

Appendix A: EPA PFAS Activities

Appendix A contains a detailed list of completed and ongoing PFAS activities at the EPA. This list is not intended to be exhaustive of all the EPA's activities on PFAS.

| Tool/Activity | Purpose | Timeframe |
|---|---|----------------------------|
| Preventing PFAS Exposures: What is EPA doing to reduce risks from PFAS? | | |
| Significant New Use Rule; Final Rule and Supplemental Proposed Rule: Perfluoroalkyl Sulfonates (67 FR 11008) | The EPA published a SNUR to require notification to the EPA before any future manufacture (including import) of 13 PFAS chemicals specifically included in the voluntary phaseout of PFOS by 3M that took place between 2000 and 2002. | Completed March 2002 |
| Significant New Use Rule: Perfluoroalkyl Sulfonates (67 FR 72854) | The EPA issued a SNUR for 75 PFAS, requiring manufacturers and importers to notify the EPA at least 90 days before starting the manufacture or importation of these chemical substances for the significant new uses described. | Completed December 2002 |
| 2010/2015 EPA PFOA Stewardship Program | The EPA launched 2010/2015 PFOA Stewardship Program with eight companies in 2006 to reduce PFAS emissions and product content by 95%; by 2015 reduce PFAS emissions and product content by 100%. All participating companies met the program goals. | Ongoing Started in 2006 |
| Premanufacture Notification Exemption for Polymers; Amendment of Polymer Exemption Rule to Exclude Certain Perfluorinated Polymers (75 FR 4295) | The EPA published a final rule that amended the Polymer Exemption Rule to no longer exclude from eligibility polymers that include any one or more of the following: PFAS, PFAC, or perfluoroalkyl moieties that are covalently bound to either a carbon or sulfur atom where the carbon or sulfur atom is an integral part of the polymer molecule. Compliance date was January 27, 2012. | Completed May 2012 |
| Significant New Use Rules: Perfluoroalkyl Sulfonates and Long-Chain Perfluoroalkyl Carboxylate Chemical Substances (78 FR 62443) | The EPA amended a SNUR to designate as a significant new use PFAS that have completed the new chemical review process under TSCA but have not yet commenced production or import and processing. The EPA also finalized a SNUR to designate as a significant new use LCPFAC chemical substances used in manufacturing (including importing) and processing of carpets or for treating carpet. | Completed October 2013 |
| Significant New Use Rules: Long-Chain Perfluoroalkyl Carboxylate and Perfluoroalkyl Sulfonate Chemical Substances Proposed Rule (80 FR 2885) | The EPA proposed a SNUR for LCPFAC chemical substances that would require manufacturers (including importers) of PFOA and PFOA-related chemicals, including as part of articles, and processors of these chemicals to notify the EPA at least 90 days before starting or resuming new uses of these chemicals in any products. The EPA plans to follow up on the 2015 SNUR. | Completed January 2015 |

| Tool/Activity | Purpose | Timeframe |
|--|---|-------------------------|
| New Chemicals Program Review of Alternatives for PFOA and Related Chemicals | The EPA has reviewed hundreds of new chemical substitutes for PFOA, PFOS, and other long-chain PFAS under the EPA's New Chemicals Program since 2000. The EPA reviews the new substances to identify whether the range of toxicity, fate, and bioaccumulation issues that have caused past concerns with perfluorinated substances may be present, as well as any issues that may arise by new chemistries, to ensure that the new chemical may not present an unreasonable risk to health or the environment. One outcome of the EPA's review of a PMN for a new chemical substance or review of a SNUN is the issuance of an order under section 5(e) of TSCA. Most TSCA section 5(e) Orders issued by the EPA are Consent Orders that are negotiated with the submitter of the notification. | Ongoing Started 2000 |
| Understanding and Addressing PFAS Toxicity: What is the EPA doing to advance the science to support New Benchmarks? | | |
| Lifetime Health Advisories for PFOA and PFOS | The EPA released lifetime health advisories (HAs) and health effects support documents for PFOA and PFOS. The EPA's HAs, which are not regulations, identify the concentration of PFOA and PFOS in drinking water at or below which adverse health effects are not anticipated to occur over a lifetime of exposure. | Completed May 2016 |
| List of available scientific literature on toxicity for 31 PFAS of interest loaded to the HERO database | The EPA updated the Health and Environmental Research Online (HERO) database with available scientific literature (as of August 2017) on PFAS toxicity to detail which scientific studies the EPA has collected. | Completed April 2018 |
| PFAS Chemical Library | Development of a chemical library of PFAS standards (pure samples of PFAS) to support consistent research and method development across the EPA. | Completed April 2018 |
| Provide states access to GenX chemicals data | Provide states access to test data obtained under TSCA authority for information on GenX chemicals (acid and salt). | Completed March 2018 |
| Information on Transcriptomic and <i>in vitro</i> assay toxicity testing (Tier 0 and Tier I) | Generate and publish first approximation toxicity and toxicokinetic data from the larger universe of PFAS compounds, in order to make inferences about which subcategories of PFAS might be of highest toxicological concern and thus prioritized for further near-term investigation. These data will also be useful for enabling read-across activities for PFAS with little to no available data. Tests will include a battery of transcriptomic <i>in vitro</i> assays (toxicity and kinetics) implemented by the EPA and the NTP. | Anticipated 2019 |
| Tier II PFAS testing | Conduct Tier II <i>in vivo</i> toxicity testing for a subset of prioritized compounds based upon data provided from Tier I testing. | Anticipated 2019 |

