May 17, 2021

Submitted via www.regulations.gov

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Re: 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–2020–0582

The Environmental Working Group is a national environmental health organization that for two decades has sought to address the risks posed by per- and polyfluoroalkyl substances, a class of chemicals known as PFAS.[1] The use of PFAS across multiple industries is ubiquitous. Experts have identified more than 1,400 PFAS used in over 200 use categories.[2] For more than fifty years, industries that manufacture, process, and use PFAS have discharged it into the environment with impunity. Even more PFAS is released into the environment through the disposal of PFAS wastes. Once released into the environment, PFAS are highly mobile and do not break down – thus leading to the designation of PFAS as "forever chemicals."[3] As a result, there is a staggering amount of PFAS contamination across the United States.

EWG has identified over 2,300 communities contaminated with PFAS chemicals in 49 states,[4] and estimates that over 200 million Americans may have PFAS in their drinking water.[5] Today, PFAS contaminates ground and surface water used for drinking water. PFAS pollutes the water used to irrigate crops and contaminates sewage sludge used to fertilize farmland. Some

[1] Bill Walker, *EWG and Toxic Fluorinated Chemicals: 20 Years in the Fight Against PFAS*, ENV'T WORKING GRP. (July 24, 2019), https://www.ewg.org/news-and-analysis/2019/07/ewg-and-toxic-fluorinated-chemicals-20-years-fight-against-pfas
[2] 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.
[3] 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.
[4] *See* ENV'T WORKING GRP., PFAS CONTAMINATION IN THE U.S., https://www.ewg.org/interactive-maps/2019_pfas_contamination/map/ (last visited May 16, 2021).
[5] 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.

crops and plants uptake PFAS, which then contaminates fruits and vegetables.[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 contaminate 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 some PFAS have a long half-life in our bodies, they build up in our blood serum and organs where they can stay 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, ulcerative colitis, thyroid disease, high cholesterol,[12] reproductive and developmental harm,[13] and damage to the immune system.[14]

In short, PFAS contamination is an environmental and public health crisis. Taking immediate steps to stem the flow of PFAS discharges into the environment is one of the single most

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[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.

[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.

important actions the EPA can take to mitigate additional harm. Setting effluent limitation guidelines and standards is one of the most effective tools EPA has to turn off the tap.

The ANPRM is an important first step towards this goal but it is unnecessarily narrow and lacks urgency. EWG urges the EPA to work more aggressively to reduce discharges by:

- Quickly setting Effluent Limitation Guidelines (ELGs) and standards for manufacturers and formulators of PFAS, including toll manufacturers, under the organic chemicals, plastics, and synthetic fibers (OCPSF) category
- Quickly developing ELGs and standards for multiple industry point source categories, including several that were not included in the PFAS multi-industry study
- Developing ELGs and standards for multiple industries concurrently, rather than on an industry-by-industry basis
- Adopting best available technologies, economically available, as well as pretreatment standards
- Addressing PFAS as a class; and
- Quickly finalizing analytical methods for wastewater and total PFAS.

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

In this ANPRM, the EPA states that it is initiating additional data collection and analysis to support potential future rulemaking related to ELGs, pretreatment standards, and new source performance standards applicable to the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) point source category to address discharges from PFAS manufacturers.[15] 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."[16]

The ANPRM further states that the EPA is also "considering" creating ELGs for formulators of PFAS. 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, or (b) as intermediary products for use in the manufacturer of commercial goods…"[17]

The EPA must do more than "consider" ELGs for formulators. Based on the EPA's own analysis, a rulemaking limited to manufacturers would only cover six PFAS manufacturing facilities.[18] EWG's analysis of potential PFAS dischargers discussed *infra* in the section II shows that there are potentially tens of thousands of facilities in the U.S. that are discharging PFAS. Although the EPA has only identified 10 formulators, this may well be an undercount. To expand the number of facilities covered in this rulemaking, the EPA should explicitly include formulators.

