EPA PFAS Action Plan: Program Update

FEBRUARY 2020

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

LETTER FROM THE ADMINISTRATOR

Last year, the U.S. Environmental Protection Agency (EPA) issued the first-ever PFAS Action Plan—a historic step in our nation's efforts to address per- and polyfluoroalkyl substances (PFAS) in the environment. The Action Plan represented a number of important firsts for the agency. It was the first time we have used all of our program offices to deal with an emerging chemical of concern. It was also the first time the agency had put together a multi-media, multi-program national research and risk communication plan to address a challenge like PFAS. By prioritizing our work under the Action Plan, we are delivering on President Trump's commitment to protect the health and well-being of communities across the country that are working to address PFAS.

Over the past year, we have built on the momentum the launch of the PFAS Action Plan put in motion, and our efforts have been nothing short of unprecedented. We have made progress in all of our program areas—from groundwater cleanup guidance, to new test methods that are helping to move our research efforts forward, to updates to our Toxics Release Inventory, to progress on updating our drinking water standards. These actions reflect the comprehensive and coordinated approach we outlined in the PFAS Action Plan; and I want to thank and congratulate the career staff at EPA for their hard work and their unwavering commitment to addressing this issue over the past year.

The Action Plan outlines more than 20 key focus areas that include both short-term and long-term goals. While we are recognizing our accomplishments over the past year, we know we have more work to do. Addressing this challenge will require action from all levels of government—federal, state, local, and tribal, which is why this year I put a new emphasis on identifying funding opportunities for PFAS research and mitigation efforts. In just one year, EPA announced approximately $15 million for new research efforts—including first-of-its-kind funding for the agriculture sector. We also highlighted new ways that our existing programs, like the State Revolving Funds, can be used to address PFAS.

As our regulatory and research efforts mature, I believe it is even more important to enhance the partnerships that we have with other nations; our federal partners; and our own state, local, and tribal governments. Over the past year, we have met with international partners who are using our Action Plan as a guide for efforts in their own countries. We have forged new partnerships and have expanded our technical assistance and support to new states and local communities. Finally, we have taken enforcement actions against companies.

This year EPA is celebrating 50 years of environmental protection. We are celebrating the progress that we've made in setting the nation's air quality standards to protect human health, regulating the quality of public drinking water, creating the Superfund program to clean up hazardous waste sites, and protecting children from exposure to lead-based paint, to name a few. As we look to the future, I look forward to working shoulder-to-shoulder with states, local communities, tribes, water utilities, other federal agencies, and private parties to implement the PFAS Action Plan and continue our progress for a stronger future.

Andrew Wheeler
Administrator

EPA PUBLICATION NUMBER: 100K20002

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INTRODUCTION

EPA Administrator Andrew Wheeler, who is joined by Cosmo Servidio, announces PFAS Action Plan in Philadelphia, Pennsylvania.

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that have been manufactured and used by a variety of industries since 1940. Common applications of PFAS include water and stain repellant materials, as well as firefighting products. While the use of certain PFAS have been discontinued, legacy uses and a lack of commercially viable alternatives to certain public safety products (e.g., fire fighting foams) have resulted in PFAS contamination in certain areas.

In May 2018, EPA convened a two-day National Leadership Summit on PFAS that brought together more than 200 federal, state, and local leaders to discuss steps to address PFAS. The Summit set the following goals: evaluate the need for a maximum contaminant level (MCL) for PFOA and PFOS in drinking water, evaluate designating PFOA and PFOS as hazardous substances, issue groundwater cleanup guidances for PFOA and PFOS, and develop toxicity values for GenX and PFBS. Following the Summit, EPA interacted with more than 1,000 people during PFAS-focused community engagement events in Exeter, New Hampshire; Horsham, Pennsylvania; Colorado Springs, Colorado; Fayetteville, North Carolina; and Leavenworth, Kansas as well as through a roundtable in Kalamazoo, Michigan and an event with tribal representatives in Spokane, Washington.

As a result of these meetings and building on the goals identified at the Summit and the approximately 120,000 public comments received by the agency, EPA developed the PFAS Action Plan, which was issued in February 2019. The PFAS Action Plan is the first multi-media, multi-program, national research, management, and risk communication plan to address an emerging contaminant like PFAS. The PFAS Action Plan outlines the tools EPA is developing to, among other things, address PFAS in drinking water, identify and clean up PFAS contamination, expand monitoring of PFAS in manufacturing, increase PFAS scientific research, and exercise effective enforcement tools. The Action Plan outlines EPA's commitment to take a wide variety of actions to address this emerging contaminant in both short-term and long-term timeframes.

