EPA
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Agency

EPA's PFAS Strategic Roadmap: A Year of Progress

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Introduction

Harmful per- and poly-fluoroalkyl substances (PFAS) are an urgent public health and environmental issue facing communities across the United States. In April 2021, U.S. Environmental Protection Agency (EPA) Administrator Michael S. Regan created the EPA Council on PFAS and charged it with developing a coordinated strategy to protect human health and the environment from PFAS.

In October 2021, EPA released its PFAS Strategic Roadmap, which highlights concrete actions the Agency will take across a range of environmental media and EPA program offices to protect people and the environment from PFAS contamination. The Roadmap included target dates to achieve each milestone and is guided by three primary goals:

Research. Investing in research, development, and innovation to increase the understanding of PFAS exposures and toxicities, human health and ecological effects, and effective interventions that incorporate the best-available science.

Restrict. Pursuing a comprehensive approach to proactively prevent PFAS from entering air, land, and water at levels that can adversely impact human health and the environment.

Remediate. Broadening and accelerating the cleanup of PFAS contamination to protect human health and ecological systems.

In this progress report, EPA summarizes the critical actions the Agency has taken over the past year to advance progress toward these goals. In addition, this document highlights milestones EPA will achieve in the near future. Since the Roadmap's release in October 2021, EPA has taken a number of key actions:

- **Proposed to designate two PFAS as CERCLA hazardous substances.** If finalized, this will be a critical step toward increasing transparency around releases of PFAS and holding polluters accountable for cleaning up their contamination.
- **Released drinking water health advisories.** Acting in accordance with EPA's mission to protect public health and keep communities and public health authorities informed when new science becomes available, the Agency issued drinking water health advisories for four PFAS.
- **Laid the foundation for enhancing data on PFAS.** This included an order under EPA's National PFAS Testing Strategy requiring companies to conduct PFAS testing, and nationwide sampling for 29 PFAS in drinking water starting in 2023.
- **Began distributing $10 billion in funding to address emerging contaminants under the Bipartisan Infrastructure Law (BIL).** EPA is making transformational investments in cleaning up PFAS and other emerging contaminants in water, especially in small or disadvantaged communities.

- **Expanded the scientific understanding of PFAS.** The Agency issued more than 30 scientific publications by EPA researchers and released EPA's PFAS Thermal Treatment Database.
- **Translated the latest science into EPA's cross-agency PFAS efforts.** This included updating EPA's contaminated site cleanup tables, developing new PFAS methods and conducting toxicity assessments, and issuing draft national recommended water quality criteria to protect aquatic life.
- **Engaged with the public.** EPA's PFAS work was informed by public webinars, stakeholder meetings, Congressional testimony, and engagement with EPA's federal advisory committees.

EPA is committed to leveraging the full range of statutory authorities to make progress on PFAS. President Biden's Fiscal Year 2023 budget proposes an increase of $51 million for EPA's PFAS work, which would provide needed resources for continuing to meet EPA's Roadmap commitments. Critical efforts to get upstream of the PFAS problem—such as ensuring robust chemical reviews under the Toxic Substances Control Act and moving forward with several critical rulemakings under the Clean Water Act—depend upon the availability of these resources.

EPA Administrator Michael S. Regan announces the PFAS Strategic Roadmap on October 18, 2021 at North Carolina State University in Raleigh, NC.

Key Accomplishments

EPA's PFAS Strategic Roadmap documents the Agency's commitment to advancing key actions to safeguard public health, protect the environment, and hold polluters accountable. Below is a summary of key actions taken by EPA in the first year of implementation.

Enhancing Chemical Safety

EPA announced the National PFAS Testing Strategy in October 2021. The Testing Strategy is a major step toward the goal of breaking PFAS into distinct categories to direct research, develop regulatory action, and accelerate technology and policy solutions to restrict and remediate PFAS. In June 2022, EPA issued its first test order under the Testing Strategy, which—along with additional orders EPA will issue in the coming months—will provide the Agency with critical information on more than 2,000 similar PFAS that fall within these categories. Additionally, EPA investigated and issued an open letter related to PFAS contamination in fluorinated pesticide and chemical packaging, took steps to remove 12 PFAS from the current list of approved inert ingredients in pesticide products, and removed several PFAS from the Safer Chemicals Ingredients List.