[15] Clean Water Act Effluent Limitations Guidelines and Standards for the Organic Chemicals, Plastics and Synthetic Fibers Point Source Category, 86 Fed. Reg. 14560 (March 17, 2021).
[16] *Id.* at 14561
[17] *Id.*
[18] *Id.* at 14563.

The EPA should also include toll and contract manufacturers in any rulemaking for the OCPSF category, further expanding the number of potentially regulated sites. Toll manufacturing is when a manufacturer provides the raw materials to another manufacturer to create finished product to the primary manufacturer's specifications.[19] In contact manufacturing, the contract manufacturer procures the raw materials and then creates a finished product to the primary manufacturer's specifications.[20] As part of its information collection efforts, the EPA should seek information from identified manufacturers and formulators to determine if they are using toll and contract manufacturers, where those facilities are located, and if those facilities have PFAS discharge records. The EPA should also collect information from internal or sister plants belonging to the same company or their subsidiaries. Whenever possible, the EPA should make information collected under this ANPRM available to the public.

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

The EPA estimates that the current ANPRM potentially only covers six PFAS manufacturers and 10 PFAS formulators. This makes up a miniscule portion of likely PFAS dischargers in the United States.

To adequately protect public health and the environment, the EPA must address discharges from additional point source categories. In the October 2019 Preliminary Effluent Guidelines Program Plan 14, the EPA announced a PFAS multi-industry study investigating PFAS use, treatment, and discharge by four industries: airports, organic chemical manufacturers, paper and paperboard manufacturers, and textile and carpet manufacturers.[21] The EPA added metal finishers to the multi-industry study after reviewing state PFAS inventories and receiving data from the metal finishing industry.[22] The EPA is also investigating PFAS in wastewater discharges from semiconductor manufacturing as part of an ongoing review of existing discharge standards for the electric and electrical component industry.[23]

The EPA should use the information it has already collected to quickly develop ELGs and standards for the point source categories in the PFAS multi-study plus the revised electric and electrical components point source category. However, addressing only these sectors ignores a large segment of likely PFAS dischargers.

There are several resources the EPA can use to identify additional categories of dischargers that should be subject to ELGs and standards. On January 14, 2021 the EPA Office of Land and

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[19] Costing Terms: Toll and Contract Manufacturing, Finance Management, https://efinancemanagement.com/costing-terms/toll-and-contract-manufacturing (last visited May 16, 2021).
[20] *Id.*
[21] 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
[22] Env't Prot. Agency, Effluent Guidelines Program Plan 14 (Jan. 2021), https://www.epa.gov/sites/production/files/2021-01/documents/eg-plan-14_jan-2021.pdf
[23] 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

Emergency Management issued a pre-publication ANPRM "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."[24] Although the ANPRM was ultimately never published in the Federal Register, it identified several industries and their corresponding North American Industry Classification System (NAICS) codes[25] for industries that could be affected by a forthcoming PFAS regulation. The Office of Water should cross-reference this list to identify other point source categories for potential regulation.

In addition to the industries identified by OLEM, 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.[26] Another recent study identified industries that are potential risks for contaminating drinking water aquifers in New England.[27] Several industries have also been identified through a testing program developed for the state of Minnesota.[28]

Through these sources, EWG has 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		Hazardous Waste Treatment and Disposal
562212		Solid Waste Landfill
562213	4953	Solid Waste Combustors and Incinerators
562219		Other Nonhazardous Waste Treatment and Disposal
562920		Materials Recovery Facilities

[24] 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.

[25] United States Census Bureau, North American Industry Classification System, https://www.census.gov/eos/www/naics/downloadables/downloadables.html (last visited May 16, 2021).

[26] 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.

[27] 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.

[28] 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.

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 look at all these industries as it considers developing additional ELGS and standards.