Together, these efforts are helping EPA and our partners identify and better understand PFAS contaminants generally, clean up current PFAS contamination, prevent future contamination, and effectively communicate risk with the public. In continuing to implement the PFAS Action Plan, EPA is committed to coordinating closely with multiple entities, including other federal agencies, states, tribes, local governments, water utilities, industry, and the public.

EPA is issuing this report one year after the PFAS Action Plan was released to provide an update on the actions the agency has taken to address PFAS.

UPDATE ON EPA PFAS ACTIONS

Addressing PFAS in Drinking Water

As part of EPA's efforts under the PFAS Action Plan, the agency is following through on its commitment to address PFAS in drinking water. The agency's work over the past year included efforts to expand drinking water test methods, to work under the Safe Drinking Water Act (SDWA) to make a regulatory determination for PFOA and PFOS, to produce new toxicity assessments, and to continue monitoring for PFAS.

Drinking Water Method 533

EPA, along with its federal, state, local, and tribal partners, is working to develop reliable and consistent laboratory methods for detecting and identifying PFAS in drinking water. In December 2019, EPA announced a new validated method for testing additional PFAS in drinking water, EPA Method 533. The new validated test method complements other actions the agency has taken under the Action Plan to help communities address PFAS nationwide. This scientific advancement makes it possible for both government and private laboratories to effectively measure more PFAS chemicals in drinking water than was possible before. EPA's Method 533 focuses on those PFAS with carbon chain lengths of 4 to 12, and complements EPA Method 537.1, published in November 2018. With this new method, the agency can measure 29 chemicals, which marks a critical step under the PFAS Action Plan.

United States Environmental Protection Agency

EPA Analytical Methods for PFAS in Drinking Water

EPA's new validated Method 533 focuses on "short chain" per- and polyfluoroalkyl substances (PFAS) (i.e., those with carbon chain lengths of 4 to 12). Method 533 complements EPA Method 537.1 (published November 2018) and can be used to test for 11 additional PFAS. Using both methods, a total of 29 unique PFAS can be effectively measured in drinking water.

Analyte	Abbreviation	CASRN	Method 533	Method 537.1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9	x	x
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acd	9Cl-PF3ONS	756426-58-1	x	x
4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4	x	x
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6	x	x
Perfluorobutanesulfonic acid	PFBS	375-73-5	x	x
Perfluorodecanoic acid	PFDA	335-76-2	x	x
Perfluorododecanoic acid	PFDoA	307-55-1	x	x
Perfluoroheptanoic acid	PFHpA	375-85-9	x	x
Perfluorohexanoic acid	PFHxA	307-24-4	x	x
Perfluorohexanesulfonic acid	PFHxS	355-46-4	x	x
Perfluorononanoic acid	PFNA	375-95-1	x	x
Perfluorooctanoic acid	PFOA	335-67-1	x	x
Perfluorooctanesulfonic acid	PFOS	1763-23-1	x	x
Perfluoroundecanoic acid	PFUnA	2058-94-8	x	x
1H,1H, 2H, 2H-Perfluorohexane sulfonic acid	4:2FTS	757124-72-4	x	
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid	6:2FTS	27619-97-2	x	
1H,1H, 2H, 2H-Perfluorodecane sulfonic acid	8:2FTS	39108-34-4	x	
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6	x	
Perfluorobutanoic acid	PFBA	375-22-4	x	
Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	113507-82-7	x	
Perfluoroheptanesulfonic acid	PFHpS	375-92-8	x	
Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5	x	
Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1	x	
Perfluoropentanoic acid	PFPeA	2706-90-3	x	
Perfluoropentanesulfonic acid	PFPeS	2706-91-4	x	
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6		x
N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9		x
Perfluorotetradecanoic acid	PFTA	376-06-7		x
Perfluorotridecanoic acid	PFTrDA	72629-94-8		x

Office of Water (MS-140) EPA 815-B-19-021 December 2019

Drinking Water Regulatory Determination

EPA is committed to following the Safe Drinking Water Act (SDWA) process for evaluating drinking water standards for two PFAS—PFOA and PFOS. The statutory process involves determining whether:

1) The contaminant may have an adverse effect on the health of persons;

2) The contaminant is known to occur or there is a substantial likelihood that the contaminant will occur in public water systems with a frequency and at levels of public health concern; and

3) In the sole judgment of the Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by public water systems.

In February 2020, EPA announced that it is proposing to regulate both PFOA and PFOS under the SDWA—a critical step as the agency continues its efforts to protect drinking water and public health nationwide. This preliminary determination is a step toward providing state and local communities with key information about PFOA and PFOS in drinking water. In the proposal, EPA is also asking for information and data on other PFAS substances, as well as seeking comment on potential monitoring requirements and regulatory approaches EPA is considering for PFAS chemicals. If the positive regulatory determination is finalized, the agency would begin the process to establish a national primary drinking water regulation for PFOA and PFOS.

