDIAN (February 20, 2019), https://www.theguardian.com/us-news/2019/feb/20/new-mexico-contamination-dairy-industry-pollution.

[10] Ctrs. for Disease Control & Prevention, Nat'l Biomonitoring Program, Per- and Polyfluorinated Substances (PFAS) Factsheet, https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html (last updated April 7, 2017). *See also* David Andrews, *Insight: The Case for Regulating All PFAS Chemicals as a Class*, BLOOMBERG ENV'T (May 20, 2019), https://news.bloombergenvironment.com/environment-and-energy/insight-the-case-for-regulating-all-pfas-chemicals-as-a-class/.

[11] Impacts to mammary gland development have been associated with low level doses of PFOA. *See, e.g.*, Madisa B. Macon et al., *Prenatal perfluorooctanoic acid exposure in CD-1 mice: low dose developmental effects and internal dosimetry*, 122 TOXICOLOGICAL SCI. 131 (2011), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3143465/; Sally S. White et al., *Gestational and chronic low-dose PFOA exposures and mammary gland growth and differentiation in three generations of CD-1 mice*, 119 ENV'T HEALTH PERSPECTIVES 1070 (2011), https://www.ncbi.nlm.nih.gov/pubmed/21501981; Dierdre K. Tucker et al., *The mammary gland is a sensitive pubertal target in CD-1 and C57Bl/6 mice following perinatal perfluorooctanoic acid (PFOA) exposure*, 54 REPRODUCTIVE TOXICOLOGY 26 (2015), https://www.ncbi.nlm.nih.gov/pubmed/25499722. PFOA, PFOS, PFHxS and PFDeA are also associated with reduced effectiveness of vaccines, even at low doses. *See* Anna Reade, Tracy Quinn, & Judith S. Schreiber, *Scientific & Policy Assessment for Per- and Polyfluoroalkyl Substances in Drinking Water*, Nat. Resources Defense Council (April 12, 2019), https://www.nrdc.org/sites/default/files/media-uploads/nrdc_pfas_report.pdf.

ulcerative colitis, thyroid disease, high cholesterol,[12] reproductive and developmental harm,[13] and damage to the immune system, including reduced efficacy of vaccines.[14]

The Clean Water Act aims to prevent, reduce, and eliminate pollution in the nation's water to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[15] To carry out this purpose, the EPA is required to establish Effluent Limitation Guidelines (ELGs), [16] which are national wastewater discharge standards implemented on an industry-by-industry basis.[17] These technology-based regulations are determined by the greatest pollutant reductions achievable for each industry.[18] Using these CWA authorities to limit industrial discharges of PFAS is one of the most effective tools EPA has to turn off the tap on PFAS pollution.

The EPA creates preliminary plans under section 304(m) of the CWA to identify any new or existing industrial categories for further review, analysis, and revision.[19] The actions identified in the EPA's most recent plan, Preliminary Plan 15, represent an important first step toward this goal but do not go far enough. The undersigned groups urge the EPA to work more aggressively to reduce discharges by:

- Quickly promulgating ELGs for manufacturers *and* formulators of PFAS, including contract and toll manufacturers, under the organic chemicals, plastics, and synthetic fibers (OCPSF) category
- Quickly promulgating ELGs for all dischargers using PFAS in the metal finishing point source category, not only chrome platers.
- Committing to quickly developing ELGs for additional industry point source categories, including several that were not included in the PFAS multi-industry study
- Developing ELGs for multiple industries concurrently
- Expanding the definition of PFAS
- Adopting best available technologies, economically available, as well as pretreatment standards
- Addressing PFAS as a class
- Quickly finalizing analytical methods for wastewater and total PFAS, and

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[12] C8 Science Panel, C8 Probable Link Reports, http://www.c8sciencepanel.org/prob_link.html (last visited Feb. 19, 2021).
[13] Alexis Temkin, *PFAS & Developmental & Reproductive Toxicity: An EWG Fact Sheet*, ENV'T WORKING GRP. (Sept. 19, 2019), https://www.ewg.org/news-and-analysis/2019/09/pfas-and-developmental-and-reproductive-toxicity-ewg-fact-sheet.
[14] Tasha Stoiber, *PFAS Chemicals Harm the Immune System, Decrease Response to Vaccines, New EWG Review Finds*, ENV'T WORKING GRP. (June 21, 2019), https://www.ewg.org/news-and-analysis/2019/06/pfas-chemicals-harm-immune-system-decrease-response-vaccines-new-ewg.
[15] 33 U.S.C § 1251.
[16] Throughout these comments, references to "effluent limitation guidelines" is meant broadly to include effluent discharge limits like BPT, BAT, and BPJ requirements as well as pretreatment standards and new source performance standards.
[17] Env't Prot. Agency, Effluent Guidelines Plan, https://www.epa.gov/eg/effluent-guidelines-plan (Last visited Sept. 24, 2021).
[18] *Id.*
[19] 33 U.S.C. § 1314(m).

- Incorporating environmental justice in developing ELGs for PFAS.

I. The EPA should quickly develop ELGs for PFAS manufacturers *and* formulators

Preliminary Plan 15 provides information following up the advance notice of proposed rulemaking (ANPRM) released on March 17, 2021, regarding potential ELGs for PFAS manufacturers and formulators in the OCPSF point source category. The EPA also published the *Multi-Industry Per- and Polyfluoroalkyl Substances (PFAS) Study – 2021 Preliminary Report* ("Multi-Industry Study") alongside Preliminary Plan 15.[20]

In the ANPRM, the EPA defines PFAS manufacturers as "facilities that produce PFAS compounds or precursors through processes including, but not limited to, electrochemical fluorination (ECF) and telomerization."[21] The EPA defines PFAS formulators as "facilities that are the primary customers of PFAS manufacturers and that use raw PFAS feedstock to (a) produce commercial or consumer goods (*e.g.,* weather-proof caulking), or (b) as intermediary products for use in the manufacture of commercial goods (*e.g.,* a grease-proof coating for a pizza box)."[22]

Preliminary Plan 15 verifies that PFAS are present in wastewater discharges from at least six PFAS manufacturers.[23] Plan 15 also finds that the EPA has identified at least eight OCPSF facilities that use feedstocks to formulate other products, but "considers it probable that there are many more OCPSF facilities using PFAS that EPA has not yet identified."[24] Based on the information collected through the Multi-Industry Study and the ANPRM, the EPA has determined that development of ELGs for PFAS manufacturers is "warranted" but that the EPA will "continue to evaluate the need to develop regulations to address PFAS discharges from formulators."[25]

The EPA should commit to regulating both manufacturers and formulators. Based on the EPA's own analysis, a rulemaking limited to manufacturers could only cover as few as six PFAS manufacturing facilities.[26] By contrast, there are likely many more PFAS formulators or chemical producers in the OCPSF using PFAS. A 2020 analysis of PFAS uses by leading academics and researchers, *Glüge et al.*, identified the following uses of PFAS by the chemical industry:[27]

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[20] Env't Prot. Agency, Multi-Industry Per- and Polyfluoroalkyl Substances (PFAS) Study- 2021 Preliminary Report 15 (Sept. 2021), https://www.epa.gov/system/files/documents/2021-09/multi-industry-pfas-study_preliminary-2021-report_508_2021.09.08.pdf (hereinafter "Multi-Industry Study").
[21] Clean Water Act Effluent Limitations Guidelines and Standards for the Organic Chemicals, Plastics and Synthetic Fibers Point Source Category, 86 Fed. Reg. 14561 (March 17, 2021).
[22] *Id.*
[23] Env't Prot. Agency, Preliminary Effluent Guidelines Program Plan 15 (Sept. 2021) at 37, https://www.epa.gov/system/files/documents/2021-09/ow-prelim-elg-plan-15_508.pdf (hereinafter "Preliminary Plan 15").
[24] *Id.*
[25] *Id.*
[26] Clean Water Act Effluent Limitations Guidelines and Standards for the Organic Chemicals, Plastics and Synthetic Fibers Point Source Category, 86 Fed. Reg. at 14563.
[27] *See* Glüge et al, *supra* note 1.

- Fluoropolymer processing aid
- Production of chlorine and caustic soda (with asbestos diaphragm cells)
- Production of chlorine and caustic soda (with fluorinated membranes)
- Processing aids in the extrusion of high- and low-density polyethylene liner film
- Tantalum, molybdenum, and niobium processing
- Chemical reactions
- Polymer curing
- Ionic liquids
- Solvents.

We agree with the EPA that eight formulators are likely an undercount. The EPA should survey all chemical manufacturers that could be using PFAS for one or more of the above processes and should use its mandatory information collection authorities to solicit data, where needed. But the EPA should not wait until it has identified all PFAS formulators before committing to moving forward with ELGs. Preliminary Plan 15 characterizes wastewater from "both PFAS manufacturers and formulators," and the Multi-Industry Study shows that at least five formulators are subject to PFAS monitoring requirements and that EPA received samples from "all six PFAS manufacturers and six of seven formulators."[28] Preliminary Plan 15 also notes that at least two OCPSF facilities have already reduced effluent using granular activated carbon (GAC) treatment,[29] and the Multi-Industry Study identifies at least five facilities with existing wastewater controls, including one facility classified as a formulator.[30] This is enough information to allow rulemaking to proceed while EPA works to identify additional formulators.

The EPA should also ensure that toll[31] and contract[32] manufacturers are included in any final revision to the OCPSF ELGs. As part of its information collection efforts, the EPA should seek information from identified manufacturers and formulators to determine whether they are using toll and contract manufacturers, where those facilities are located, and whether those facilities have PFAS discharge records. It should then require sampling as needed. The EPA should also collect information from internal or sister plants belonging to the same company or their subsidiaries. When EPA finalizes Program Plan 15, it should say when EPA anticipates completing its industry study and proposing new ELGs.