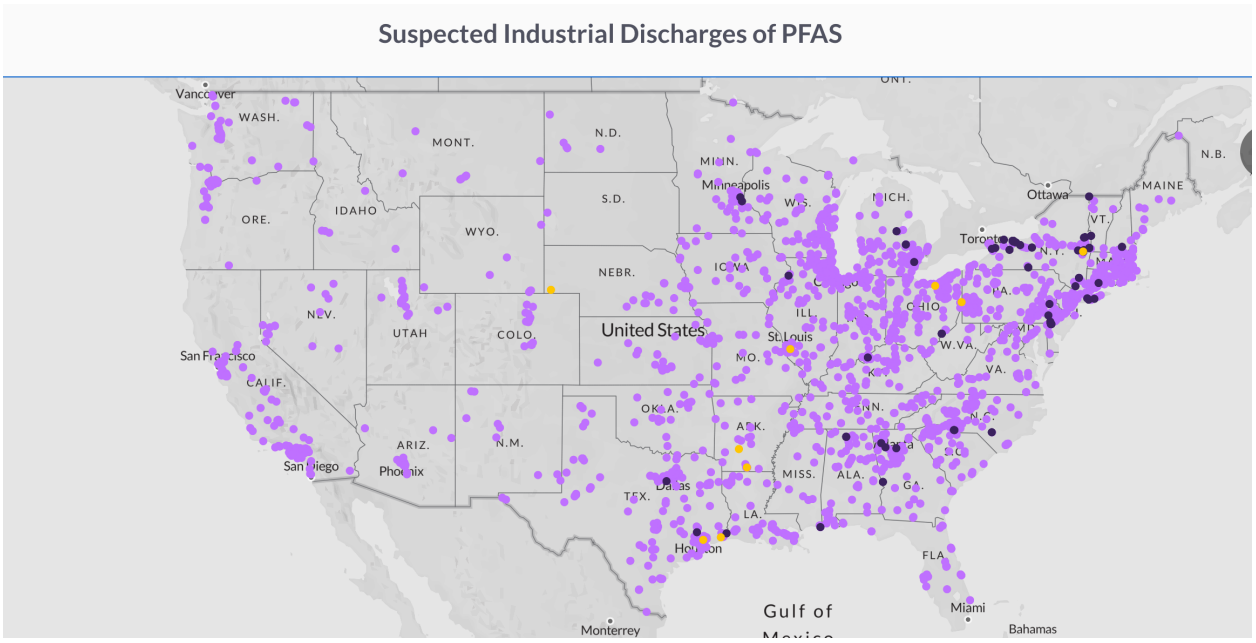
III. The EPA should use existing resources to identify likely discharging facilities

The EPA already has access to several datasets that will help it identify likely PFAS discharging facilities. The Enforcement and Compliance History Online (ECHO)[29] database provides an interface to federal and state data for over 1,500,000 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.[30]

EWG has used ECHO, the CDR, and a New York Department of Environmental Conservation survey[31] to map likely industrial dischargers of PFAS on three occasions. In June 2019, EWG identified 475 suspected industrials 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

[29] Env't Prot. Agency, Enforcement and Compliance History Online, echo.epa.gov (last visited May 16, 2021).
[30] 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).
[31] New York Dep't. of Env't Conservation, PFOA/PFOS Facility Identification Survey, https://www.dec.ny.gov/docs/remediation_hudson_pdf/pfoasurvey1.pdf.

manufacturers.[32] EWG used the same sources to update this analysis in April 2020 to identify at least 2,500 facilities that could be discharging PFAS chemicals.[33]



EWG updated this analysis again in 2021. The new analysis significantly expands the number of suspected dischargers to 41,654 of which nearly 19,000 have NPDES permits. The full analysis will be published in a forthcoming paper, but a list of NAICS codes and associated SIC codes is included in Section II. In identifying potential dischargers, the EPA should include relevant SIC codes to identify those facilities that do not have a NAICS code.

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

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

The EPA has already collected data from the state of Michigan Department Environment, Great Lakes, and Energy in preparation for this ANPRM. The Michigan Department of Environmental Quality (renamed Michigan EGLE in April 2019) conducted extensive testing of drinking water, surface water, and groundwater to identify and reduce PFAS contamination levels that exceed

[32] 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.