Unregulated Contaminant Monitoring Rule 5

The 1996 Safe Drinking Water Act (SDWA) amendments require that once every five years EPA issue a new list of unregulated contaminants to be monitored by public water systems. This data supports the agency's efforts to regulate particular contaminants of potential public health concern. Consistent with recent statutory changes, including the National Defense Authorization Act (NDAA) for Fiscal Year 2020, EPA is committed to monitoring for PFAS in the next Unregulated Contaminant Monitoring Rule (UCMR) cycle. The agency looks forward to issuing a proposed rule this year and working through the regulatory process outlined in the SDWA.

Other Water Actions

Under the PFAS Action Plan, EPA is working to determine if there is enough available data and research to support the development of Clean Water Act (CWA) water quality criteria for PFAS. EPA develops criteria for determining when water has become unsafe for people and wildlife using the latest scientific knowledge. These criteria are recommendations, and state and tribal governments may choose to adopt these criteria or use them as guidance in developing their own water quality criteria. Currently, EPA is scoping development of draft human health and aquatic life criteria for PFOA and PFOS. EPA is also actively collaborating with the Department of Defense to develop benchmarks to protect aquatic life and aquatic-dependent wildlife.

In addition, EPA is developing a risk assessment to better understand the potential public health and ecological risks associated with PFOA and PFOS in land-applied biosolids. Over the past year, EPA has engaged with stakeholders through site visits, webinars, and meetings to gather information on the use of biosolids.

Lastly, EPA is examining available information about PFAS in discharges to surface water to identify industrial sources that may warrant further study for potential regulation. Included in EPA's Preliminary Effluent Guidelines Plan 14 is initial analyses of industrial sources and discharges of PFAS. This information is part of a multi-industry study to determine which industries are most likely to discharge PFAS into the environment and to determine the specific PFAS compounds currently in use.

Reducing PFAS Exposure through Cleanups

EPA supports its federal, state, local, and tribal partners by providing assistance in efforts to identify exposures, develop methods to measure PFAS in the environment, and support cleanup efforts where PFAS chemicals have been identified as a risk to public health. EPA is currently providing cleanup assistance to more than 30 states and the District of Columbia to address PFAS contamination. Over the past year, EPA has made considerable progress under the PFAS Action Plan as it relates to clean ups.

Administrator Andrew Wheeler tours a Superfund site.

Groundwater Guidance for Federal Clean Up Programs

In December 2019, EPA met its own deadline to issue Interim Recommendations for Addressing Groundwater Contaminated with PFOA and PFOS under federal cleanup programs, a priority action under the PFAS Action Plan. The interim recommendations provide clear and consistent guidance for federal cleanup programs and help protect drinking water resources in communities across the country. This is a critical tool for the agency's state, tribal, and local partners to use to protect public health and address these chemicals.

"We welcome the EPA's release of the Interim Recommendations for Addressing Groundwater Contaminated with PFOA/PFAS under federal cleanup programs," said the Association of State and Territorial Solid Waste Management Officials (ASTSWMO).

With these interim recommendations, EPA is prioritizing public health impacts by focusing on addressing groundwater that is a current or potential source of drinking water. The guidance recommends:

- Using a screening level of 40 parts per trillion (ppt) to determine if PFOA and/or PFOS is present at a site and may warrant further attention.
    - Screening levels are risk-based values that are used to determine if levels of contamination may warrant further investigation at a site.
- Using EPA's PFOA and PFOS Lifetime Drinking Water Health Advisory level of 70 ppt as the preliminary remediation goal (PRG) for contaminated groundwater that is a current or potential source of drinking water, where no state or tribal MCL or other applicable or relevant and appropriate requirements (ARARs) are available or sufficiently protective.
    - PRGs are generally initial targets for cleanup, which may be adjusted on a site-specific basis as more information becomes available.

After reviewing public comments on the agency's April 2019 draft guidance, EPA finalized the interim recommendations based on the available data and scientific information on PFAS toxicity. EPA acknowledges that the scientific information on these compounds is continuing to evolve. As part of the PFAS Action Plan, EPA continues to develop and assess toxicity information, test methods, laboratory methods, analytical methods, exposure models, and treatment methods, among other research efforts to improve the agency's knowledge about this class of chemicals. As new information becomes available on other PFAS chemicals, the agency will consider additional recommendations.

CERCLA Hazardous Substance Designation

Helping other federal agencies, cities, states, and tribes address legacy PFAS contamination at Superfund sites and other federal cleanup sites is one of the agency's top priorities under the PFAS Action Plan. In 2019, EPA continued to provide technical assistance on site-specific PFAS challenges across the country, including using the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and other authorities, as appropriate, to investigate sites. Along with EPA's work on the interim groundwater cleanup recommendations issued in 2019, the agency continued moving forward with the regulatory process for proposing to designate PFOA and PFOS as hazardous substances under CERCLA.