II. The EPA should develop ELGs for all metal finishers, not just chrome platers

Preliminary Plan 15 states that, "based on information and data EPA has collected since it began studying PFAS in industrial wastewater, the EPA determined that PFAS have, and continue to be, used by metal finishing facilities in the United States."[33] Preliminary Plan 15 goes on to say

[28] Multi-Industry Study, *supra* note 20, at 37-38.
[29] Preliminary Plan 15, *supra* note 23, at 37.
[30] Multi-Industry Study, *supra* note 20, at 36-37.
[31] Toll manufacturing is when a manufacturer provides the raw materials to another manufacturer to create finished product to the primary manufacturer's specifications. Costing Terms: Toll and Contract Manufacturing, Finance Management, https://efinancemanagement.com/costing-terms/toll-and-contract-manufacturing (last visited May 16, 2021).
[32] In contract manufacturing, the contract manufacturer procures the raw materials and then creates a finished product to the primary manufacturer's specifications. *Id.*
[33] Multi-Industry Study, *supra* note 20, at 37-38.

that chromium electroplating facilities are "the most significant source of PFAS in the metal finishing category" and that "EPA therefore plans to revise the existing Metal Finishing ELGS (40 CFR Part 433) to address PFAS discharges from chromium electroplating." In the Multi-Industry Study, the EPA also states that it "focused on chromium electroplating facilities for its review of the metal finishing point source category."[34]

Preliminary Plan 15 does not indicate whether the EPA plans to revise the ELGs to address metal finishers other than chrome platers. *Glüge et al.* identifies several other uses of PFAS in the metal finishing industry, including nickel plating, copper plating, tin plating, alkaline zinc and zinc alloy plating, and deposition of fluoropolymer particles onto steel. [35]

A 2019 study found that PFAS were widely detected in workshop production wastewater from electroplating industrial areas in China.[36] The study found high levels of 11 PFAS, particularly high levels of short-chain PFAS.[37] In the U.S., electroplating has also been identified as a source of water contamination. For example, in September 2020, EPA added the Blades Groundwater site, located in Sussex County, Del., to the National Priority List, because electroplating compounds and PFAS were found in groundwater and public and residential supply well.[38]

When EPA revises the metal finishing ELGs, it should address all metal finishers. The final Program Plan 15 should also say when the EPA anticipates completing this work.

III. The EPA should develop ELGs for additional industry point source categories

To adequately protect public health and the environment, the EPA must address discharges from additional point source categories beyond the commitments made in Preliminary Plan 15. The House of Representatives has twice passed legislation, the Clean Water Standards for PFAS Act,[39] that would require the EPA to set water quality criteria for measurable PFAS within two to three years[40] and place effluent limits on discharges to surface waters and publicly owned treatment works (POTWs) from nine-point source categories within four years. In addition to its introduction as a stand-alone bill, the Clean Water Standards for PFAS Act was also included as section 17 of H.R. 2467, the PFAS Action Act, and section 12023 of H.R. 3684, the INVEST Act. Both the PFAS Action Act and INVEST Act have passed the House of Representatives.

Two of the categories in the Clean Water Standards for PFAS Act, OCPSF and metal finishing, have EPA commitments in Preliminary Plan 15. Three others – pulp, paper, and paperboard;

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[34] Multi-Industry Study, *supra* note 20, at 42.
[35] Glüge et al., *supra* note 1.
[36] Tang Jiawei, Zhang Yizhen, Sun Jiajun, Shi Xuelu, Sun Chao, Zhang Chunhui, Occurrence and characteristics of perfluoroalkyl substances (PFASs) in electroplating industrial wastewater, 79 WATER SCI. & TECH. 731, 734 (2019).
[37] *Id*.
[38] Env't Prot. Agency, Superfund Site: Blade Groundwater, Blades, DE. https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0304203#bkground (last visited Oct. 4, 2021).
[39] Clean Water Standards for PFAS Act, S. 1907/ H.R. 3622, 117th Cong. (1st Sess. 2021).
[40] The timeframe differs slightly from the standalone (two years) to the version included as an amendment in the PFAS Action Act and INVEST Act (three years).

textile mills; and electrical and electronic components – are discussed in Preliminary Plan 15, but the EPA has made not commitments to develop ELGs for these categories.

At a minimum, the EPA should commit to quickly using its mandatory information collection authorities to gather data from facilities in each of the point source categories included in the Clean Water Standards for PFAS Act, and then initiate rulemaking as soon as possible. The EPA should provide a timeline in the final Program Plan 15 detailing how and when the EPA will collect data and when it may initiate rulemaking to update ELGs for these categories.

In addition to the categories included in the Clean Water Standards for PFAS Act, the EPA should continue its work on airports and landfills through the Multi-Industry Study and provide a timeline in the final Program Plan 15 for when the EPA will complete its analysis and begin updating the ELGs for these categories to address PFAS.

Pulp, paper, and paperboard

Preliminary Plan 15 finds that only a small subset of facilities is actively applying PFAS to paper products and that the food packaging industry is expected to transition to PFAS-free technologies by 2024.[41] Plan 15 further states that "EPA will continue to study" this category.[42]

In the PFAS Multi-Industry Study, the EPA indicates that it worked with the American Forest and Paper Association (AF&PA) to survey its members.[43] Nineteen out of 38 AF&PA member companies responded to the survey, representing 146 of the 171 mills operated by its members. Five of the 146 mills reported intentionally using PFAS in the manufacture of pulp and paper products as of July 2020 and expected to phase it out in the next three to four years.[44]

Although this is encouraging news, the EPA needs more information. Only half of AF&PA's member companies responded to the survey, and about 15 percent of the industry is not represented by AF&PA. The EPA should use its mandatory information collection authorities to get data from facilities that did not respond to the AF&PA or that are not owned or operated by AF&PA member companies.

The EPA should also coordinate with the Food and Drug Administration to identify any food contact notifications (FCNs) for PFAS in paper/paperboard products that are not covered by the FDA's voluntary fluorotelomer phaseout.[45] For any remaining FCNs, the EPA should solicit data from the chemical manufacturer and any relevant downstream users.

The EPA should also investigate paper mills that do not manufacture food packaging. There have been several cases of paper mills identified as contributing to significant PFAS contamination,

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[41] Preliminary Plan 15, *supra* note 23, at 38.
[42] *Id.*
[43] Multi-Industry Study, *supra* note 20, at 48-49.
[44] *Id.*
[45] Press Release, Food & Drug Adm'n, FDA Announces the Voluntary Phase-Out by Industry of Certain PFAS Used in Food Packaging (July 31, 2020), https://www.fda.gov/food/cfsan-constituent-updates/fda-announces-voluntary-phase-out-industry-certain-pfas-used-food-packaging.

including in Parchment, Mich,[46] Maine,[47] and Norway.[48] The state of Maine has worked to track the land application of sewage sludge from at least eight paper mills and can likely provide the EPA with more information about the operating status of those mills, if PFAS were used at those facilities, how they were used, whether they are still being used, and production volumes.

Textile mills

PFAS have been widely used by the textile industry in consumer goods, including carpets, rugs, upholstery, and apparel. As the Multi-Industry Study notes, a Natural Resources Defense Council (NRDC) analysis of a 2016 fluorotelomer market study concluded the global textile industry was the largest user of fluorotelomers.[49] Vermont conducted a landfill study to determine PFAS sources in 2019 and found that textiles and carpeting were the most significant contributors to PFAS waste at the site.[50] The state of California recently decided to regulate PFAS as a class in carpets[51] after identifying carpets and rugs as "major sources of human and ecological PFAS exposures"[52] and that those exposures have "the potential to contribute to or cause significant or widespread adverse impacts."[53]

Several textile mills are known dischargers of PFAS into the environment. For example, New Hampshire first negotiated a consent decree with Saint-Gobain Performance Plastics in 2018[54] to address groundwater contamination from the facility's manufacture of PFAS-coated performance fabrics.[55] The village of Merrimack, N.H., has also recently filed a lawsuit against Saint-Gobain and another textile manufacturer, Textiles Coated International of Londonderry.[56]

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[46] John Gardella, *PFAS Paper Mill Settlement Reflects Growing Trend*, NAT'L LAW REVIEW (April 28, 2021), https://www.natlawreview.com/article/pfas-paper-mill-settlement-reflects-growing-trend.
[47] Kevin Miller, *Trail of 'Forever Chemicals' Leads to Maine Paper Mills*, PORTLAND PRESS HERALD (July 18, 2021), https://www.pressherald.com/2021/07/18/trail-of-forever-chemicals-leads-to-maine-paper-mills/.
[48] Håkon A. Langberg et al., *Paper Product Production Identified as the Main Source of Per-and Polyfluoroalkyl Substances (PFAS) in a Norwegian Lake: Source and Historic Emission Tracking*, 273 ENV'T POLLUTION 116259 (March 20210), https://www.sciencedirect.com/science/article/pii/S0269749120369487.
[49] Multi-Industry Study, *supra* note 20, at 55.
[50] Sanborn, Head & Associates, PFAS Waste Source Testing Report, New England Waste Services of Vermont (Oct. 2019), https://anrweb.vt.gov/PubDocs/DEC/SolidWaste/OL510/OL510%202019.10.15%20NEWSVT%20PFAS%20Source%20Testing%20Rpt%20-%20Final.pdf.
[51] Simona Andreea Bălan et al., *Regulating PFAS as a Chemical Class Under the California Safer Consumer Products Program*, 129 Env't Health Perspectives (2021), https://ehp.niehs.nih.gov/doi/pdf/10.1289/EHP7431.
[52] Calif. Dep't of Toxic Substances Control et al., Product- Chemical Profile for Carpets and Rugs Containing Perfluoroalkyl or Polyfluoroalkyl Substances (Oct. 2019) at 7, https://dtsc.ca.gov/wp-content/uploads/sites/31/2020/02/Final_Product-Chemical_Profile_Carpets_Rugs_PFASs_a.pdf.
[53] *Id.* at 6.
[54] Consent Decree, State of New Hampshire, Dep't of Env't Servs. V. Saint-Gobain Perforamnce Plastics Corp. State of N.H. Superior Court (March 20, 2018), https://www4.des.state.nh.us/nh-pfas-investigation/wp-content/uploads/2018/03/final-cd-20180320.pdf.
[55] Annie Ropeik, *Up Close with Saint-Gobain's New PFAS Chemical Treatment System in Merrimack*, NEW HAMPSHIRE PUBLIC RADIO (July 21, 2021), https://www.nhpr.org/environment/2021-07-21/up-close-with-saint-gobains-new-pfas-chemical-treatment-system-in-merrimack.
[56] Josie Albertson-Grove, *Merrimack Village Water System Sues Saint-Gobain, Two Other Local Manufacturers*, NEW HAMPSHIRE UNION LEADER (Sept. 25, 2021), https://www.unionleader.com/news/courts/merrimack-village-water-system-sues-saint-gobain-two-other-local-manufacturers/article_198768ed-8851-5298-8edd-c574df5796cd.html.