| Tool/Activity | Purpose | Timeframe |
|--|---|--|
| Tri-Services Ecological Risk Assessment Work Group | The EPA Ecological Risk Assessment Forum has a joint work group with the DoD Tri-Services Environmental Risk Assessment Work Group (TSERAWG) to develop ecological risk assessment screening values for PFAS. The DoD has an interagency agreement between the Air Force Civil Engineering Center and the Department of Energy (DOE) Argonne National Laboratory for the development of screening values for PFAS compounds. The PFAS screening values will be available for use at CERCLA sites and RCRA facilities. | Ongoing |
| Tools and data for evaluating ecotoxicity effects | Identify sensitive and susceptible taxa, synthesize information on bioaccumulation in organisms and food chains, and develop benchmarks and thresholds for ecological toxicity. | Anticipated 2022 |
| Toxicity assessments for additional PFAS | Development of additional peer-reviewed PFAS toxicity assessments for PFBA, PFHxA, PFHxS, PFNA, and PFDA to support stakeholders. | Anticipated 2020 |
| Toxicity assessments for GenX chemicals and PFBS | Provide toxicity assessments to stakeholders for GenX chemicals and an updated PFBS assessment. Both assessments underwent independent peer-review and review by federal partners prior to public comment. | Draft completed November 2018 Finalize 2019 |
| Update Chemistry Dashboard with Information for Additional PFAS | The CompTox Chemicals Dashboard provides users with information on chemical structures, experimental and predicted physicochemical and toxicity data, and additional links to relevant websites and applications. The EPA updated the Dashboard with additional PFAS. | Completed March 2018 |
| Water Contaminant Information Tool (WCIT) Profiles for PFOA and PFOS | Contaminant Profiles for two PFAS, PFOS and PFOA, to be added to the EPA's Water Contaminant Information Tool . | Completed December 2018 |
| CWA Effluent Guidelines Planning PFAS Review | Through the Clean Water Act Effluent Guidelines Planning process, the EPA is examining readily-available information about PFAS surface water discharges to identify industrial sources that may warrant further study for potential regulation through Effluent Limitation Guidelines. | Ongoing |
| Interim Recommendations for Addressing Groundwater Contaminated with PFOA and PFOS | The EPA anticipates releasing interim cleanup recommendations to address groundwater contaminated with PFOA and/or PFOS to support stakeholders in their remediation efforts. | Anticipated 2019 |
| Evaluation of CWA 304(a) Ambient water quality criteria for PFAS | The EPA is evaluating available data and research to support development of Clean Water Act Section 304(a) Ambient water quality criteria for PFAS. | Anticipated 2022 |