In December 2021, President Biden issued Executive Order 14057 on *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*. EPA is a leader in implementing the executive order to prioritize federal purchasing of products without added PFAS. In February 2022, EPA released updated resources to aid federal purchasers in meeting this goal.

Safeguarding Drinking Water

In December 2021, EPA finalized the fifth Unregulated Contaminant Monitoring Rule, which will expand PFAS testing nationwide by requiring monitoring for 29 PFAS in drinking water. This monitoring, scheduled annually from 2023 to 2025, will occur at thousands of drinking water systems nationwide. These data will be critical in assessing the prevalence of PFAS in America's public water systems, prioritizing state and federal efforts to reduce PFAS levels in drinking water, and enabling EPA to better determine if and where PFAS contamination is disproportionately impacting communities with environmental justice concerns.

EPA is developing national drinking water standards for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). Toward this goal, EPA released four draft scientific documents for review by EPA's Science Advisory Board in November 2021, two of which identify negative health effects from PFOA and PFOS at much lower levels than previously understood.

Radhika Fox, Co-Chair of EPA's PFAS Council and Assistant Administrator for the Office of Water, and Elizabeth Biser, Secretary of the North Carolina Department of Environmental Quality, tour a new Granular Activated Carbon system at the Sweeney Water Treatment Plant in Wilmington, NC, on June 15, 2022.

Recognizing the need to inform the public of this new science, EPA committed to updating the Agency's 2016 health advisories for PFOA and PFOS as quickly as possible. EPA met this new commitment by issuing interim health advisories for PFOA and PFOS in June 2022. At the same time, EPA also issued final health advisories for hexafluoropropylene oxide dimer acid and its ammonium salt (also known as GenX chemicals) and perfluorobutane sulfonate (PFBS). Importantly, these health advisory levels are based on risks to the most sensitive life stages.

Ensuring Clean Water

In the Roadmap, EPA emphasized the importance of getting upstream of the PFAS problem by restricting PFAS from entering the environment in the first place. In April 2022, EPA released draft recommended water quality criteria for PFOA and PFOS that are intended to provide the best-available scientific recommendations from EPA on how states and Tribes can protect against harmful effects to aquatic life. Also in April, EPA released a memo to EPA's Regional offices on how to proactively use Clean Water Act permitting authorities to reduce discharges of PFAS at the source and to obtain more comprehensive monitoring information on potential sources of PFAS. EPA will follow this action with a memo to state permitting authorities, while EPA continues its work on longer term efforts to set nationwide technology-based standards for certain PFAS discharges under the Effluent Limitations Guidelines program. EPA will soon publish an updated plan on its effluent guidelines efforts to limit discharges of PFAS and other contaminants.

Cleaning Up PFAS Contamination

As EPA focuses on proactively getting upstream of the PFAS problem, the Agency recognizes the concurrent need to broaden and accelerate the cleanup of PFAS contamination where it already impacts communities and the environment. EPA took a foundational step in September 2022 by proposing to designate PFOA and PFOS as hazardous substances under the Comprehensive Environmental Response, Compensation, and

EPA scientists Richard Mitchell and Shera Reems collect water samples from the Animas River in Colorado. The samples will be analyzed for PFAS and other contaminants as part of a collaborative project between EPA, four states, and three Tribes to identify contaminants in the San Juan watershed.

Liability Act (CERCLA), or Superfund. This action, if finalized, will increase transparency around releases of these harmful chemicals and help to hold polluters accountable for cleaning up their contamination.

In May 2022, EPA took an important step forward to protect people from PFAS by adding five PFAS to a list of risk-based values that inform site cleanup decisions. This action provides the Agency with critical tools for Superfund and other EPA programs to investigate contamination and protect people from these PFAS using the latest peer-reviewed science.

EPA has also announced two new rulemaking actions under the Resource Conservation and Recovery Act. These actions will strengthen the authorities available to EPA and its state partners to protect communities from PFAS and hold polluters accountable. EPA expects to propose both rules in 2023.