Preliminary Plan 15 finds that "PFAS have been used and continue to be used by textile and carpet manufacturers" but that the "industry trade associations and companies that EPA contacted, however, declined to meet with EPA or provide information."[57] Preliminary Plan 15 states that "EPA plans to continue to study textile and carpet manufacturers in a separate detailed study."[58] The EPA should use its mandatory data collection authorities to require information from the textile manufacturers that have thus far refused to cooperate with the EPA. The EPA should also solicit data from states that are already working to regulate PFAS in textiles, such as California, and states like New Hampshire that are investigating specific facilities. In the final Program Plan 15, the EPA should provide an update on the detailed study of textile mills, including a timeline for when the EPA expects to complete the study and initiate rulemaking to address PFAS in the textile mills ELGs.

Electrical and electronic components

In Preliminary Effluent Limitations Guidelines Program Plan 14, the EPA shared that it is investigating PFAS in wastewater discharges from semiconductor manufacturing as part of an ongoing review of ELGs for the electric and electrical component industry.[59] Although Plan 15 states that the EPA "is in the process of finalizing a study report,"[60] it does not indicate how PFAS will be addressed in the study or whether the electrical and electronic components point source category will be added to the PFAS Multi-Industry Study.

However, the use of PFAS in the electronics industry is well-documented. A report prepared for the American Chemistry Council FluoroCouncil[61] in February 2020 identifies electronics as "the largest downstream sector by sales" and states that "fluoropolymers are critical to the semiconductor manufacturing process." *Glüge et al.* identify several uses of PFAS in the electrical and electronic components industry, including testing of electronic devices and equipment, heat transfer fluids, solvent systems and cleaning, carrier fluid/lubricant deposition, etching of piezoelectric ceramic filters, as well as multiple uses of PFAS in semiconductor manufacturing.[62] TSCA Chemical Data Reporting Rule (CDR) data shows that 2,180 metric tons of PFAS were used for electrical equipment, appliance and component manufacturing per year between 2012 and 2015.[63]

PFAS are also reportedly used in electrical and electronic equipment as flame retardants, wire and metal anti-weathering agents, insulators, and solder sleeves.[64] Several studies have now

[57] Preliminary Plan 15, *supra* note 23, at 38-39.
[58] *Id.* at 39.
[59] Env't Prot. Agency, Preliminary Effluent Guidelines Program Plan 14 (Oct. 2019), https://www.epa.gov/sites/production/files/2019-10/documents/prelim-eg-plan-14_oct-2019.pdf
[60] Preliminary Plan 15, *supra* note 23, at 34.
[61] The FluoroCouncil split into two groups in 2020, the Performance Fluoropolymer Partnership and the Alliance for Telomer Chemistry Stewardship. *See* American Chemistry Council, *ACC's FluoroCouncil Splits to Improve Industry Advocacy*, ACC SmartBrief (April 22, 2020), https://www.smartbrief.com/branded/30C3408B-E421-4879-91DA-84B8AF42FF3B/297770F8-8442-4F9C-A081-C7FD95746BBC.
[62] Glüge et al., *supra* note 1.
[63] *Id.*
[64] Interstate Technology Regulatory Council, PFAS Uses, https://pfas-1.itrcweb.org/2-5-pfas-uses/ (Last updated Sept. 2020).

confirmed PFAS contamination in wastewaters of electronics, optoelectronics, and semiconductor industries.[65]

The EPA should quickly complete its detailed study on electrical and electronic components and provide an update in the final Program Plan 15. The EPA should expand the study to include all uses by the electronics industry. The final Program Plan 15 should include a detailed timeline addressing when the study will be complete and when the EPA anticipates rulemaking to update the electrical and electronic components ELGs to address PFAS.

Leather tanning and finishing

Neither Preliminary Plan 15 nor the Multi-Industry Study addresses PFAS discharges from the leather tanning or finishing point source category. "Leather tanning or finishing" refers to the process of converting animal hides or skins into leather. PFAS may be used to treat leather in various consumer products, including treated leather carpets, rugs, clothing, shoes, upholstery, or other converted fabrics.[66] When leather is treated to prevent dirt or stains in many household products, it becomes a significant source of PFAS via inhalation.[67]

Glüge et al. identifies several other uses of PFAS in the leather tanning and finishing including manufacturing of genuine leather, repellant treatment, manufacturing of synthetic leather, shoe brighteners, and impregnation spray.[68] Although now closed, the Wolverine Worldwide facility in Rockford, Mich., is an example of a leather tanning operation that has created significant PFAS contamination.[69]

The EPA should use its mandatory data collection authorities to begin collecting data on facilities in the leather tanning and finishing point source category and should update ELGs to address PFAS as soon as possible. The EPA should provide an update on this point source category in the final Program Plan 15.

Paint formulating

Neither Preliminary Plan 15 nor the Multi-Industry Study addresses PFAS discharges from paint formulating. The paint formulating industry produces paints with either an oil base or a water base.[70] When formulating paint, PFAS are added to improve flow, spread, and glossiness, to decrease bubbling and peeling, and to make paint stain-resistant and water-repellent properties.[71]

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[65] *Id.*
[66] Calif. Dept. Toxic Substances Control, Chemical Profile for Treatments Containing Perfluoroalkyl or Polyfluoroalkyl Substances for Use on Converted Textiles or Leathers (Nov. 2019), https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/11/Product-Chemical-Profile-for-Treatments-with-PFASs.pdf.
[67] *Id.*
[68] Glüge et al., *supra* note 1.
[69] Env't Prot. Agency, EPA in Michigan, Wolverine World Wide Tannery, https://www.epa.gov/mi/wolverine-world-wide-tannery (last updated May 25, 2021).
[70] Env't Prot. Agency, Paint Formulation Effluent Guidelines, https://www.epa.gov/eg/paint-formulating-effluent-guidelines (last visited Oct. 4, 2021).
[71] Interstate Technology Regulatory Council, PFAS Releases Into the Environment, https://pfas-1.itrcweb.org/2-6-pfas-releases-to-the-environment/?print=pdf (last updated May 2021).

PFAS are also used as additives in dye and ink and can be used as pigment grinding aids or as agents to combat pigment flotation problems.[72] TSCA Chemical Data Reporting Rule (CDR) data shows that 0.32 metric tons of PFAS were used for paint coating and manufacturing per year between 2012 and 2015.[73] Because oil-based paints are highly flammable, many paint manufacturing facilities are likely outfitted with aqueous film-forming foam (AFFF) fume and suppression systems and likely keep AFFF on hand. The use of AFFF at these facilities will result in discharges to wastewaters.

The EPA should use its mandatory data collection authorities to begin collecting data on facilities in the paint formulating source category and should update ELGs to address PFAS as soon as possible. The EPA should provide an update on this point source category in the final Program Plan 15.

Plastics molding and forming

Neither Preliminary Plan 15 nor the Multi-Industry Study addresses PFAS discharges from plastics molding and forming, although Preliminary Plan 15 acknowledges that PFAS feedstocks can be used to "produce new commercial or intermediate products, such as plastic, rubber, resins, coatings, and cleaning products."[74] *Glüge et al.* identify several uses of PFAS for plastics molding and formulating, including separation of mould and moulded material, foam blowing, polyol foams, polymer processing aid, etching of plastic, and fluoroelastomer formulation.[75]

Some plastics formulating facilities are known sources of PFAS contamination, such as the Saint-Gobain Performance Plastics facility in Hoosick Falls, N.Y.,[76] and the Thermofill plastics manufacturing facility in Green Oaks Township, Mich.[77] In March, the EPA released test data showing PFAS contamination of pesticides from the use of fluorinated high-density polyethylene containers.[78] The FDA also recently warned manufacturers about the use of fluorinated polyethylene in food containers.[79]

Researchers at the Swiss Federal Institute of Technology, in Zurich, found that the production of plastic and rubber, along with the electronics and paint manufacturing industries, accounted for the greatest amount of PFAS used in Sweden, Finland, Norway, and Denmark between 2000 and 2017.[80]

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[72] *Id*
[73] *Id.*
[74] Preliminary Plan 15, *supra* note 23, at 37.
[75] Glüge et al., *supra* note 1.
[76] Env't Prot. Agency, Superfund Site: Saint-Gobain Performance Plastics, Village of Hoosick Falls, NY, https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0202702#bkground (last visited Oct. 8, 2021).
[77] Mich. PFAS Action Response Team, Living County, Green Oaks Township, Thermofill https://www.michigan.gov/pfasresponse/0,9038,7-365--500859--,00.html (last updated May 24, 2021).
[78] Env't Prot. Agency, Per-and Polyfluoroalkyl Substances in Pesticide Packaging, https://www.epa.gov/pesticides/pfas-packaging (last updated Sept. 29, 2021).
[79] Press Release, Food & Drug Adm'n, FDA Issues Letter to Industry on Fluorinated Polyethylene Food Contact Containers (Aug. 5, 2021), https://www.fda.gov/food/cfsan-constituent-updates/fda-issues-letter-industry-fluorinated-polyethylene-food-contact-containers.
[80] Glüge et al., *supra* note 1.

Given the prevalence of PFAS use in these industries abroad, it is very likely that electronics, paint formulating, and plastics manufacturing facilities in the U.S. are also using large volumes of PFAS. The EPA should prioritize these sectors in its ongoing PFAS research.

The EPA should use its mandatory data collection authorities to begin collecting data on facilities in the plastics formulating and molding source category and should update ELGs to address PFAS as soon as possible. The EPA should provide an update on this point source category and a detailed timeline of these anticipated actions in the final Program Plan 15.