[33] 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.

state standards, mapping 11,300 potential sources of PFAS contamination within the state.[34] Michigan EGLE also worked with POTWs to survey upstream users and implement pretreatment measures, in some cases reducing PFOS in effluent by 99 percent.[35]

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.[36] California also issued PFAS testing orders to POTWs in 2020 and to bulk fuel storage terminals and refineries in 2021.[37] New York conducted a survey in 2017 which identified 28 facilities reporting past use of PFOA and PFOS, including 13 that were currently storing PFOA and PFOS onsite.[38] Colorado conducted a survey of potential PFAS dischargers in 2020 and mapped facilities with known or suspected PFAS presence.[39]

While the EPA reviewed existing National Pollution Discharge Elimination System (NPDES) permits of manufacturers and formulators in preparation for this ANPRM, 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.[40] Colorado requires the Suncor oil refinery to regularly sample for PFAS under a state order.[41] Michigan now requires PFAS sampling in routine NPDES permit compliance sampling inspections.[42] The EPA should work with State regulators and NPDES permit writers to identify all industrial dischargers who must report PFAS under NPDES permits or under consent decrees. The EPA should also quickly

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[34] 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/.

[35] 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.

[36] California Water Bd., CA PFAS Timeline, https://www.waterboards.ca.gov/pfas/ca_pfas_timeline.html (last update April 09, 2021).

[37] 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.

[38] New York Dep't. of Env't Conservation, PFOA/PFOS Facility Identification Survey, https://www.dec.ny.gov/docs/remediation_hudson_pdf/pfoasurvey1.pdf.

[39] Colorado Dep't of Public Health & Env't, PFAS Discharge Permit Survey, https://cdphe.colorado.gov/pfcs/PermitSurvey (last visited May 16, 2021).

[40] 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).

[41] 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/.

[42] 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).

finalize its PFAS guidance for federal NPDES permit writers[43] and begin requiring routine sampling as part of routine sampling for all industries known to use PFAS and which are subject to EPA-issued NPDES permits.

Forthcoming data in the Toxics Release Inventory will also help the EPA to identity 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.[44] An additional three PFAS have been added for reporting year 2021.[45] The publicly viewable TRI data for PFAS from facilities manufacturing, processing, and otherwise using these compounds above a reporting threshold of 100 pounds is expected in October 2021, but the EPA will have the information from reporting facilities by July.

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 has been submitted to the Office of Management and Budget.[46] The EPA can also use information submitted under this rule to identify PFAS-discharging facilities and inform potential future rulemakings.

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

As the EPA identifies additional likely point source categories and faciliites, it should seek information about all discharges from these facilities. The EPA should request accidental release 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 have residual amounts of PFAS present. 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 storage 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.

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

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[43] 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.

[44] 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-tri-ndaa (last updated Jan. 12, 2021).

[45] 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).

[46] Reporting and Recordkeeping for Perfluoroalkyl and Polyfluoroalkyl Substances Under Section 8(a)(7) of the Toxic Substances Control Act, RIN 2070-AK67, https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202010&RIN=2070-AK67.

Given the urgent risks to public health and widespread use of PFAS chemicals across multiple industry sectors, the EPA must develop ELGs and standards for multiple industry categories at the same time. Although the EPA typically updates ELGs on a category-by-category basis that model is untenable for PFAS chemicals. If the EPA regulates one industry category at a time, it could take several decades before most PFAS dischargers are subject to discharge restrictions. Impacted downstream communities in places like Parkersburg, WV; Hoosick Falls, NY; Merrimack, NH; and Belmont, MI simply do not have that kind of time.

Instead, the EPA should consider writing ELGs that would apply across multiple industry point source categories. Several industrial dischargers of PFAS in different industry sectors have already adopted similar technologies to reduce dischargers under consent decrees, legal settlements, state NPDES permits, or state initiatives. In some cases, these changes have led to significant decreases in the amount of PFAS discharged into the environment. Because the best available technology, economically feasible is likely to be the same or similar for facilities in different industry point source categories, developing effluent limitations and standards for multiple categories at the same time is the most efficient way for the EPA to protect public health and the environment.

VII. 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.[47] Widely available technologies already exist to stop PFAS at the source.