| Tool/Activity | Purpose | Timeframe |
|---|--|-------------------------|
| Identifying and Addressing PFAS Exposures: What is the EPA doing to help identify communities with potential PFAS impacts, remediate PFAS exposures, and monitor compliance? | | |
| Method Development | The EPA developed Method 537 for measuring PFOA, PFOS, and 12 other PFAS in drinking water to support the Unregulated Contaminant Monitoring Rule. | Completed 2009 |
| Method Development | The EPA expanded Method 537 to measure four additional short-chain PFAS, including HFPO-DA (GenX chemicals) and ADONA. Method 537.1 is available on the EPA’s website. | Completed November 2018 |
| Method Development | Validated Direct Injection Method (SW-846) for quantifying 24 PFAS in surface, ground, and waste water matrices (non-drinking water) and solids (e.g., soil and sediment). | Anticipated 2019 |
| Method Development | Validated Isotope Dilution Method (SW-846) for quantifying 24 PFAS in surface, ground, and waste water matrices (non-drinking water) and solids (e.g., soil and sediment). | Anticipated 2019 |
| Method Development | New validated analytical method for PFAS in drinking water focusing on short-chain PFAS which cannot be measured by Method 537.1. | Anticipated 2019 |
| Method Development | Method for sampling and analyzing PFAS in factory stack air emissions. | Anticipated 2020 |
| Method Development | Testing and developing additional methods for possible refinement, including methods to quantify PFAS precursors; Total Organic Fluorine for a general PFAS detection method; and refinement of non-targeted high-resolution mass spectrometry approaches for suspect screening and novel PFAS discovery. | Ongoing |
| PFAS Geospatial Analytical Tool | Working with states and other federal partners, the EPA is evaluating how to best develop and maintain a GIS resource to consolidate and present PFAS data to inform analysis and understanding of PFAS sources and occurrence in the environment. | Anticipated 2019 |
| Modeling atmospheric fate and transport of PFAS | Incorporate PFAS information into the EPA air models (e.g., the Community Multiscale Air Quality modeling system, AERMOD atmospheric dispersion model) to inform understanding of the potential and significance of atmospheric transport of PFAS. | Anticipated 2022 |
| Unregulated Contaminant Monitoring Rule 3 for Public Water Systems | The third UCMR required monitoring for 30 contaminants (28 chemicals and two viruses) between 2013 and 2015 using analytical methods developed by the EPA, consensus organizations, or both. The purpose of UCMR3 was to collect occurrence data for contaminants suspected to be present in drinking water, but that do not have regulatory standards set under the SDWA. Six PFAS compounds were included in the UCMR3: PFOS, PFOA, PFNA, PFHxS, PFBS, and PFHpA. Of these six compounds, PFOA and PFOS were found in the greatest number of samples, and 1.3% of the public water systems sampled had results that exceeded the reference dose (lifetime HA limit of 70 ppt or 0.07µg/L). | Completed 2013-2015 |

| Tool/Activity | Purpose | Timeframe |
|---|--|---------------------------------------|
| Unregulated Contaminant Monitoring Rule 5 | The EPA intends to propose nationwide drinking water monitoring for PFAS under the next UCMR monitoring cycle utilizing newer methods available to detect more PFAS and at lower minimum reporting levels (MRLs) than previously possible in earlier monitoring. | Anticipated 2020-2025 |
| Drinking Water Treatability Database-Update for Additional PFAS | Users can utilize the database to identify effective drinking water treatment processes for PFOA, PFOS, and additional PFAS chemicals. This database is continually updated as additional information becomes available. | Ongoing Updated September 2018 |
| Research for Drinking Water Treatment | Conduct bench-, pilot-, and full-scale experiments to discern performance and cost of treatment (both capital and operations and maintenance), along with potential unintended consequences of employing specific technologies. Following a literature review for data gap identification, granular activated carbon and ion exchange treatment technologies will be tested under varying water qualities. | Anticipated Fall 2019 |
| Treatability Cost Models | Updated drinking water PFAS treatability cost models. | Ongoing Updated September 2018 |
| Evaluation of commercially Point-of-Use (POU) and Point-of-Entry (POE) home treatment systems | Investigate commercially available reverse osmosis and granular activated carbon units that can serve households in a point-of-use or point-of-entry applications for 6 PFAS included in UCMR3. | Completed 2018 |
| Evaluation of treatment technologies for contaminated sites | A series of studies evaluating effectiveness and cost of different combinations of treatment train approaches for remediating contaminated sites. | 2021 |
| Fourth Contaminant Candidate List (CCL) | The EPA is required by the Safe Drinking Water Act to publish a list of contaminants known or anticipated to occur in public water systems which may require regulation under the Safe Drinking Water Act. The EPA included PFOA and PFOS on the fourth Contaminant Candidate List (the most recent CCL list). | 2016 |
| Fourth Regulatory Determination Process | The EPA is working on the Fourth Regulatory Determination process in which the EPA determines whether to regulate at least five contaminants on the CCL and issue final regulatory determinations after considering public input. The EPA is evaluating available information to determine if contaminants on the CCL, including PFOA and PFOS, meet the three criteria for regulation in accordance with the SDWA: (1) whether a contaminant may have adverse health effects; (2) whether a contaminant is found in public water systems with a frequency and at levels of concern; and (3) whether, in the sole judgment of the Administrator, there is a meaningful opportunity for health risk reduction through a national drinking water regulation. | Ongoing Anticipated 2019 |