Oil and gas extraction

Neither the Preliminary Plan 15 nor the Multi-Industry Study address PFAS in oil and gas extraction, and oil and gas extraction is not one of the point source categories included in the Clean Water Standards for PFAS Act. But *Glüge et al*. identify multiple uses for the PFAS oil and gas extraction industry, including drilling fluid, drilling insulating materials for cable and wire, chemical-driven oil production, chemical-driven gas production, oil and gas transport, oil and gas storage, oil containment, and oil and fuel filtration.[81] A state of Colorado investigation into the Suncor Oil and Gas Refinery in Commerce City, Colo., has found significant PFAS flowing from the facility.[82] A recent New York Times exposé uncovered EPA approvals of PFAS a decade ago for use in drilling and fracking.[83] Oil and gas refineries also rely on AFFF to extinguish class B fuel-based fires. Training and response to fire emergencies will also result in discharges of PFAS into wastewater.

Preliminary Plan 15 states that "EPA intends to take no further action on oil and gas extraction wastewater management."[84] The EPA should reconsider this position and take steps to solicit data on PFAS in oil and gas wastewater and begin the process of updating ELGs to address PFAS discharges.

Additional industry sectors

In addition to the point source categories discussed above, there are several resources the EPA can use to identify additional categories of dischargers that should be subject to ELGs. On January 14, 2021, the EPA Office of Land and Emergency Management issued a pre-publication rule, "Addressing PFOA and PFOS in the Environment: Potential Future Regulation Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act and the Resource

[81] *Id.*
[82] Sam Brasch, *After Tests Find 'Forever Chemicals' Flowing From Suncor, Colorado Eyes a Crackdown*, COLORADO PUBLIC RADIO NEWS (July 22, 2020), cpr.org/2020/07/22/after-tests-find-forever-chemicals-flowing-from-suncor-state-eyes-crackdown/.
[83] Hiroko Tabuchi, *E.P.A. Approved Toxic Chemicals for Fracking a Decade Ago, New Files Show*, N.Y. TIMES (July 26, 2021), https://www.nytimes.com/2021/07/12/climate/epa-pfas-fracking-forever-chemicals.html.
[84] Preliminary Plan 15, *supra* note 23, at 36.

Conservation and Recovery Act."[85] Although the proposed rule was ultimately never published in the Federal Register, it identified several industries and their corresponding North American Industry Classification System (NAICS) codes[86] for industries that could be affected by a forthcoming PFAS regulation. A proposed EPA rule for data collection under the Toxic Substances Control Act section 8(a)(7) released in June 2021 also includes a long list of NAICS codes for industries likely affected by the proposed rulemaking.[87] The Office of Water should cross-reference these lists to identify other point source categories for potential regulation.

In addition to the industries identified by the Office of Land and Emergency Management (OLEM) and the Office of Chemical Safety and Pollution Prevention (OCSPP), there are several other recently published analyses of potential sources of industrial PFAS discharges. Leading academics and researchers have identified over 200 use categories for 1,400 unique PFAS.[88] Another recent study identified industries that are potential risks for contaminating drinking water aquifers in New England.[89] Several industries have also been identified through a testing program developed for the state of Minnesota.[90]

Through these sources, we have identified the following NAICS and Standard Industrial Classification SIC codes for industries that may be discharging PFAS:

2017 NAICS Code	1987 SIC Code	2017 NAICS Title
562211	4953	Hazardous Waste Treatment and Disposal
562212		Solid Waste Landfill
562213		Solid Waste Combustors and Incinerators
562219		Other Nonhazardous Waste Treatment and Disposal

[85] Env't Prot. Agency, Advanced Notice of Proposed Rulemaking: Addressing PFOA and PFOS in the Environment: Potential Future Regulation Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act and the Resource Conservation and Recovery Act (Jan. 14, 2021), https://www.epa.gov/sites/production/files/2021-01/documents/frl-10019-13-olem_addressing_pfoa_pfos_anprm_20210113_admin-508.pdf.
[86] United States Census Bureau, North American Industry Classification System, https://www.census.gov/eos/www/naics/downloadables/downloadables.html (last visited May 16, 2021).
[87] Toxic Substances Control Act Section 8(a)(7) Reporting and Recordkeeping Requirements for Perfluoroalkyl and Polyfluoroalkyl Substances, 86 Fed. Reg. 33926 (proposed June 28, 2021) (to be codified at 40 CFR 705 pt. 2607).
[88] Glüge et al., *supra* note 1.
[89] Jennifer L. Guelfo et al., *Evaluation and Management Strategies for Per- and Polyfluoroalkyl Substances (PFASs) in Drinking Water Aquifers: Perspectives from Impacted U.S. Northeast Communities*, 125 ENV'T HEALTH PERSPECTIVES (2018), https://ehp.niehs.nih.gov/doi/10.1289/EHP2727.
[90] Shalene Thomas, Minnesota's State PFAS Protocol: One State's Strategy to Protect Human Health and the Environment, Webinar to ASDWA (May 29, 2019), https://www.asdwa.org/wp-content/uploads/2019/06/Thomas-MN-PFAS-Protocol.pdf.

562920		Materials Recovery Facilities
221320	4952	Sewage Treatment Facilities
332813	3471	Electroplating, Plating, Polishing, Anodizing, and Coloring
424710	N/A	Petroleum Bulk Stations and Terminals
325998	N/A	All Other Miscellaneous Chemical Product and Preparation Manufacturing
332999	N/A	All Other Miscellaneous Fabricated Metal Product Manufacturing
323111	N/A	Commercial Printing (except Screen and Books)
325211	2821	Plastics Material and Resin Manufacturing
325510	2851	Paint and Coating Manufacturing
334413	3674	Semiconductor and Related Device Manufacturing
424690	N/A	Other Chemical and Allied Products Merchant Wholesalers
334419	N/A	Other Electronic Component Manufacturing
488119	N/A	Other Airport Operations
212221	1041	Gold Ore Mining
324191	N/A	Petroleum Lubricating Oil and Grease Manufacturing
325612	2842	Polish and Other Sanitation Good Manufacturing
811192	7524	Car Washes
326113	3081	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing
325611	N/A	Soap and Other Detergent Manufacturing
335999	N/A	All Other Miscellaneous Electrical Equipment and Component Manufacturing
324110	N/A	Petroleum Refineries
322220	2672	Paper Bag and Coated and Treated Paper Manufacturing
322219	N/A	Other Paperboard Container Manufacturing
313310	2261 2262 2269	Textile and Fabric Finishing Mills
322121	N/A	Paper (except Newsprint) Mills
313320	2295	Fabric Coating Mills
333249	N/A	Other Industrial Machinery Manufacturing
322130	2631	Paperboard Mills
325910	N/A	Printing Ink Manufacturing
922160	9224	Fire Protection
313210	N/A	Broadwoven Fabric Mills

314999	N/A	All Other Miscellaneous Textile Product Mills
335929	N/A	Other Communication and Energy Wire Manufacturing
325992	N/A	Photographic Film, Paper, Plate, and Chemical Manufacturing
314110	2273	Carpet and Rug Mills
313230	N/A	Nonwoven Fabric Mills
316110	N/A	Leather and Hide Tanning and Finishing
323120	N/A	Support Activities for Printing
212291	1094	Uranium-Radium-Vanadium Ore Mining
316998	3199	All Other Leather Good and Allied Product Manufacturing
313220	N/A	Narrow Fabric Mills and Schiffli Machine Embroidery
561740	7217	Carpet and Upholstery Cleaning Services
313240	N/A	Knit Fabric Mills

The EPA should investigate all these industries as it considers revising additional ELGS to address PFAS.

IV. The EPA should develop industry ELGs concurrently, rather than on a category-by-category basis

Given the urgent risks to public health and the widespread use of PFAS chemicals across multiple industry sectors, the EPA must promulgate ELGs for multiple industry categories at the same time. A category-by-category approach to ELGs is untenable for PFAS chemicals, given the sheer number of likely dischargers. If the EPA regulates one industry category at a time, it could take several decades before most PFAS dischargers are subject to discharge restrictions. Affected downstream communities in places like Decatur, Ala., Parkersburg, W.V., Hoosick Falls, N.Y., Merrimack, N.H., and Fayetteville, N.C. simply do not have that kind of time.

Congress passed the Clean Water Act nearly 50 years ago with the objective to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[91] To meet that objective, Congress tasked the EPA with the development of pollution limits based on the best available technology, and the annual revision of those limits to keep pace with improved technology and address emerging contaminants. As a September 22, 2021, letter to the EPA signed by 61 clean water organizations points out, the EPA was able to keep pace with this challenge throughout the 1970s and 1980s, promulgating regulations for 50 of the 59 industries currently subject to ELGs.[92] The historic record demonstrates that the EPA can work

[91] 33 U.S.C. § 1251.

[92] Letter from Eric Schaeffer, Executive Director, Env't Integrity Project, et al., to Michael Regan, Admn'r, Env't Prot. Agency, re: EPA's Annual Review of Effluent Limitation Guidelines Under the Clean Water Act (Sept. 22, 2021), https://environmentalintegrity.org/wp-content/uploads/2021/09/2021.09.22-EPA-ELG-letter-FINAL.pdf.

expeditiously to simultaneously develop ELGs to tackle threats to clean water from multiple sources.

The EPA has a clear legal mandate to address the threat to our nation's waterways from underregulated contaminants like PFAS. Given the sheer volume of likely dischargers, the best way for the EPA to meet this mandate is to regulate across multiple ELG categories. Preliminary Plan 15 describes how the EPA prioritizes ELG revisions, based on:

1. The performance of applicable and demonstrated wastewater treatment technologies, process changes, and pollution prevention strategies to reduce pollutants in an industrial category's wastewater;
2. The costs (economic achievability) of demonstrated wastewater treatment technologies, process changes, and pollution prevention alternatives;
3. The amount and types of pollutants in an industrial category's discharge; and
4. The opportunity to promote technological innovation or to eliminate inefficiencies or impediments to pollution prevention.[93]

Multiple point source categories described in section III meet the EPA's prioritization criteria. There are dischargers of PFAS in different point source categories[94] that have already adopted similar applicable, demonstrated, and economically achievable technologies to reduce releases through consent decrees, legal settlements, state NPDES permits, or state initiatives. The dischargers had previously released large volumes of PFAS, and the applied technologies have led to significant decreases in PFAS discharges. And given the growing demand for tighter regulations of PFAS discharges, there is a clear opportunity to promote technological innovation for even more efficient and cost-effective technologies.