As the Southern Environmental Law Center and several other groups point out in their comments to this docket, granular activated carbon has been used at the Chemours Fayetteville facility to nearly eliminate PFAS as high as 345,000 ppt and has reduced PFAS in effluent to non-detect levels for several PFAS.[48] Chemours' own testing through pilot studies shows that granular activated carbon is capable of removing more than 99 percent of 20 PFAS.[49] 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."[50] 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 industrial sites and publicly owned treatment works."[51] In Michigan, several industrial

[47] 33 U.S.C. § 1311(b)(2)(A).
[48] *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.
[49] *Id.*
[50] 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
[51] 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/.

dischargers saw 99% reductions of PFOS in effluent after installing GAC through an industrial pretreatment program for PFAS.[52]

In North Carolina, the Fayetteville Chemours Plant also plans to use a reverse osmosis treatment system, coupled with granulated activated carbon and ion exchange, to treat the wastewater from its manufacturing processes. Pilot testing for a reverse osmosis system at Northwest Water Treatment Plant in North Carolina found that RO was expected to remove 90% or more of PFAS compounds, including GenX.[53] RO is considered the most robust technology for protecting against unidentified contaminants and does not require media change out nearly as often as GAC.[54] 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, Alabama is currently installing a reverse osmosis system to remove PFAS.[55]

Ion exchange or ion exchange 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.[56]

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.

VIII. The EPA should address PFAS as a class

The EPA should apply effluent limitations and standards 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 Water Act.[57] 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.[58] When the Office of Chemical Safety and Pollution

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[52] 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).
[53] *See* Anna Reade, Tracy Quinn, & Judith S. Schreiber, *Scientific & Policy Assessment for Per- and Polyfluoroalkyl Substances in Drinking Water*, Nat. Resources Defense Council at 55 (April 12, 2019), https://www.nrdc.org/sites/default/files/media-uploads/nrdc_pfas_report.pdf.
[54] *Id.*
[55] Alabama Dep't of Env't Management, Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water, http://adem.alabama.gov/programs/water/drinkingwater/pfaspage.cnt.
[56] 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.
[57] 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
[58] Effluent Limitations Guidelines and Standards for the Dental Category, 82 Fed. Reg. 27154 (June 14, 2017).

Prevention regulated a class of polybrominated diphenyl ethers, or PBDEs, 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.[59] OCSPP decided to regulate a large group of PFAS chemicals under a TSCA SNUR because of similar risks to human health and the environment, common persistent and bioaccumulative tendencies, and similar sources of exposure.[60]

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 currently considering regulating PFAS as a class in carpets in part because all PFAS are persistent.[61] Many PFAS bioaccumulate in the blood[62] and other organs.[63] 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."

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."[64] For example, DuPont (later Chemours) replaced PFOA with GenX despite its own studies showing similar health risks from both chemicals.[65] Yet, the EPA did not complete a draft risk assessment of GenX confirming these risks until 2018,[66] long after GenX contaminated the drinking water of thousands of people downstream from facilities in places like Parkersburg, WV and Fayetteville, NC. Recently, New Jersey regulators found high levels of a novel PFAS replacement chemical for PFNA outside a Solvay facility.[67] Public records requests revealed that the replacement chemical is at least as toxic, if not more toxic, than PFOA. Regulating PFAS as a class will ensure that communities are protected from these emerging threats.

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[59] Certain Polybrominated Diphenylethers; Significant New Use Rule, 77 Fed. Reg. 19862 (April 12, 2012).
[60] Perfluoroalkyl Sulfonates and Long-Chain Perfluoroalkyl Carboxylate Chemical Substances; Final Significant New Use Rule, 78 Fed. Reg. 62443 (Oct. 22, 2013).
[61] 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.
[62] 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 12 (April 12, 2019), https://www.nrdc.org/sites/default/files/media-uploads/nrdc_pfas_report.pdf.
[63] 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/
[64] 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.
[65] *See* Southern Env't Law Ctr. et al., *supra* note 48, at 6 (citing DuPont and Chemours, TSCA filing to EPA, 8EHQ-06- 1643 6_8EHQ-06- 16478" (Jan. 8, 2013).
[66] 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) https://www.epa.gov/sites/production/files/2018-11/documents/genx_public_comment_draft_toxicity_assessment_nov2018-508.pdf.
[67] 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/.