| Tool/Activity | Purpose | Timeframe |
|---|---|------------------|
| Collection of Great Lakes Environmental PFAS data | The EPA collects and analyzes environmental samples, including whole fish tissue, sediment, air, and water, to determine concentrations and trends of PFAS in the Great Lakes and occurrence in fish tissue. | Ongoing |
| Evaluate PFAS exposure through fish consumption | Evaluate temporal and demographic patterns of PFAS exposure and the relationship with fish consumption, in the U.S. general population. | Anticipated 2019 |
| Fish Tissue Contamination Studies | To ensure that communities are aware of levels of PFAS in fish they may consume, continue to analyze PFAS in edible fish tissue as part of the National Rivers and Streams Assessment and the Great Lakes portion of the National Coastal Condition Assessment, and include PFAS in the revised list of target analytes that states may consider including in their fish and shellfish contaminant monitoring and advisory programs. | Ongoing |
| CERCLA Hazardous Substance Listing | The EPA has initiated the regulatory development process for listing PFOA/PFOA as CERCLA hazardous substances. | Ongoing |
| Scoping biosolids risk assessment for PFOA/PFOS | The EPA is in the early scoping stages of risk assessment for PFOA and PFOS in biosolids to better understand the implications of PFOA and PFOS in biosolids to determine if there are any potential risks. | Anticipated 2020 |
| Identifying PFAS Risks from Chromic Acid Etch Facilities | The EPA's Office of Research and Development and Region 5 are collaborating on a study to characterize PFAS fume suppressants used at chromic acid etch facilities. Both Minnesota and Michigan have identified high levels of PFOS releases from these facilities, even after PFOS was phased out of the fume suppressant products in 2015. Region 5 is assessing if the current PFOS releases are the result of legacy use of PFOS fume suppressants or related to the replacement chemical formulations. | Ongoing |
| Identify PFAS sources, concentrations, uses, locations, and exposure routes most likely to pose threats to human health and the environment | Continue to make Toxic Substances Control Act (TSCA) data available where possible; identify sources, uses, and locations; develop information on potential high-impact locations; work with states to develop consistent sampling protocols. | Ongoing |
| Need to integrate data from multiple sources to better understand the presence of PFAS in the environment | Develop data sharing standards that allows states, tribes, communities, public water systems, and other organizations to contribute data about PFAS testing in a consistent manner. | Ongoing |

| Tool/Activity | Purpose | Timeframe |
|--|---|-----------|
| EPA TSCA section 5(e) order for GenX Chemicals | In 2009 the EPA entered into a Consent Order under TSCA section 5(e) with Dupont (now Chemours) that imposes requirements on the manufacture, processing, use, and disposal of GenX chemicals. Among other requirements, the Consent Order restricts the releases of the GenX chemicals by requiring the recapture of 99% of the chemicals. It also requires certain worker personal protective equipment as well as certain studies to be performed. | Ongoing |
| TRI listing for PFAS chemicals | Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) created the TRI Program. The TRI Program is another tool EPA may use to understand the releases of PFAS by industrial and federal facilities. Currently, no PFAS chemicals are included on the list of chemicals required to report to TRI; however, the EPA is considering whether to add PFAS chemicals. In considering listing, the EPA must determine whether data and information are available to fulfill the listing criteria and the extent and utility of the data that would be gathered. In addition, in considering if TRI will provide useful information to stakeholders, the EPA also will consider if those PFAS are still active in commerce. The process for listing includes notice and comment rulemaking to list PFAS chemicals for reporting prior to adding these chemicals to the TRI for annual reporting. | Ongoing |

| Tool/Activity | Purpose | Timeframe |
|--|--|-----------------------------------|
| <p>Regions 1 and 3: Safe Drinking Water Act Section 1431 Emergency Orders to Department of Defense</p> | <p>2014 order to Navy at Warminster (PA) NPL Site directing the Navy to address high levels of PFOS discovered in three drinking water supply wells at and off the Warminster Naval Warfare Center where the elevated levels were four times the provisional health advisory level (which was 200 ppt for PFOS and 400 ppt for PFOA) in one case: Where levels in finished drinking water are above the HA for PFOA or PFOS, the Order required the Navy to provide a permanent drinking water supply as soon as practicable, but in no event later than 6 months after execution of the order.</p> <p>2015 order to Air Force and Air National Guard at Horsham Air Guard Station/Willow Grove (PA) NPL Site (2015): The order directs the Air Guard/Air Force to treat two onsite public water supply wells and supply treatment to any private well found to exceed the provisional health advisory for PFOS in drinking water. Sampling confirmed that the Guard portion of the facility is also (like the Navy portion from Willow Grove) a source of PFOS offsite migration. The order covers long term treatment for private homes and also for short- and long-term public water supply concerns.</p> <p>2015 order to Air Force for Contamination at Pease Air Force Base (NH) NPL Site: The order directs the Air Force to address contamination from perfluorinated compounds in drinking water at Pease Air Force Base including a number of actions to address the partial loss of the city’s water supply attributed to firefighting foams used at the Base. The PFAS contamination resulted in the shutdown of one public water supply well, and two others could have been impacted if action were not taken to control PFAS migration. Under the order, the Air Force will restore contaminated groundwater in the Pease aquifer.</p> | <p>Ongoing</p> |
| <p>Annex 3, Chemicals of Mutual Concern, of the Great Lakes Water Quality Agreement</p> | <p>The goal of Annex 3 under the Canada-United States Great Lakes Water Quality Agreement (GLWQA) is to reduce the anthropogenic release of chemicals of mutual concern into the waters of the Great Lakes. In 2016, PFOS, PFOA, and LC-PFCAs—or collectively, PFAS—were designated as chemicals of mutual concern. In designating PFAS as a chemical of mutual concern, Canada and the United States have agreed that they may pose a threat to the Great Lakes. An Annex 3 binational strategy for PFAS is under development.</p> | <p>Anticipated September 2019</p> |
| <p>Belmont and Rockford, Michigan</p> | <p>The EPA is coordinating with the State of Michigan by overseeing a federal CERCLA time-critical removal action focused on hazardous substances at the Wolverine World Wide (Wolverine) Tannery and House Street Disposal Site and providing technical assistance to MDEQ while it responds to PFAS contamination of residential wells from Wolverine’s former Tannery, shoe factory, and disposal locations in the Rockford area.</p> | <p>Ongoing</p> |

| Tool/Activity | Purpose | Timeframe |
|--|--|--------------------------------|
| Regions 3 and 5: Amendment to 2009 Safe Drinking Water Act Section 1431 Emergency Order on Consent with DuPont and Chemours | In 2009, the EPA issued a 1431 order on consent to Chemours' Washington Works Facility that contaminated sources of drinking water in WV and OH primarily via air deposition from the Facility. That order was amended in 2017, incorporating the Lifetime Health Advisory and requiring DuPont and Chemours to offer treatment, connection to a PWS, or bottled water to people on public or private water systems with PFOA levels above 70 ppt. In 2018, at the EPA's request, Chemours has also voluntarily sampled numerous private and PWSs for GenX chemicals. | Ongoing |
| Region 4 coordination of assistance to North Carolina Department of Environmental Quality (NCDEQ) – Chemours Fayetteville Works Facility | <p>Region 4 has provided ongoing support to the NCDEQ as it has responded to GenX chemicals in the Cape Fear River and Fayetteville area.</p> <ul style="list-style-type: none"> • Analytical testing via ORD-RTP and Region 4 Science and Ecosystem Support Division labs (testing of raw & finished water in the Cape Fear, rainwater, and air emissions stack testing for GenX chemicals and 22 other PFAS compounds) • Technical input as the state established its interim health goal • Coordinated treatment technique assistance for water systems • Technical assistance with NPDES permitting related matters and air emissions control. | Ongoing Started June 2017 |
| Grant Funding Opportunity: National Priorities: Per- and polyfluoroalkyl substances | <p>The EPA solicited proposals for EPA-G2018-ORD-A1 that included the below desired research areas:</p> <ul style="list-style-type: none"> • Short-chain PFAS (C4 to C7) • PFAS found as residuals from manufacturing processes • Alternatives for long-chain PFAS (≥ C8) such as per- and poly-fluoroethers • PFAS generated through environmental chemical transformation | Ongoing Completed June 2018 |
| Technical Support | The EPA will continue to assist states and tribes in bringing on PFAS analytical capabilities. | Ongoing |