Strengthening the Scientific Foundation

Over the past year, EPA researchers have published more than 30 papers on PFAS in scientific journals and have added new data on PFAS to the Drinking Water Treatability Database, the CompTox Chemicals Dashboard, and the ECOTOX Knowledgebase. EPA continues its work to develop and validate methods to detect and measure PFAS in the environment—releasing a new Adsorbable Organic Fluorine method (draft Method 1621) in April 2022 as well as EPA Method 1633, a method to detect 40 PFAS in eight environmental media. EPA continues its work to advance the science to assess human health and environmental risks from PFAS, including releasing a final toxicity assessment for GenX chemicals in October 2021 and advancing toxicity assessments for several additional PFAS under the Integrated Risk Information System (IRIS) program. EPA is also evaluating and developing technologies for reducing PFAS in the environment. As part of these efforts, EPA released the PFAS Thermal Treatment Database in February 2022. This database provides an online resource that contains more than 2,000 records from 80 different sources about the treatability of PFAS using different thermal processes.

Mark Strynar from EPA's Office of Research and Development monitors a high-resolution mass spectrometer while conducting non-targeted screening for emerging PFAS.

Holding Polluters Accountable

EPA is proactively using enforcement tools to better identify and address PFAS releases at facilities. As part of this work, EPA has sought information from PFAS manufacturers and other parties to better understand PFAS contamination that may be present in soil, groundwater, surface water, and sediment around facilities where PFAS were manufactured, used, released, or handled. In January 2022, EPA issued information requests letters to three major PFAS manufacturers: The Chemours Company; Corteva, Inc.; and DuPont de Nemours, Inc. The letters require these companies to provide information on their current and past PFAS production and management and disposal practices at 24 facilities. Based on information EPA collects through this effort, the Agency will take follow-up action, where appropriate, to protect nearby communities and the environment.

In November 2022, EPA issued an administrative order on consent to 3M that requires 3M to offer to sample and provide treatment for PFAS contamination in drinking water near 3M's facility in Cordova, Illinois. EPA is committed to continuing to investigate releases of PFAS and to require appropriate follow-up action where needed.

Addressing PFAS with Bipartisan Infrastructure Law Investments

The Bipartisan Infrastructure Law (BIL), also known as the Infrastructure Investment and Jobs Act, signed by President Biden in November 2021, provides more than $50 billion to EPA to make transformational investments in the nation's drinking water, wastewater, and stormwater infrastructure, while also dedicating more than $5 billion to clean up legacy pollution at Superfund and brownfields sites. The BIL includes $10 billion in dedicated funding for communities impacted by emerging contaminants in water, including PFAS. This funding provides a tremendous opportunity to harmonize the research and policy commitments in the Roadmap with critical financial resources that communities need to protect people and environment from PFAS contamination.

The BIL uses both existing and new EPA water finance programs to provide communities with funding for emerging contaminants. All three programs are designed to flow through the states and territories. The $10 billion must be provided as grants or forgivable loans.

Small or Disadvantaged Communities Drinking-Water Grants: $5 Billion

The BIL provides $5 billion over five years to address PFAS and other emerging contaminants in drinking water, specifically in small or disadvantaged communities. In June 2022, EPA announced the availability of the first $1 billion in grant funding to help small or disadvantaged communities reduce the presence of PFAS and other emerging contaminants in their drinking water. EPA invited states to submit letters of intent for this funding, and EPA is working to develop additional documentation to assist states and territories to help develop and implement their respective programs and project awards.

Drinking Water State Revolving Fund: $4 Billion

The BIL also provides a dedicated $4 billion over five years to address PFAS and other emerging contaminants within the Drinking Water State Revolving Fund. One-quarter (25%) of these funds must be reserved for disadvantaged communities or public water systems that serve fewer than 25,000 people. States may also use more than $11.7 billion in BIL General Supplemental Drinking Water State Revolving Funds to invest in projects that address PFAS in drinking water. In March 2022, EPA released an implementation memo that provides additional information on projects and activities that are eligible for this funding.

Clean Water State Revolving Fund: $1 Billion

The BIL provides $1 billion over five years to address PFAS and other emerging contaminants in wastewater and stormwater infrastructure. States, water systems, and communities may also leverage additional resources from the $11.7 billion in BIL Clean Water State Revolving Fund General Supplemental Funds to invest in projects that address PFAS in clean water infrastructure. In August 2022, EPA released specific Questions and Answers to assist states in developing their applications for BIL capitalization grants for these funds.