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[68] shows that new PFAS chemicals are often just as toxic as their legacy analogues.[69] The Office of Research Development has developed toxicity values for three PFAS (PFOA, PFOS, and PFBS), and is in the process of developing toxicity values for six additional PFAS chemicals (GenX, PFBA, PFNA, PFHxS, PFDA, PFHxA).[70] EPA has studies on 32 different PFAS in its Health and Environmental Research Online (HERO) database.[71] Last month, independent researchers launched a new database using systematic review methods to find relevant studies on 29 PFAS.[72] A search of ChemView shows that industry has submitted TSCA 8(e) substantial risk reports on 97 different PFAS chemicals (77 of which are on the TSCA active inventory).[73]

The EPA has multiple tools available 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,[74] Quantitative Structure-Activity Relationship, or QSAR, methodologies and computer modeling to make risk estimates about less-studied chemicals within a chemical class.[75] ORD has already constructed a screening library and is developing targeted testing using these methods on 75 PFAS chemicals.[76]

The EPA estimates that there are more than 1000 PFAS[77] used commercially in the United States, though the EPA has catalogued over 9,000 PFAS chemicals.[78] 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.[79] Class regulation will ensure that the EPA selects a BAT that adequately reduces *all* the PFAS likely

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[68] PFAS-Tox Database, https://pfastoxdatabase.org/ (last updated April 16, 2021).
[69] 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.
[70] 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).
[71] 85 Fed. Reg. 14121.
[72] PFAS-Tox Database, https://pfastoxdatabase.org/ (last updated April 16, 2021).
[73] EPA, ChemView, https://chemview.epa.gov/chemview (searched May 16, 2021).
[74] Env't Prot. Agency, Generalized Read-Across (GenRA) Manual (2016), https://www.epa.gov/chemical-research/generalized-read-across-genra-manual.
[75] 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).
[76] 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).
[77] 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.
[78] Env't Prot. Agency, PFAS Master List of PFAS Substances, https://comptox.epa.gov/dashboard/chemical_lists/pfasmaster (last updated Sept. 16, 2020).
[79] 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.

being discharged from a facility. This is especially important given some technologies like GAC need adjustments to effectively remove short-chain PFAS.

IX. 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. Methods 533 and 537.1 can detect 29 different PFAS compounds in drinking water but the extent to which these methods cover PFAS waste streams from diverse industries is poorly understood.[80] U.S. EPA has drafted but not finalized method 8327, to measure 24 PFAS in groundwater, surface water, and wastewater samples and is also working on a method to test for 40 PFAS in non-drinking water samples. The EPA and the Department of Defense are also developing a test method for 40 PFAS in non-drinking water matrices, including wastewater influent and effluent.[81] The EPA is in the process of validating two methods to measure total PFAS—total organic fluorine (TOF) and total organic precursors (TOP).[82]

EPA should quickly validate these methods.

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

Reducing industrial discharges of PFAS into surface waters is one of many steps that 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 clean-up process in contaminated communities; and
- Stop approving new PFAS and new uses of existing PFAS under the Toxic Substances Control.

EWG appreciates the opportunity to comment on this ANPRM. Should you have any questions regarding this comment or wish to discuss further, please do not hesitate to contact Melanie Benesh, mbenesh@ewg.org.

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[80] Carrie A. McDonough et al., *Measuring Total PFASs in Water: The Tradeoff Between Selectivity and Inclusivity*, 7 CURRENT OPINION IN ENV'T SCI. & HEALTH 13 (2019), https://www.sciencedirect.com/science/article/abs/pii/S2468584418300515.

[81] Env't Prot. Agency, Status of EPA Research and Development on PFAS, https://www.epa.gov/chemical-research/status-epa-research-and-development-pfas (last updated April 20, 2021).

[82] 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 May 11, 2021).