Because the best available technology that is economically feasible (BAT) is likely to be the same or similar for facilities in different industry point source categories, and the costs of installing such technology are also likely to be similar, the EPA has the chance to streamline the process for developing technology-based effluent limitations for multiple categories at the same time.

V. The EPA should adopt a broader definition of PFAS

The Multi-Industry Study defines PFAS as:

[93] Env't Prot. Agency, Effluent Guidelines Plan, https://www.epa.gov/eg/effluent-guidelines-plan (last visited Sept. 24, 2021).

[94] As EPA points out in Preliminary Plan 15, several of the identified PFAS manufacturers and formulators are already treating PFAS wastewater. Several chrome-plating facilities in Michigan have installed granular activated carbon systems through Michigan's Industrial Pretreatment Program. And the Saint-Gobain Performance Plastics facility in New Hampshire is also treating PFAS wastewater because of its negotiations with the state.

Per- and polyfluorinated substances that structurally contain the unit R-(CF2)-C(F)(R')R'' where both the CF2 and CF moieties are saturated carbons and none of the R groups (R, R', or R'') can be hydrogen.[95]

EPA's definition of PFAS is unnecessarily narrow and fails to capture the full list of substances that should be considered PFAS. As a group of leading scientists point out in a comment letter on a TSCA proposed rulemaking using the same definition, it excludes many PFAS of known concern, including PVDF, which EPA has previously identified as a fluoropolymer.[96] As several water groups – including the American Water Works Association (AWWA), the Association of State Drinking Water Administrators (ASDWA), and the Association of Metropolitan Water Agencies (AMWA) – point out in comments to the SDWA Contaminant Candidate List 5 (CCL 5), this definition would exclude perfluoro-2-methoxyacetic acid (PFMOAA),[97] a PFAS substance detected in sources of drinking water in the Cape Fear region of North Carolina.[98]

EPA's definition diverges from other internationally accepted definitions of PFAS. The Organisation for Economic Co-Operation and Development (OCED) recently published an updated definition of PFAS to create a comprehensive definition based on gaps identified in previous versions.[99] The OCED defines PFAS as:

"fluorinated substances that contain at least one fully fluorinated methyl or methylene carbon atom (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."[100]

The definition also conflicts with the definition most adopted by Congress, which defines PFAS as containing "at least one fully fluorinated carbon atom."[101] The definition is also narrower than the one included in the Clean Water Standards for PFAS Act, which defines PFAS as:

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[95] PFAS Multi-Industry Study, *supra* note 20, at 14.
[96] *See* Env't Prot. Agency, EPA Activities on Per- and Polyfluoroalkyl Substances (PFAS) at slide 4, (June 1, 2018), https://yosemite.epa.gov/sab/sabproduct.nsf/708FDD305E55DC7E8525829C005F9EB4/$File/PFAS+Presentation+SAB.pdf.
[97] *See, e.g.*, Comments of the Association of State Drinking Water Administrators (ASDWA) on Contaminant Candidate List 5 (CLL 5) at 3 (Sept. 17, 2021), https://www.asdwa.org/wp-content/uploads/2021/09/ASDWA_CCL-5-Final-Comments.pdf.
[98] P. Lee Ferguson et al., PFAS Team 1- Occurance of PFAS in North Carolina's Drinking Water Sources, at slide 7 (June 2019), https://ncpfastnetwork.com/wp-content/uploads/sites/18487/2019/06/Team-1-Knappe.pdf.
[99] OECD, *Reconciling Terminology of the Universe of Per- and Polyfluoroalkyl Substances: Recommendations and Practical Guidance,* OECD Series on Risk Management, No. 61, at 23 (July 09, 2021), https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/CBC/MONO(2021)25&docLanguage=en.
[100] *Id.*
[101] *See, e.g.* The PFAS Action Act, H.R. 2467, 117th Cong. § 7(g)(5)(1st Sess. 2021)(" PFAS.—The term 'PFAS' means a perfluoroalkyl or polyfluoroalkyl substance with at least one fully fluorinated carbon atom, including the chemical GenX."); No PFAS in Cosmetics Act, H.R. 3990/S. 2047, 117th Cong. (1st Sess. 2021)(" DEFINITION.—In this section, the term "perfluoroalkyl or polyfluoroalkyl substance" means a perfluoroalkyl or polyfluoroalkyl substance that is man-made and has at least 1 fully fluorinated carbon atom."); H.R. 4381, 117th Cong. (1st Sess. 2021)("DEFINITION.—In this Act, the term "PFAS" means a perfluoroalkyl or polyfluoroalkyl substance with at least one fully fluorinated carbon atom.").

> PERFLUOROALKYL SUBSTANCE.—The term "perfluoroalkyl substance" means a chemical of which all of the carbon atoms are fully fluorinated carbon atoms.
>
> POLYFLUOROALKYL SUBSTANCE.—The term "polyfluoroalkyl substance" means a chemical containing at least one fully fluorinated carbon atom and at least one carbon atom that is not a fully fluorinated carbon atom.[102]

States have also defined PFAS as containing "at least one fully fluorinated carbon atom.[103] For regulatory consistency and to ensure ELGs are sufficiently health protective, the EPA should adopt a broader definition of PFAS that does not conflict with definitions adopted by the OECD, Congress, or the states.

VI. The EPA should use existing resources to identify likely discharging facilities

The EPA already has access to several datasets that will help it identify likely PFAS discharging facilities. The Enforcement and Compliance History Online (ECHO)[104] database provides an interface to federal and state data for more than 1.5 million regulated facilities. The Chemical Data Reporting Rule (CDR) under the Toxic Substances Control Act collects information about types, quantities and uses of chemical substances, including PFAS, every four years from manufacturers with production volumes of 25,000 pounds or greater.[105]

EWG has used ECHO, the CDR, and a New York Department of Environmental Conservation survey[106] to map likely industrial dischargers of PFAS on three occasions. In June 2019, EWG identified 475 suspected industrial dischargers by mapping manufacturing facilities already reporting chemical discharges through the Toxics Release Inventory in the following industries: carpeting/rugs, coated paper, electroplating, semiconductors, tanneries and wiring manufacturers.[107] EWG used the same sources to update this analysis in April 2020 to identify at

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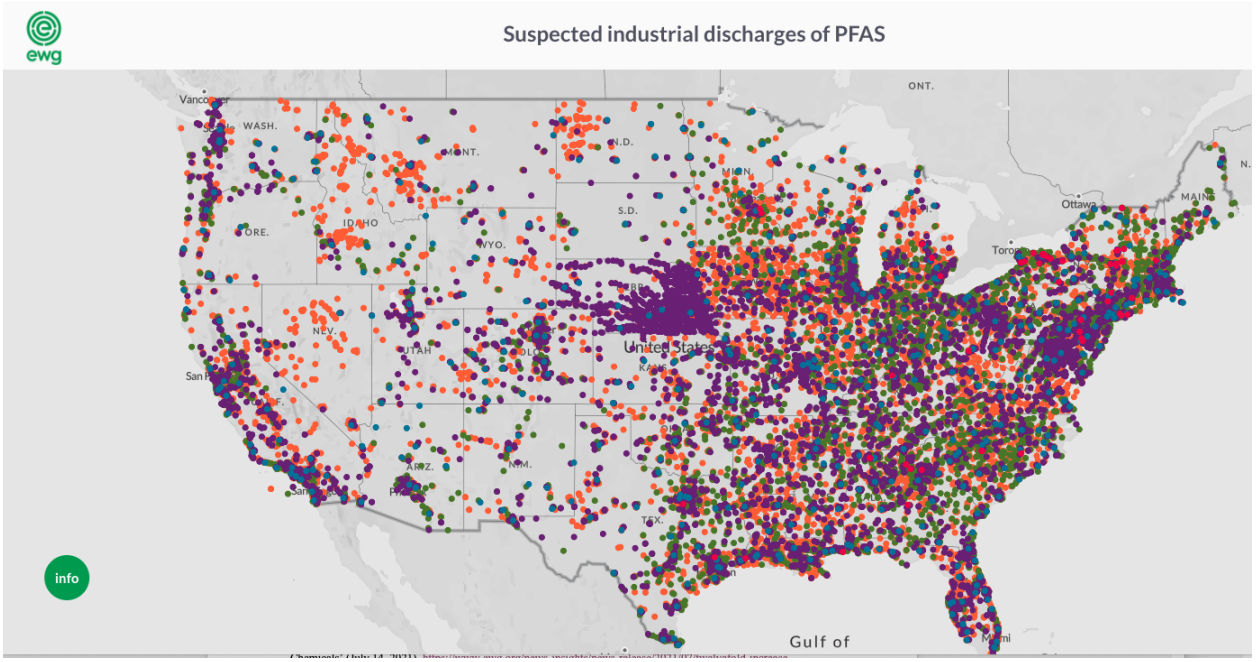
[102] Clean Water Standards for PFAS Act, S. 1907/ H.R. 3622, 117th Cong. (1st Sess. 2021).
[103] *See* S. 1044, 2019 Leg., Reg. Sess. (Cal. 2020); H.R. 19-1279, 72nd Gen. Assemb., Reg. Sess. (Colo. 2019); H.R. 1043, 129th Leg., Reg. Sess. (Me. 2019); S. 20, 2021 Gen. Assemb., Reg. Sess. (Vt. 2021); S. 5135, 66th Leg., Reg. Sess. (Wash. 2019).
[104] Env't Prot. Agency, Enforcement and Compliance History Online, echo.epa.gov (last visited May 16, 2021).
[105] Env't Prot. Agency, Chemical Data Reporting, https://www.epa.gov/chemical-data-reporting/basic-information-about-chemical-data-reporting#what (last updated April 27, 2020).
[106] New York Dep't. of Env't Conservation, PFOA/PFOS Facility Identification Survey, https://www.dec.ny.gov/docs/remediation_hudson_pdf/pfoasurvey1.pdf.
[107] Jared Hayes et al., *PFAS Nation: Toxic Discharges Suspected From Almost 500 Industrial Facilities Across U.S.*, ENV'T WORKING GRP. (June 11, 2019), https://www.ewg.org/news-insights/news/pfas-nation-toxic-discharges-suspected-almost-500-industrial-facilities-across.

least 2,500 facilities that could be discharging PFAS chemicals.[108] In July 2021, this analysis was updated to identify nearly 30,000 potential dischargers.[109]



Source: *Environmental Working Group*

Finally, a recently published peer-reviewed analysis in *AWWA Water Science* identifies 41,862 potential dischargers, of which 19,179 have National Pollution Discharge Elimination System (NPDES) permits.[110] A list of NAICS codes and associated SIC codes used to identify these facilities is included in Section III. In identifying potential dischargers, the EPA should include relevant SIC codes to identify those facilities that do not have a NAICS code.