Analytical Methods for Other Environmental Media

In addition to test methods for drinking water, EPA worked to develop test methods for PFAS in non-potable groundwater, surface water, and wastewater. The agency issued for public comment SW-846 Method 8327, a multi-lab validated method that is used to conduct assessments and develop remediation treatment technologies and disposal practices. EPA accepted comments through August 2019 on the published method. The agency is continuing to review those comment in its efforts to revise the methods for future publication in the SW-846 compendium in 2020.

Treatment and Disposal Research

The agency also has numerous PFAS treatment and disposal research projects underway, including on high temperature incineration and other methods. The agency is collaborating with other federal partners, including the Department of Defense, on efforts to increase the agency's understanding and availability of treatment technologies for PFAS, including analytical methods. Under the NDAA for Fiscal Year 2020, EPA will work to publish interim guidance on the destruction and disposal of PFAS within one year and publish revisions every three years after that.

Ensuring Safety and Understanding PFAS in Commerce: EPA Actions Under the Toxics Release Inventory and the Toxic Substances Control Act

EPA is responsible for reviewing new chemical substances before they enter commerce to help manage the potential risk to public health and the environment from chemicals that are new to the marketplace. Since 2000, EPA has reviewed hundreds of new PFAS chemicals. In many cases, the agency used its authority under the Toxic Substances Control Act (TSCA) to impose restrictions on these substances. The agency has also used its authority to require companies to provide data on chemical properties, toxicity, and other health effects information. EPA has expanded on these efforts under the PFAS Action Plan, including the agency's work to update the Toxics Release Inventory program to include PFAS and efforts to finalize a Significant New Use Rule for PFAS chemicals.

The Toxics Release Inventory

EPA continues to receive, review, and take appropriate risk management actions for new PFAS chemicals received through Pre-Manufacture Notices and Low Volume Exemption Notices. For both types of notices, EPA conducts a full life-cycle risk assessment for the chemical under the conditions of use.

In November 2019, EPA announced a 60-day public comment period on potentially adding certain per- and polyfluoroalkyl substances (PFAS) to the list of chemicals that companies are required to report to the agency as part of the Toxics Release Inventory (TRI). Exploring the addition of certain PFAS chemicals to the TRI is an important step that will provide information to the public on these chemicals for the first time. The information gathered through this advance notice of proposed rulemaking (ANPRM) will be used for two purposes:

- First, the public input will help the agency determine whether data and information are available to fulfill the TRI chemical listing criteria.
- Second, EPA will use the input to help evaluate the extent and utility of the data that would be gathered under the TRI.

In a separate but related effort, on December 31, 2019, EPA notified TRI reporters that facilities need to track and collect data on PFAS chemicals during 2020, a new requirement included in the FY 2020 NDAA. To provide clear information on which chemicals fall under the NDAA requirement, in February 2020, EPA released a list of 172 PFAS chemicals that are subject to TRI reporting. The NDAA also instructs EPA to consider adding additional PFAS to the TRI chemical list. While the NDAA adds certain PFAS to the TRI chemical list, there are additional PFAS that were not added by the NDAA. Through the ANPRM announced in November 2019, EPA solicited comments on PFAS generally as they relate to TRI reporting, including comment on appropriate reporting thresholds, categorization of PFAS, availability of information on human health and environmental toxicity, persistence, and bioaccumulation of these additional PFAS that would help determine if they meet listing criteria.

EPA's TRI program is an important tool that provides the public with information about chemical releases and pollution prevention activities reported by industrial and federal facilities. U.S. facilities in different industry sectors must report annually how much of each chemical is released to the environment and/or managed through recycling, energy recovery, and treatment. TRI reporting requirements state that a facility should use readily available data collected pursuant to other provisions of law or, where such data are not readily available, reasonable estimates of the amounts involved. Reporting on the recently added PFAS will be due by July 1, 2021, for 2020 data including the PFAS added to the TRI by the NDAA. TRI information helps support informed decision-making by companies, government agencies, non-governmental organizations and the public.

Significant New Use Rule

Of the more than 600 PFAS chemicals on the active TSCA inventory, EPA has reviewed almost 60 percent of them under the new chemicals program. Since 2006, the agency has reviewed around 300 PFAS new chemical notices and has regulated about 200 with consent orders and/or new chemical SNURs.