Upcoming Milestones

Over the next year, priorities for EPA's work to research, restrict, and remediate PFAS include:

- **Propose a National Drinking Water Standard for PFOA and PFOS.** Responding to a growing body of science, EPA will propose a rule to set enforceable limits in drinking water for PFOA and PFOS under the Safe Drinking Water Act by the end of 2022. The rule is currently undergoing interagency review at the Office of Management and Budget as the final step before its release for public comment.
- **Complete CERCLA Designations.** In September 2022, EPA released a proposal to designate PFOA and PFOS as hazardous substances under CERCLA. EPA intends to take final action on the proposed rule in 2023, while continuing to work closely with stakeholders to address equity concerns and to hold responsible parties accountable for cleanup. EPA will seek input on designating additional PFAS as hazardous substances through an advance notice of proposed rulemaking.
- **Improve Chemical Data and Safety.** EPA also expects to release additional rules that will significantly enhance the public availability of data on how PFAS are used and released while helping EPA and communities better understand disproportionate impacts to communities with environmental justice concerns. EPA will propose a rule to remove certain exemptions from PFAS reporting under the Toxics Release Inventory program. EPA also intends to take final action on a proposed rule that would better characterize the sources and quantities of manufactured PFAS in the United States—collecting significant new information on chemical quantities, byproducts, worker exposures, and disposal methods. Finally, EPA will propose a Significant New Use Rule that would ensure that any discontinued use of certain PFAS cannot reenter the marketplace without EPA review.
- **Restrict Upstream Discharges.** Reducing discharges to the environment and to publicly owned treatment works is a cornerstone of EPA's strategy to restrict PFAS. EPA will soon release its final Effluent Limitation Guidelines Plan 15, which contains key steps toward addressing PFAS discharges across a range of industrial categories. EPA will also release new guidance to states describing how to leverage their National Pollutant Discharge Elimination System permits and pretreatment programs to increase monitoring, including at known or suspected dischargers of PFAS. This will enable states to take appropriate steps to restrict PFAS at their source, collect important data on PFAS discharges, and enable communities to work closely with their state permitting authorities to take action where discharges may occur.
- **Address PFAS in Biosolids.** EPA is working to complete a full risk assessment on PFOA and PFOS in biosolids for release in 2024. The Agency is set to reach a milestone in its biosolids efforts in late 2022 by releasing a draft biosolids risk-assessment screening framework for scientific peer review, which will estimate high end exposures for a wide range of chemical contaminants due to use and disposal of biosolids. PFAS in biosolids is an issue that requires enhanced coordination, and the Agency commits to working with key partners across the federal government, states, and the water, solid waste, and agricultural sectors.
- **Provide Public PFAS Tools.** EPA expects to publicly release a set of PFAS Analytic Tools, an application that integrates data on PFAS reporting, testing, and occurrences in communities. Making these data available, and linking to tools like EJSCREEN (the Agency's Environmental Justice Screening and Mapping Tool), will help the public, researchers, and other stakeholders better understand potential PFAS

sources in their communities, potential exposure pathways in communities with environmental justice concerns, and to what extent PFAS pollution contributes to the cumulative burden of exposures from multiple sources.

- **Engage with Communities.** In the Roadmap, EPA committed to engaging with communities in each EPA Region to hear how PFAS contamination impacts their lives and livelihoods in response to a recommendation from the National Environmental Justice Advisory Council. To meet this commitment, EPA is planning a series of regional listening sessions as well as a specific session focused on unique Tribal and indigenous community needs and concerns. EPA wants to hear directly from communities impacted by PFAS challenges on how to best implement current actions and on future priorities.

EPA's Approach

In the October 2021 PFAS Strategic Roadmap, EPA laid out a set of principles that underpin the strategic approach to addressing PFAS. These principles continue to guide the Agency's work as existing Roadmap commitments are achieved and new areas of work are identified.