VII. There are several data sources to confirm facilities discharging PFAS

EPA should use all available data sources to confirm whether facilities are discharging PFAS.

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[108] Jared Hayes & Scott Faber, *UPDATE: Thousands of Industrial Facilities Likely Discharging Toxic 'Forever Chemicals' Into Air and Water*, ENV'T WORKING GRP. (April 09, 2020), https://www.ewg.org/news-and-analysis/2020/04/updated-thousands-industrial-facilities-likely-discharging-toxic-forever. The majority of the new facilities came from an updated analysis of ECHO data. These 2,444 facilities can be found here: https://static.ewg.org/files/IndustrialFacilitiesPFAS_4_7_2020.xlsx?_ga=2.70606424.999160638.1621085684-975890449.1592862015.

[109] Press Release, Env't Working Grp., Twelvefold Increase in Suspected Industrial Dischargers of 'Forever Chemicals' (July 14, 2021), https://www.ewg.org/news-insights/news-release/2021/07/twelvefold-increase-suspected-industrial-dischargers-forever.

[110] David Andrews, Ph.D., et al., *Identification of Point Source Dischargers of Per and Polyfluoroalkyl Substances in the United States*, AWWA WATER SCIENCE 1252 (2021), https://doi.org/10.1002/aws2.1252

The EPA has already collected data from the Michigan Department of Environment, Great Lakes, and Energy in preparation for Preliminary Effluent Guidelines Program Plan 15. The Michigan Department of Environmental Quality (renamed Michigan EGLE in April 2019) conducted extensive tests of drinking water, surface water, and groundwater to identify and reduce PFAS contamination levels that exceed state standards, mapping 11,300 potential sources of PFAS contamination within the state.[111] Michigan EGLE also worked with POTWs to survey upstream users and implement pretreatment measures, in some cases reducing PFOS in effluent by 99 percent.[112]

Several other states have collected data on PFAS discharging facilities. California issued investigative orders in 2019 requiring PFAS testing at airports, landfills, and chrome-plating facilities, as well as in adjacent water systems, to assess sources of PFAS contamination.[113] California also issued PFAS testing orders to POTWs in 2020 and to bulk fuel storage terminals and refineries in 2021.[114] New York conducted a survey in 2017, which identified 28 facilities reporting past use of PFOA and PFOS, including 13 that were storing PFOA and PFOS onsite.[115] Colorado conducted a survey of potential PFAS dischargers in 2020 and mapped facilities with known or suspected PFAS presence.[116] The Metropolitan Water Reclamation District of Greater Colorado's Industrial Waste Division is conducting a PFAS screening evaluation survey.[117]

Although the EPA reviewed existing NPDES permits of manufacturers and formulators to prepare for Preliminary Program Plan 15, there are likely other downstream PFAS users that must monitor for PFAS under NPDES permits or through consent decrees. For example, state regulators required St. Gobain Performance Plastics in New Hampshire to sample fish tissues, stormwater, and on-site groundwater.[118] Under a state order, Colorado requires the Suncor oil

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[111] Keith Matheny, *DEQ: Harmful PFAS Might Contaminate More than 11,000 Sites Statewide*, DETROIT FREE PRESS (July 30, 2018), https://www.freep.com/story/news/local/michigan/2018/07/30/deq-pfas-chemical-contamination-pollution-michigan/851152002/.
[112] Colin O'Neil et al., *How Michigan Reduced Industrial Discharges of PFAS*, ENV'T WORKING GRP. (April 28, 2020), https://www.ewg.org/news-insights/news/how-michigan-reduced-industrial-discharges-pfas.
[113] California Water Bd., CA PFAS Timeline, https://www.waterboards.ca.gov/pfas/ca_pfas_timeline.html (last updated Sept. 29, 2021).
[114] California Water Bd., State Water Resources Control Bd., Water Code Sections 13267 and 13383 Order for the Determination of the Presence of Per- and Polyfluoroalkyl Substances at Publicly Owned Treatment Works, Order WQ 2020-0015-DWQ, https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2020/wqo2020_0015_dwq.pdf.
[115] New York Dep't. of Env't Conservation, PFOA/PFOS Facility Identification Survey, https://www.dec.ny.gov/docs/remediation_hudson_pdf/pfoasurvey1.pdf.
[116] Colorado Dep't of Public Health & Env't, PFAS Discharge Permit Survey, https://cdphe.colorado.gov/pfcs/PermitSurvey (last visited May 16, 2021).
[117] Metropolitan Water Reclamation District of Greater Chicago, Industrial Waste Division PFAS Initiative Screening Evaluation Survey https://mwrd.org/form/industrial-users-pfas-survey (last visited Oct. 8, 2021).
[118] New Hampshire Dep't of Env't Services, NH PFAS Investigation, https://www4.des.state.nh.us/nh-pfas-investigation/?cat=8 (last visited May 16, 2021).

refinery to regularly sample for PFAS.[119] Michigan now requires PFAS sampling in routine NPDES permit compliance sampling inspections.[120] The EPA should work with state regulators and NPDES permit writers to identify all industrial dischargers that must report PFAS under NPDES permits or under consent decrees. The EPA should also quickly finalize its PFAS guidance for federal NPDES permit writers[121] and begin requiring routine sampling for PFAS in EPA-issued NPDES permits.

The EPA should also pull from Toxics Release Inventory data to identify known dischargers of PFAS chemicals. Section 7321 of the National Defense Authorization Act for Fiscal Year 2020 requires facilities to report releases over 100 pounds for 172 different PFAS.[122] An additional three PFAS have been added for reporting year 2021,[123] and the EPA will determine by December 2021 whether to add additional PFAS to the TRI.[124] Preliminary data for reporting year 2020, released in July, likely represents a significant undercount of PFAS manufacturing, use, and disposal.[125] However, the EPA can acquire additional data through efforts to close loopholes and enforcement actions to address noncompliance.

The NDAA for FY 2020 also required the EPA to initiate a PFAS data call-in under section 8(a) of TSCA. A proposed rule was released in July 2021 and, once final, will provide a wealth of information about PFAS use, volumes, health effects, and likely exposures.[126] The EPA should use information submitted under this rule to identify PFAS-discharging facilities and inform potential future rulemakings.

VIII. EPA should collect information about all PFAS discharges from facilities

As the EPA identifies additional likely point source categories and facilities, it should seek information about all discharges from these facilities. The EPA should request accidental release

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[119] Sam Brasch, *After Tests Find 'Forever Chemicals' Flowing From Suncor, Colorado Eyes a Crackdown*, COLORADO PUBLIC RADIO NEWS (July 22, 2020), https://www.cpr.org/2020/07/22/after-tests-find-forever-chemicals-flowing-from-suncor-state-eyes-crackdown/.

[120] Michigan Dep't of Env't, Great Lakes, & Energy, Michigan PFAS Action Response Team, Wastewater Treatment Plants/ Industrial Pretreatment Program, https://www.michigan.gov/pfasresponse/0,9038,7-365-88059_91299---,00.html (last visited May 16, 2021).

[121] Memorandum from David P. Ross, Assistant Administrator for the Office of Water, to Regional Administrators, Re: Recommendations from the PFAS NPDES Regional Coordinators Committee *Interim Strategy for Per- and Polyfluoroalkyl Substances in Federally Issued National Pollutant Discharge Elimination System Permits* (Nov. 2020), https://www.epa.gov/sites/production/files/2020-11/documents/pfas_npdes_interim_strategy_november_2020_signed.pdf.

[122] Env't Prot. Agency, Toxics Release Inventory (TRI) Program, List of PFAS Added to the TRI by the NDAA, https://www.epa.gov/toxics-release-inventory-tri-program/list-pfas-added-matri-ndaa (last updated Jan. 12, 2021).

[123] Env't Prot. Agency, Toxics Release Inventory (TRI) Program, Addition of Certain PFAS to the TRI by the National Defense Authorization Act, https://www.epa.gov/toxics-release-inventory-tri-program/addition-certain-pfas-tri-national-defense-authorization-act (last updated Jan. 08, 2021).

[124] 15 U.S.C. § 8921(d).

[125] *See, e,g.*, Melanie Benesh, *Industry Likely Shirking EPA Reporting Requirements on 'Forever Chemicals'*, ENV'T WORKING GRP. (July 29, 2021), https://www.ewg.org/news-insights/news-release/2021/07/industry-likely-shirking-epa-reporting-requirements-forever.

[126] Toxic Substances Control Act Section 8(a)(7) Reporting and Recordkeeping Requirements for Perfluoroalkyl and Polyfluoroalkyl Substances, 86 Fed. Reg. 33926 (proposed June 28, 2021) (to be codified at 40 CFR 705 pt. 2607).

history from manufacturers, such as from periodic equipment leaks. Some sites may also have PFAS wastewater recovery systems. Wastewater that is discharged after the PFAS is recovered may still contain residual amounts of PFAS. Facilities with these systems should also report discharges to the EPA. The EPA should also request information about off-site disposal of PFAS waste. Because portable containers like totes and tankers used to handle, transport, or recover PFAS must be periodically cleaned, the EPA should request information about discharges from both on- and off-site cleaning facilities and about where wastes from these processes are ultimately disposed. On-site tanks used for storing PFAS-containing materials also might need to be periodically cleaned by outside contractors (e.g., waterblasting). Information about wastewater management from this activity, including ultimate disposal, should be requested. The EPA should ask whether there is AFFF on site, including in fume and fire suppression systems, and how often AFFF is discharged, whether it is contained, and how it will be disposed of.

IX. Treatment technologies are widely available

The Clean Water Act requires industrial polluters to use the best available technology that is economically achievable to reduce discharges into surface waters or to POTWs.[127] Widely available technologies already exist to stop PFAS at the source.

In the Multi-Industry Study, the EPA identified some PFAS manufacturers and formulators successfully controlling PFAS in wastewater using granular activated carbon (GAC), ion exchange (IX), reverse osmosis (RO), and thermal treatment systems. Based on EPA's Drinking Water Treatability Database (DWTD), these technologies can remove more than 99 percent of some PFAS in industrial wastewater or eliminate the discharge of wastewater containing PFAS.[128]

As the Southern Environmental Law Center and several other groups point out in their comments to the OCPSF ANPRM, granular activated carbon has been used at the Chemours Fayetteville facility to nearly eliminate PFAS as high as 345,000 parts per trillion (ppt) and has reduced PFAS in effluent to non-detect levels for several PFAS.[129] Chemours' own testing through pilot studies shows that GAC is capable of removing more than 99 percent of 20 PFAS.[130] EPA researchers have found that, "GAC can be 100 percent effective for a period of time, depending on the type of carbon used, the depth of the bed of carbon, the flow rate of the water, the specific PFAS you need to remove, temperature, and the degree and type of organic matter as well as other contaminants, or constituents, in the water."[131] A 2018 report found that GAC has been used to remove PFAS "for over 15 years at more than 45 military installations, as well as several

[127] 33 U.S.C. § 1311(b)(2)(A).
[128] Multi-Industry Study, *supra* note 20, at 41.
[129] *See* Southern Env't Law Ctr. et al., Comments on Advanced Notice of Proposed Rulemaking Clean Water Act Effluent Limitations Guidelines and Standards for the Organic Chemicals, Plastics and Synthetic Fibers Point Source Category, EPA-HQ-OW-202-0582, at 13.
[130] *Id.*
[131] Env't Prot. Agency, Reducing PFAS in Drinking Water with Treatment Technologies, (Aug. 23, 2018), https://www.epa.gov/sciencematters/reducing-pfas-drinking-water-treatment-technologies

industrial sites and publicly owned treatment works."[132] In Michigan, several industrial dischargers saw 99 percent reductions of PFOS in effluent after installing GAC through an industrial pretreatment program for PFAS.[133]

In North Carolina, the Fayetteville Chemours Plant also plans to use a reverse osmosis treatment system, coupled with GAC and IX, to treat the wastewater from its manufacturing processes. Pilot tests for an RO system at Northwest Water Treatment Plant in North Carolina found that it was expected to remove 90 percent or more of PFAS compounds, including GenX.[134] RO is considered the most robust technology for protecting against unidentified contaminants and does not require media change out nearly as often as GAC.[135] Although less common than GAC systems, RO systems are being used nationwide to remove PFAS. For example, the West Morgan-East Lawrence Water Authority serving Decatur, Ala., is installing an RO system to remove PFAS.[136]

IX or IX resins specified to perform to the same standard as GAC have also been shown to be effective in some cases and could be included in the list of best available options developed as part of ELGs.[137]

The EPA should apply these technology-based limits to both direct and indirect dischargers, as well as new sources. Given the efficacy of available technology, the EPA should require non-detection when setting numeric limits for PFAS in ELGs wherever possible. Moreover, given the EPA's finding that "for both PFAS manufacturers and formulators, average concentrations of short chain perfluoroalkyl carboxylic acids (PFCAs) and perfluoroalkane sulfonic acids (PFSAs) were generally higher relative to long-chain PFCAs and PFSAs,"[138] the EPA should ensure that technology requirements adequately address both long- and short-chain PFAS.

When developing technology-based ELGs for PFAS, the EPA should also consider end-of-life issues for used water filters and management of water brine water from different treatment technologies.

X. The EPA should address PFAS as a class

The EPA should apply ELGs to PFAS as a class. The EPA commonly regulates chemicals in classes or categories, including 26 categories of chemicals as toxic pollutants under the Clean

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[132] Interstate Technology Regulatory Council, *PFAS – Per- and Polyfluoroalkyl Substances: 12. Treatment Technologies*, (Updated Sept. 2020) (citing E. Forrester and J. Matthis, "Treatment Solutions for PFAS Removal: Evaluating Total Cost" (2018)) at https://pfas-1.itrcweb.org/12-treatment-technologies/.
[133] Michigan PFAS Action Response Team, "Wastewater Treatment Plants/Industrial Pretreatment Program," https://www.michigan.gov/pfasresponse/0,9038,7-365-88059_91299---,00.html (last visited on Apr. 28, 2021).
[134] *See* Anna Reade, Tracy Quinn, & Judith S. Schreiber, *Scientific & Policy Assessment for Per- and Polyfluoroalkyl Substances in Drinking Water*, NATURAL RESOURCES DEFENSE COUNCIL at 55 (April 12, 2019), https://www.nrdc.org/sites/default/files/media-uploads/nrdc_pfas_report.pdf.
[135] *Id.*
[136] Alabama Dep't of Env't Management, Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water, http://adem.alabama.gov/programs/water/drinkingwater/pfaspage.cnt.
[137] Tasha Stoiber et al., *PFAS in Drinking Water: An Emergent Water Quality Threat*, WATER SOLUTIONS (2020), https://www.ewg.org/sites/default/files/u352/Stoiber_Evans_WaterSolutions_2020.pdf.
[138] Preliminary Plan 15, *supra* note 23, at 37.

Water Act.[139] The EPA regulates classes of chemicals for various reasons, including shared traits, common health risks, similar behavior or molecular makeup, and ease of reporting. For example, the EPA regulates mercury compounds as a class under the Clean Water Act because of their combined effect as a potent neurotoxin and tendency to bind with other chemicals.[140] When the Office of Chemical Safety and Pollution Prevention regulated a class of polybrominated diphenyl ethers in a TSCA significant new use rule, or SNUR, it looked at shared origins and similar sources of exposure, as well as similar health and environmental effects, as a basis for regulating as a class.[141] OCSPP decided to regulate a large group of PFAS chemicals under a SNUR because of similar risks to human health and the environment, common persistent and bioaccumulative tendencies, and similar sources of exposure.[142]

The Office of Water can regulate PFAS as a class because of shared traits and common health risks across the class. All PFAS chemicals persist in the environment for long periods of time. The state of California is regulating PFAS as a class in carpets, in part because all PFAS are persistent.[143] Many PFAS bioaccumulate in the blood[144] and other organs.[145] PFAS often target the same organs and have similar toxic effects. As regulators in California have already concluded, regulating PFAS as a class is "logical, necessary, and forward-thinking."[146]

Regulating as a class is also important to protect against regrettable substitutions. Replacement PFAS have been found to be "equally environmentally persistent" and "even more mobile in the environment and more difficult to remove from drinking water."[147] For example, DuPont (later Chemours) replaced PFOA with GenX, despite its own studies showing similar health risks from both chemicals.[148] Yet the EPA did not complete a draft risk assessment of GenX confirming these risks until 2018,[149] long after GenX contaminated the drinking water of thousands of

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[139] Antimony and compounds, arsenic and compounds, beryllium and compounds, cadmium and compounds, chlorinated benzenes (other than di-chlorobenzenes), chlorinated ethanes, chloroalkyl ethers, chlorinated phenols, chromium and compounds, copper and compounds, cyanides, dichlorobenzenes, dichloroethylenes, haloethers, halomethanes, lead and compounds, mercury and compounds, nickel and compounds, nitrophenols, nitrosamines, phthalate esters, polychlorinated biphenyls, polynuclear aromatic hydrocarbons, selenium and compounds, silver and compounds, thallium and compounds, zinc and compounds. 40 CFR Section 401.15

[140] Effluent Limitations Guidelines and Standards for the Dental Category, 82 Fed. Reg. 27154 (June 14, 2017).

[141] Certain Polybrominated Diphenyl Ethers; Significant New Use Rule, 77 Fed. Reg. 19862 (April 12, 2012).

[142] Perfluoroalkyl Sulfonates and Long-Chain Perfluoroalkyl Carboxylate Chemical Substances; Final Significant New Use Rule, 78 Fed. Reg. 62443 (Oct. 22, 2013).

[143] Simona Andreea Bălan et al., *Regulating PFAS as a Chemical Class Under the California Safer Consumer Products Program*, 129 ENV'T HEALTH PERSPECTIVES (2021), https://ehp.niehs.nih.gov/doi/pdf/10.1289/EHP7431.

[144] Half-life estimates range from over two years from PFOA and PFNA to 5.4 years for PFOS to 8.5 years for PFHxS. *See* Anna Reade, Tracy Quinn, & Judith S. Schreiber, Natural Resources Defense Council, Scientific & Policy Assessment for Per- and Polyfluoroalkyl Substances in Drinking Water at 12 (April 12, 2019), https://www.nrdc.org/sites/default/files/media-uploads/nrdc_pfas_report.pdf.

[145] Francisca Perez et al., *Accumulation of Perfluoroalkyl Substances in Human Tissues*, 59 ENV'T INT'L 354 (2013), https://pubmed.ncbi.nlm.nih.gov/23892228/

[146] Bălan et al., *supra* note 143.

[147] Carol F. Kwiatkowski et al., *Scientific Basis for Managing PFAS as a Chemical Class*, 7 ENV'T SCI. & TECH. LETTERS 532, 534 (2020), https://pubs.acs.org/doi/10.1021/acs.estlett.0c00255.

[148] *See* Southern Env't Law Ctr. et al., *supra* note 129, at 6 (citing DuPont and Chemours, TSCA filing to EPA, 8EHQ-06- 1643 6_8EHQ-06- 16478" (Jan. 8, 2013).

[149] Env't. Prot. Agency, Human Health Toxicity Values for Hexafluoropropylene Oxide (HFPO) Dimer Acid and Its Ammonium Salt (CASRN 13252-13-6 and CASRN 62037-80-3)(Nov. 2018)

people downstream from facilities in places like Parkersburg, W.V. and Fayetteville, N.C. Recently, New Jersey regulators found high levels of a novel PFAS replacement chemical for PFNA outside a Solvay facility.[150] Public records requests revealed that the replacement chemical is at least as toxic, if not more so, than PFOA. Regulating PFAS as a class will ensure that communities are protected from these emerging threats.