In 2015, EPA proposed a Significant New Use Rule (SNUR) for long-chain PFAS that would require manufacturers (including importers) of PFOA and certain PFOA-related chemicals to notify EPA at least 90 days before starting or resuming manufacture (including import) or processing for new uses of these chemicals in any products. In February 2020, EPA issued a supplemental proposal that strengthens regulations on imported products containing these chemicals in surface coatings. This supplemental proposal, once final, would require EPA to review new uses of imported products containing certain PFAS as a surface coating. EPA's 2020 proposal supplements parts of the 2015 proposed rule on PFAS imports by clarifying the categories of products that would be covered. When finalized, this rule would ensure that uses which are phased out in products like furniture, automobile parts, electronics, and household appliances that could contain these PFAS chemicals as a surface coating cannot be imported to the U.S. unless EPA reviews the new uses and puts in place the necessary restrictions to address any unreasonable risks. This action would close an important loophole that currently allows products containing certain PFAS chemicals that have been phased out in the United States to still be imported into the United States. It also would level the playing field for companies that have already voluntarily phased-out the use of long-chain PFAS chemicals under EPA's PFOA Stewardship Program by preventing new uses of these phased-out chemicals to begin again.

Increasing Research to Reduce Risks

The science needed to protect public health and the environment from PFAS exposure cuts across many applications and disciplines. EPA's goal under the PFAS Action Plan is to develop and apply scientific information and tools to enable federal, state, local, and tribal governments to work together to make informed decisions to protect public health and the environment. Some of EPA's key research accomplishments over the past year include the following.

PFAS in Agriculture and Rural Communities

In February 2019, Administrator Wheeler directed the Office of Research and Development to "generate practical and actionable science to help manage PFAS chemical issues impacting agriculture and rural economies." Under this effort EPA has established a robust workgroup with the U.S. Department of Agriculture (USDA) and the Food and Drug Administration (FDA) on PFAS analytical methods for agricultural and food products. The group is also collaborating with USDA on modeling PFAS in contaminated dairy cows. EPA is contributing to USDA's efforts under the 2019 Farm Bill to support environmental remediation in rural American, which includes addressing PFAS.

Analytical Methods R&D

There are hundreds of different PFAS chemicals of varying sizes and lengths and sampling. Analyzing them in a comprehensive way has been a challenge that scientists at all levels of government are working to address. EPA has published new test methods for drinking water, and is continuing to work on methods for groundwater, surface water, and wastewater. The agency has also developed research methods for measuring PFAS in human serum and urine, and estuarine water. The agency is also working to develop and apply high-resolution mass spectrometry techniques to conduct Non-Targeted Analysis of PFAS in the environment, which is a critical step in the agency's efforts to comprehensively address these chemicals. Finally, EPA is working to develop sampling and analytical methods for detecting and measuring PFAS in stack emissions.