- **Prioritize Protection of Disadvantaged Communities.** EPA will continue to develop the data and tools needed to identify and protect overburdened communities and vulnerable populations that may be disproportionately impacted by PFAS contamination. Over the last year, EPA has engaged with key groups—including the National Environmental Justice Advisory Council, Tribal PFAS Working Group, and Local Government Advisory Committee—to ensure that EPA's regulatory processes and financial assistance programs are grounded in the experience and needs of disadvantaged communities.
- **Consider the Lifecycle of PFAS.** As EPA and its partners research, restrict, and remediate PFAS, the Agency will account for the breadth of potential contamination pathways and the potential impacts on a range of stakeholders from drinking water and wastewater treatment plants to farmers and ranchers.
- **Get Upstream of the Problem.** EPA is committed to preventing PFAS from entering the environment in the first place. This is reflected in the Agency's actions to reduce PFAS discharges to waterways, their use in new ways, and gather new data on the prevalence, use, and effects of additional PFAS chemicals.
- **Hold Polluters Accountable.** EPA is leveraging key authorities to hold polluters accountable for legacy and ongoing contamination. By advancing efforts to designate PFAS as hazardous substances and using its enforcement tools, the Agency is taking critical actions to protect communities from the impacts of PFAS.
- **Ensure Science-Based Decision-Making.** EPA will continue to advance scientific understanding of PFAS and follow the science to advance public health and environmental protections. The Agency is focused on further developing science to take important programmatic steps, from updating guidance on PFAS destruction and disposal, to evaluating options for addressing air emissions of PFAS, to identifying opportunities to take broader actions on categories of PFAS.

Whole-of-Government Effort

As EPA advances critical work using its authorities and resources, it is doing so as part of a larger Biden-Harris Administration effort to harness the collective knowledge, experience, and capacity of the federal government to address PFAS. This effort begins at the White House, where the Council on Environmental Quality leads an interagency group focused on PFAS policy actions and the Office of Science and Technology Policy (OSTP) leads an interagency working group of federal technical and scientific experts. In October 2021, the White House issued an overview of the Administration's government-wide actions to address PFAS. In June 2022, the Administration shared a further update on actions towards restricting PFAS from entering water, air, land, and food.

Since June, some notable actions by federal agencies include:

- The Department of Energy (DOE) issued its PFAS Strategic Roadmap, which establishes and details the goals, objectives, and steps DOE is taking to address PFAS.
- The Department of Defense (DOD) continues to address its PFAS releases and has completed initial assessments at 343 of 702 installations and started 178 remedial investigations, which is the next step in the cleanup process. DOD is also continuing research and demonstration on more than 100 projects related to PFAS treatment technologies, sampling, analysis, and monitoring.
- The Centers for Disease Control and Prevention completed PFAS Exposure Assessments in eight communities known to have had PFAS in their drinking water.
- The Food and Drug Administration (FDA) determined that the estimated exposure to PFOA in samples of canned clams from China is a likely health concern and announced voluntary recalls from the two distributors of the samples with the two highest levels of PFOA in the United States. The FDA also issued a Request for Information on the food contact uses of fluorinated polyethylene to ensure that authorized uses are safe.

EPA's Bruno Pigott, Deputy Assistant Administrator for Water, testifies at a Congressional PFAS field hearing in East Lansing, MI, alongside Senator Gary Peters and representatives from the Department of Health and Human Services and the Department of Defense.

- OSTP issued a Request for Information to identify gaps in data, research, and development on several aspects of PFAS, which will inform federal strategic planning.
- The National Academies of Science, Engineering, and Medicine, with funding from several agencies, completed a review of the current evidence on human health effects of PFAS and provided guidance to clinicians on PFAS exposure.

As this work moves forward, EPA is enhancing its focus on a range of interagency efforts, from collaborating with DOD on analytical methods to working with the Department of Health and Human Services on better understanding PFAS exposure. EPA is also helping to lead efforts in emerging areas of research and policy, including collaboration with the Department of Agriculture and the FDA on PFAS in the food system.

Conclusion

Over the last year, EPA has achieved important milestones to better understand PFAS, to stop them from entering the environment, and to clean up contamination where it has already occurred. With the addition of resources from the Bipartisan Infrastructure Law, the Agency is working with states, Tribes, and territories to protect communities—including the most disadvantaged and vulnerable populations—through water infrastructure investments. EPA has also collaborated with its federal partners, state coregulators, and other stakeholders—many of whom are also advancing important actions. With this progress report, the Agency renews its commitment to work hand in hand with all partners to build durable and comprehensive solutions to protect human health and the environment now and for future generations.

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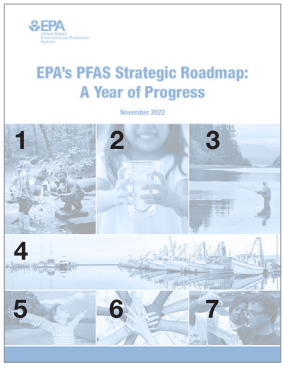

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