| Tool/Activity | Purpose | Timeframe |
|--|--|----------------------------|
| Risk Communication and Engagement: What is the EPA doing to provide consistent and accurate information and guidance to the public? | | |
| Clearinghouse of PFAS information for states, tribes and local communities | The EPA compiled information from a wide range of sources on measurement, health impacts, and treatment and remediation technologies. The EPA continues to update this site as additional information becomes available. | Ongoing Started 2018 |
| Engagement with states and stakeholders | <p>Ongoing robust engagement effort with states, tribes, local communities, utilities, industry, and the public. Extensive outreach in 2018 included:</p> <ul style="list-style-type: none"> • 5/22-5/23/2018: PFAS National Leadership Summit • 6/25-26/2018: Exeter, NH (Region 1 wide) Community Engagement • 7/25/2018: Horsham, PA Community Engagement • 8/7-8/2018: Colorado Springs, CO Community Engagement • 8/14/2018: Fayetteville, NC Community Engagement • 8/13/2018: Spokane WA, PFAS session at the Tribal Lands and Environment Forum meeting • 9/5/2018: Leavenworth, KS Community Engagement • 10/4-5/2018: Michigan site visits, Kalamazoo, MI Roundtable | Completed October 2018 |
| EPA Region 7 participation in Kansas PFAS Monitoring Plan Advisory Committee | Region 7 to serve on Kansas Department of Health and Environment Per- and Polyfluoroalkyl Substance Monitoring Plan Advisory Workgroup for drinking water. The KDHE requested the EPA's participation to serve in an advisory capacity on a monitoring plan to be developed with the focus on drinking water. | Started Fall 2018 |
| EPA Region 7 updates on PFAS for states and tribes | Activated the EPA Region 7 Science Council with state representation which will also include a PFAS update on a quarterly basis. The EPA Region 7's Regional POC for PFAS will also update our tribal representatives at the Regional Tribal Operation Committee meetings. | Started March 2018 |
| Federal Remediation Technologies Roundtable Meeting | One-day interagency technical meeting meant to identify and discuss the emerging science behind PFAS characterization and remedial technologies. Technical presentations also remotely broadcasted. Primarily federal agency participation. | Completed November 7, 2018 |
| Internal EPA regional coordination network | Activated internal EPA regional coordination network with representation from all regions and program offices to further support rapid dissemination of information in order to better support states, tribes, and local communities. | Started February 2018 |
| Internal EPA regional coordination for cleanup programs | Created an internal EPA regional coordination group for cleanup programs with representation from all regions to further support rapid dissemination of information in order to better support states, tribes, and local communities. | Started Summer 2016 |

| Tool/Activity | Purpose | Timeframe |
|--|--|-----------------------|
| Internal EPA Region 7 team | Activated internal EPA Region 7 network with representation from all programs further support rapid dissemination of information in order to better support states, tribes, and local communities. | Started February 2018 |
| Quarterly Meetings with Region 10 Environmental and Health Departments | Region 10 quarterly conference calls with Region 10 PFAS contacts in state environmental and health departments to share information and discuss issues and topics of mutual interest. | Ongoing |
| Webinar on PFAS State case studies | Webinar showcasing PFAS risk communication activities by states; developed in coordination with ECOS and ASTHO. | Completed June 2018 |