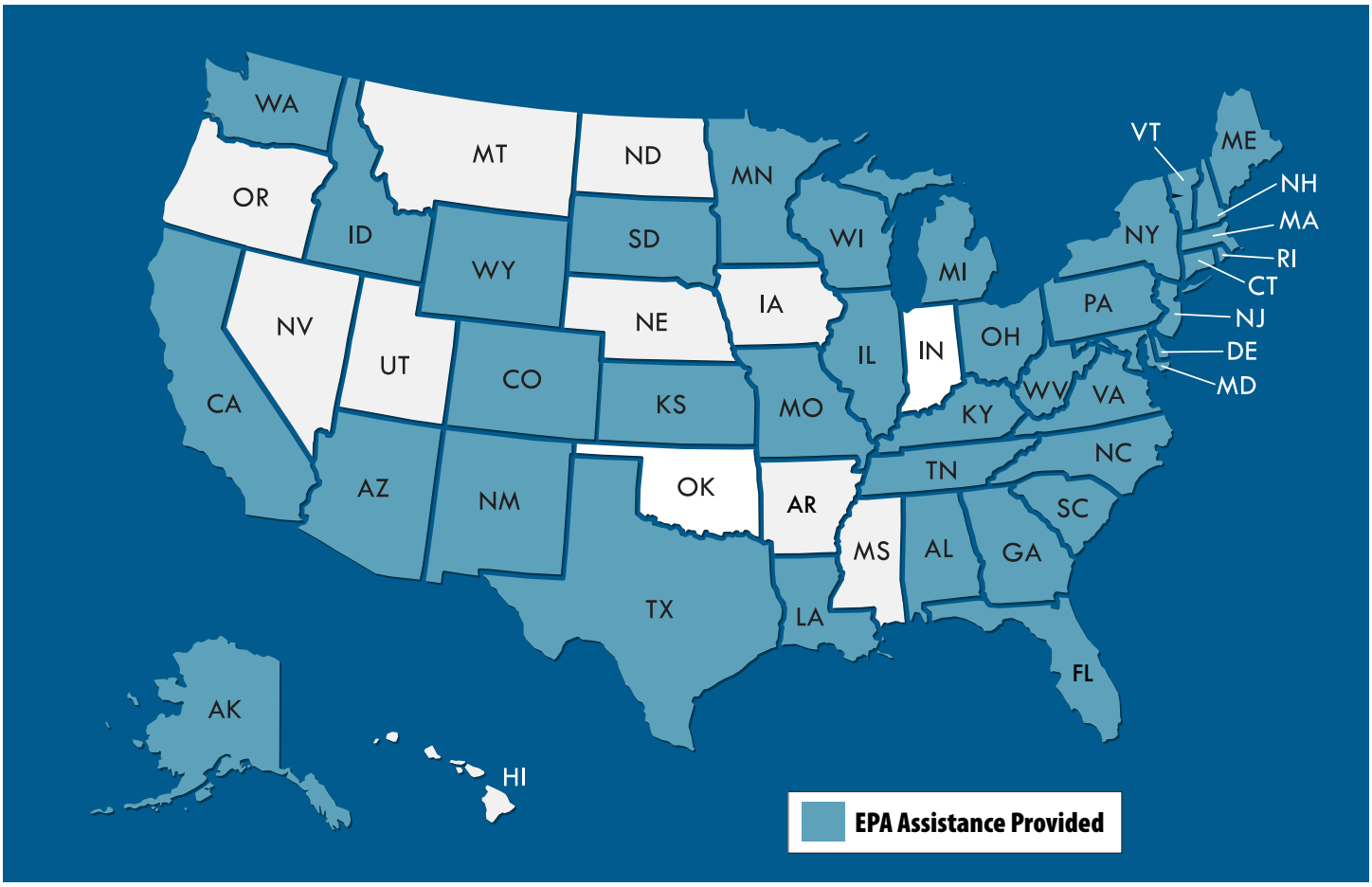
Toxicity and Effects R&D

EPA is currently researching the human health effects of seven of the most common PFAS. In 2019, EPA sought public input on draft toxicity assessments for GenX chemicals and perfluorobutane sulfonic acid (PFBS). To develop these draft toxicity assessments, the agency relied on the best available science, including input from independent peer reviewers. The agency also engaged with federal and state partners throughout the development of the draft assessments. For GenX, EPA has collaborated with a National Toxicology Program expert panel to review the toxicological study to address key technical comments received on the proposed toxicity assessments issued in 2018. The expert panel issued their report in 2019 and the agency looks forward to finalizing the assessment in 2020. EPA expects to finalize the PFBS and GenX toxicity assessments in 2020 and will continue working closely with all of its partners as the agency works to consider public input and revise these assessments.

Further, EPA is conducting an Integrated Risk Information System (IRIS) assessment on perfluorodecanoic acid (PFDA), perfluorononanoic acid (PFNA), perfluorohexanoic acid (PFHxA), perfluorohexanesulfonate (PFHxS), and perfluorobutanoic acid (PFBA). The IRIS assessments will identify the potential human health effects from exposure to each assessed PFAS and will develop toxicity values, as supported by the available evidence. The assessments will evaluate both cancer and noncancer effects, including potential effects on the endocrine, hepatic, urinary, immune, developmental, and reproductive systems. EPA expects to propose draft toxicity values of these chemicals for public and scientific review in 2020.

Expanding Technical Assistance, Enforcement, and Support

Over the past year, EPA provided technical support to multiple states on PFAS contamination and treatment. EPA is currently responding to requests for assistance from more than a dozen state and territorial governments by screening for PFAS at high priority sites and training local health agencies to test for PFAS on their own. EPA is also providing cleanup assistance to more than 30 states and the District of Columbia to address PFAS at contaminated groundwater and soil sites. For example, at the request of the State of North Carolina, in 2017 and 2018 EPA provided significant laboratory assistance to support the State's investigation of GenX in the Cape Fear River, which resulted in a state enforcement action and February 2019 state settlement.



EPA is providing assistance to states across the United States.

Effective Enforcement

EPA has taken—and will continue to take—enforcement action, as appropriate, to address PFAS to protect human health and the environment. For example, EPA took an enforcement action in 2019 against facilities in West Virginia and North Carolina for violating requirements under the TSCA while manufacturing PFAS chemicals. In October 2019, in coordination with Michigan Department of Environment, Great Lakes, and Energy, EPA issued an administrative consent order under CERCLA to Wolverine World Wide, Inc. to complete removal action work related to their Michigan facility that has both hazardous substance and PFAS contamination.

Since 2002, the agency has initiated 12 enforcement actions, including four since 2017. EPA will continue to partner with states on compliance assistance and enforcement, as necessary. The agency is also continuing to investigate PFAS releases, including issuing 20 information request letters and conducting 11 onsite inspections since July 2017, including joint inspections with states.