The EPA also has enough toxicity data to justify regulation for the class. Although some PFAS, like PFOA and PFOS, have more robust toxicological profiles than other PFAS chemicals, a growing body of evidence[151] shows that new PFAS chemicals are often just as toxic as their legacy analogues.[152] The Office of Research Development has developed final toxicity values for three PFAS (PFOA, PFOS, and PFBS) and is developing toxicity values for six additional PFAS chemicals (GenX, PFBA, PFNA, PFHxS, PFDA, PFHxA).[153] EPA has studies on 30 different PFAS in its Health and Environmental Research Online database.[154] Earlier this year, independent researchers launched a new database using systematic review methods to find relevant studies on 29 PFAS.[155] A search of ChemView shows that industry has submitted to TSCA 8(e) substantial risk reports on 97 different PFAS chemicals (77 of which are on the TSCA active inventory).[156]

The EPA has multiple tools available with which to extrapolate what is known about some PFAS chemicals and apply it to other PFAS or groups of PFAS. The EPA regularly uses methods like read-across,[157] Quantitative Structure-Activity Relationship methodologies, and computer modeling to make risk estimates about less-studied chemicals within a chemical class.[158] The Office of Research and Development has already constructed a screening library and is developing targeted testing using these methods on 75 PFAS chemicals.[159]

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https://www.epa.gov/sites/production/files/2018-11/documents/genx_public_comment_draft_toxicity_assessment_nov2018-508.pdf.

[150] Ryan Felton, *New PFAS Compound in N.J. Water May Be More Toxic Than Older One, Regulators Say*, CONSUMER REPORTS (Nov. 10, 2020), https://www.consumerreports.org/water-quality/new-pfas-compound-in-nj-water-may-be-more-toxic-than-older-one-regulators-say/.

[151] PFAS-Tox Database, https://pfastoxdatabase.org/ (last updated April 16, 2021).

[152] Nat'l Toxicology Program, Per- and Polyfluoroalkyl Substances (PFAS), https://ntp.niehs.nih.gov/whatwestudy/topics/pfas/index.html (last updated Sept. 02, 2020); *See also* Cheryl Hogue, *Short-Chain and Long-Chain PFAS Show Similar Toxicity, US National Toxicology Program Say,* Chemical & Engineering News (Aug. 24, 2019), https://cen.acs.org/environment/persistent-pollutants/Short-chain-long-chain-PFAS/97/i33.

[153] Env't Prot. Agency, Systematic Review Protocol for the PFAS IRIS Assessments, https://cfpub.epa.gov/ncea/iris_drafts/recordisplay.cfm?deid=345065 (last updated Nov. 10, 2020).

[154] Env't Prot. Agency, Health & Environmental Research Online (HERO), https://hero.epa.gov/hero/index.cfm/litbrowser/public/#PFAS (last updated Oct. 08, 2021).

[155] PFAS-Tox Database, https://pfastoxdatabase.org/ (last visited Oct. 8, 2021).

[156] EPA, ChemView, https://chemview.epa.gov/chemview (searched May 16, 2021).

[157] Env't Prot. Agency, Generalized Read-Across (GenRA) Manual (2016), https://www.epa.gov/chemical-research/generalized-read-across-genra-manual.

[158] Env't Prot. Agency, Toxicity Estimation Software Tool (TEST), https://www.epa.gov/chemical-research/toxicity-estimation-software-tool-test (last updated May 17, 2021).

[159] Env't Prot. Agency, EPA and Partners Describe a Chemical Category Prioritization Approach to Select 75 PFAS for Testing Using New Approach Methods, https://www.epa.gov/sciencematters/epa-and-partners-describe-chemical-category-prioritization-approach-select-75-pfas (last updated Fed. 26, 2019).

The EPA estimates that there are more than 1,000 PFAS[160] used commercially in the U.S., though the EPA has catalogued over 9,000 PFAS chemicals.[161] These PFAS chemicals are often used and discharged into the environment in complex mixtures. Testing has shown that multiple PFAS often co-occur in surface water, groundwater, and drinking water.[162] Class regulation will ensure that the EPA selects a BAT that adequately reduces *all* the PFAS likely being discharged from a facility. This is especially important given some technologies like GAC need adjustments to effectively remove short-chain PFAS.

XI. EPA should quickly finalize its analytical methods for wastewater and total fluorine

Creating and enforcing effluent limitations and standards will require continued research in support of analytical methods for detection of PFAS. We are encouraged that the EPA has now finalized Method 8,327 to measure 24 PFAS in groundwater, surface water, and wastewater samples.[163] The EPA has also drafted but not finalized Method 1633 to test for 40 PFAS in non-drinking water samples, including wastewater influent and effluent, in collaboration with the Department of Defense.[164] The EPA is working on methods to measure total PFAS by developing a screening tool for total organic fluorine and by exploring validating commercially available methods to detect total organic precursors.[165]

EPA should quickly validate and finalize draft Method 1633 and commercially available TOP methods and quickly release the draft TOF screening method.

XII. The EPA should incorporate environmental justice factors when setting ELGs and standards for PFAS manufacturers and formulators

According to Executive Order 12,898, every federal agency is responsible for "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."[166] EPA prioritizes environmental justice, stating that it "should be factored into Agency regulatory decisions to ensure that all Americans, regardless of race, economic status or

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[160] Press Release, Env't Working Grp., EPA Creates New PFAS Council, Narrows Exemption for New PFAS (April 27, 2021), https://www.ewg.org/news-insights/news-release/epa-creates-new-pfas-council-narrows-exemption-new-pfas.
[161] Env't Prot. Agency, PFAS Master List of PFAS Substances, https://comptox.epa.gov/dashboard/chemical_lists/pfasmaster (last updated Sept. 16, 2020).
[162] Bălan et al., *supra* note 143.
[163] Env't Prot. Agency, PFAS Analytical Methods Development and Sampling Research, https://www.epa.gov/water-research/pfas-analytical-methods-development-and-sampling-research (last updated Sept. 08, 2021).
[164] *Id.*
[165] *Id.*
[166] 59 Fed. Reg. at 7629, § 1-101 (Feb. 16, 1994); *See also*, Earthjustice et al., Comment Letter on Waters of the United States (Sept. 3, 2021), https://www.regulations.gov/comment/EPA-HQ-OW-2021-0328-0257

ethnicity, have access to clean water, clean air and healthy communities."[167] Likewise, the EPA's EJ 2020 Action Agenda sets forth three environmental justice goals, including several priority areas for creating healthier and less toxic communities.[168]

Preliminary Plan 15 includes a brief mention of environmental justice considerations for future ELG planning but provides few specifics.[169] The EPA is preliminarily evaluating the wastewater discharge indicator index in EJSCREEN, EPA's new environmental justice mapping and screening tool that combines environmental justice and demographic indicators to assess industrial discharges on disadvantaged communities.[170] EJSCREEN uses 11 EJ indicators, including a wastewater discharge indicator. EJSCREEN information is already incorporated into ECHO data, so to the extent EPA relies on ECHO to identify potential dischargers, the EPA should also incorporate any available environmental justice information.

The EPA should use race and socioeconomic factors when prioritizing industrial sectors to review for ELGs. When developing new ELGs, the EPA should focus on industries most harming fence-line communities, and/or consider the impacts of clusters of industry in polluted areas like cancer alley.

The EPA must uphold its commitments under Executive Order 12898, and prioritize environmental justice for rulemaking, permitting, compliance and enforcement, and science.[171] The final Program Plan 15 should provide more details about how the EPA plans to address environmental justice through the promulgation of ELGs. Additionally, a major principle of environmental justice is meaningful inclusion of impacted communities. For this reason, as the EPA is finalizing Program Plan 15, it should reach out to environmental justice groups and leaders and incorporate their feedback and suggestions into the final plan.

XIII. EPA must do more to protect Americans from PFAS chemicals

Reducing industrial discharges of PFAS into surface waters is one of many steps the EPA must take to protect Americans from PFAS chemicals. In addition to quickly developing ELGs, the EPA should:

- Quickly finalize health-protective drinking water standards for PFAS;
- Regulate PFAS as hazardous air pollutants under the Clean Air Act;
- Designate PFAS as hazardous substances under CERCLA to jumpstart the cleanup process in contaminated communities;
- Close reporting loopholes under the Toxics Release Inventory; and

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[167] Env't Prot. Agency, Guidance on Considering Environmental Justice During the Development of Regulatory Actions (May 2015), https://www.epa.gov/sites/default/files/2015-06/documents/considering-ej-in-rulemaking-guide-final.pdf

[168] Env't Prot. Agency, EJ 2020 Action Agenda, https://www.epa.gov/sites/default/files/2016-05/documents/052216_ej_2020_strategic_plan_final_0.pdf

[169] Preliminary Plan 15, *supra* note 23, at 33.

[170] *Id. See also* Env't Prot. Agency, EJSCREEN: Environmental Justice Screening and Mapping Tool, https://www.epa.gov/ejscreen.

[171] Env't Prot. Agency, EJ 2020 Action Agenda, https://www.epa.gov/sites/default/files/2016-05/documents/052216_ej_2020_strategic_plan_final_0.pdf.

- Stop approving new PFAS and new uses of existing PFAS under the Toxic Substances Control Act.

We appreciate the opportunity to comment on Preliminary Effluent Guidelines Program Plan 15. Should you have any questions regarding this comment, please do not hesitate to contact Melanie Benesh, mbenesh@ewg.org.

Sincerely,

Alaska Community Action on Toxics
Breast Cancer Prevention Partners
Center for Environmental Health
Clean Cape Fear
Clean and Healthy New York
Community Action Works
Defend Our Health
Delaware Riverkeeper Network
Environmental Working Group
Merrimack Citizens for Clean Water
Natural Resources Defense Council
Safer Chemicals Healthy Families
Sierra Club
Social Science Environmental Health Research Institute, PFAS Project Lab, Northeastern University
U.S. PIRG
Zero Waste Washington