- Specifically, EPA has issued a number of information requests regarding PFAS, including:
    - Five CWA information request letters since November 2018 regarding discharges of PFAS from manufacturing or processing facilities,
    - Thirteen TSCA information request letters since January 2018,
    - One CERCLA information request letter in November 2017, and
    - One Resource Conservation and Recovery Act (RCRA) information request letter in April 2018.
- EPA's Office of Enforcement and Compliance Assurance (OECA), with support from its National Enforcement Investigations Center and Regional enforcement divisions, has carried out 11 inspections at eight PFAS manufacturing or processing facilities since July 2017, under the authority of TSCA, CWA, and/or RCRA, including joint inspections with states.
- The agency has multiple criminal investigations underway concerning PFAS-related pollution.

EPA's regional offices are also assisting their states to address PFAS releases and contamination with technical and enforcement support, including joint-prosecution agreements, investigations, inspections, and sampling.

In addition, EPA oversees PFAS response actions by federal agencies at National Priorities List sites. For example, EPA actively engaged with the Army regarding their decision to provide the Town of Ayer, Massachusetts, with a treatment system for well water threatened by a PFAS plume emanating from the former Fort Devens Army base (now a BRAC facility). In February 2019, the Army agreed to take a CERCLA Time Critical Removal Action (TCRA) to address groundwater contamination above the Health Advisory. The TCRA committed Army to eliminate the ongoing discharge of PFAS-contaminated water into surface water and fund installation of a drinking water treatment system to address PFAS contamination in the public drinking water supply.

Information on EPA's federal agency compliance assistance is available on the FedCenter website where federal agency PFAS contacts can share information and find resources.

PFAS in Air

Under the PFAS Action Plan, EPA is working to better characterize and understand the environmental impacts of PFAS emitted to the air. This work will build on the scientific foundation that has been established to develop sampling and measurement methods for PFAS in air, assess effectiveness of PFAS disposal methods, and understand the efficacy of emission control technology. EPA also has provided support to states on technical matters on destruction and incineration of PFAS in contaminated waste and materials.

Tribal and International Support

EPA has provided robust support to both the tribal and international communities. In Indian Country, tribes are impacted in a number of different ways including their proximity to airports, military bases, industrial facilities, landfills, and past fires. Through its efforts the agency has met with tribes and with representatives from the European Union, Finland, the Netherlands, Germany, Norway, Denmark, Australia, and Japan. The agency's PFAS Action Plan has provided these partners with a roadmap to addressing PFAS within their own countries and in Indian Country. The interactions have also provided opportunities for the agency to learn about the actions other countries are taking to address PFAS.

Funding for Additional PFAS Efforts

As a leader in the nation's efforts to address PFAS in the environment, EPA recognizes that providing funding to external organizations is a critical component to successfully addressing these chemicals. Some of the agency's funding efforts include the following.

Ecological Exposure

In May 2019, EPA awarded approximately $3.9 million through two grants for research that will improve understanding of human and ecological exposure to PFAS in the environment. The research will also promote a greater awareness of how to restore water quality in PFAS-impacted communities.

- The Colorado School of Mines in Golden, Colorado will research the fate, transport, bioaccumulation, and exposure of a diverse suite of PFAS in nationally representative PFAS impacted communities.
- Oregon State University in Corvallis, Oregon will study the toxicity of a large collection of PFAS and PFAS mixtures with the zebrafish assay and mice studies to identify toxic PFAS that require prioritization for risk management.

Environmental Risks in Waste

In September 2019, EPA also awarded nearly $6 million to fund research by eight organizations to expand the understanding of the environmental risks posed by PFAS in waste streams and to identify practical approaches to manage the potential impacts as PFAS enters the environment. Funding was awarded to:

- New York State Department of Health - Health Research Inc., Menands, N.Y. – to build a dataset by analyzing samples from approximately 150 landfills in the State of New York. This data will be used to understand the types and concentrations of PFAS that are found in and around landfills, as well as the key landfill attributes that contribute to release of PFAS.

- North Carolina State University, Raleigh, N.C. – to collect landfill gas (LFG) samples from over 400 landfills across the U.S. to determine if PFAS from LFG is a significant source of PFAS released into the atmosphere.
- University of Florida, Gainsville, Fla. – to study the role of waste type, management strategies, and treatment methods on the occurrence, source and fate of PFAS in landfills. The study will identify the sources of PFAS compounds in the current domestic waste stream using laboratory-scale batch leaching, and landfill simulation studies.
- Clemson University, Clemson, S.C. – to examine the chemical process for the destruction of PFAS in leachate and groundwater. This project will assess degradation kinetics, test hypothesized process modifications, and conduct trials of leachate treatment.
- Purdue University, West Lafayette, Ind. – to develop methods to decrease PFAS concentrations in both municipal wastewater treatment plant effluent and sludge. The study will determine the technical and economic feasibility of using a treatment approach consisting of nanofiltration followed by electrochemical oxidation.
- Texas A&M AgriLife Research, College Station, Texas – to investigate the feasibility of electron beam technology for the destruction of PFAS compounds during the remediation of groundwater, wastewater, sewage sludges, and soils.
- Texas Tech University, Lubbock, Texas – to identify and quantify the occurrence of PFAS in landfill leachate, investigate the fate of PFAS passing through typical landfill liner systems, and test the ability to break down PFAS in landfill leachate using soundwaves.
- University of North Dakota, Grand Forks, N.D. – to develop practical strategies for removing legacy and emerging PFAS from leachate and groundwater by studying the adsorption, desorption, and biodegradation of PFAS and precursor compounds in landfills.

PFAS in Agriculture

In November 2019, EPA announced the availability of nearly $5 million for new research on PFAS in agriculture, which will help fulfill Administrator Wheeler's call for the agency to prioritize new federal research that will help farmers, ranchers, and rural communities.

"NASDA appreciates the EPA's efforts to prioritize PFAS research that will help the agricultural community. As the primary stewards for the agricultural industries in their states, NASDA members will continue to work closely with the EPA as the agency implements its PFAS Action Plan. Together, we can ensure healthy communities and farms across America," **said National Association of State Departments of Agriculture (NASDA) CEO Dr. Barbara P. Glenn.**

"EPA is uniquely suited to lead and promote research on this important topic and USDA applauds EPA's focus on farmers, ranchers, and rural communities. EPA's funding of this research complements the work USDA does supporting U.S. production agriculture and ensuring a safe food supply," **said USDA Deputy Under Secretary for Research, Education, and Economics Dr. Scott Hutchins.**

PFAS Under the Drinking Water State Revolving Fund (DWSRF)

The DWSRF can provide financial assistance to publicly-owned and privately-owned community water systems, as well as non-profit non-community water systems, for drinking water infrastructure projects. Projects must either facilitate the system's compliance with national primary drinking water regulations or significantly further the health protection objectives of the Safe Drinking Water Act. Infrastructure needs related to addressing PFAS are eligible projects. Examples of projects could include funding equipment, such as laboratory equipment, upgrading treatment technologies to add PFAS removal capability, and funding routine training for system operators.

Risk Communications and Engagement

Risk communication and engagement are critical for EPA to effectively support communities across the United States that are addressing PFAS. As outlined in the PFAS Action Plan, EPA is actively working to enhance the way in which the agency communicates about potential human health risks that may be associated with PFAS.

At the National Leadership Summit and throughout the public engagement sessions the agency held across the country, EPA heard that it is important to clearly explain the actions the agency is taking as well as the specific concerns that those actions are intended to address. Throughout the past year, the agency has consistently worked to ensure that both of those goals were met. Through press releases, public speaking engagements, congressional testimony, social media, and on www.epa.gov, the agency is ensuring that its voice is clearly articulated in the public discourse as it relates to these chemicals. EPA's actions, and the corresponding communications products, show EPA's robust, comprehensive and collaborative approach to accurately and appropriately communicate risk to the public.

EPA Administrator Wheeler has made risk communications a priority for the agency since he became Administrator. Over the past year, EPA has worked to expand its risk communications efforts internally, which include a strong focus on PFAS. Over the next year, the agency looks forward to rolling out new materials; continuing to coordinate with our federal, state, local, and tribal partners to ensure consistent messaging; and adding training opportunities for the agency's workforce. Together, these efforts will help the agency enhance the public's understanding of the potential health effects associated with PFAS and provide support to all the agency's partners.

CONCLUSION

EPA is committed to continuing to aggressively implement the PFAS Action Plan—the most comprehensive cross-agency plan ever to address an emerging chemical of concern. EPA's Action Plan and the progress that has been made over the past year under the Plan demonstrates the agency's leadership role at the national level to address this emerging environmental concern. This includes ensuring that instances where PFAS pose risk to public health or the environment are identified and quickly addressed. The agency looks forward to continued progress both within and outside of the agency. Over the next year, EPA will make progress on addressing PFAS under the Safe Drinking Water Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Resource Conservation and Recovery Act, and the Toxic Substances Control Act. The agency will also work to expand its research efforts as well as enhance the agency's engagement with the rest of the federal government. The agency will also focus its efforts on providing more information and data to the public.

"For the first time in Agency history, we utilized all of our program offices to construct an all-encompassing plan to help states and local communities address PFAS and protect our nation's drinking water. We have moved forward, and continue to forward, with several important actions, including the maximum contaminant level process, that will help affected communities better monitor, detect, and address PFAS."

EPA Administrator Andrew Wheeler

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY