EPA Response: New Mexico Environment Department – NM State Senate Radioactive and Hazardous Materials Committee Request

Overview

In response to the NM Senate Radioactive and Hazardous Materials Committee's request for EPA to present on matters related to PFAS on August 5th, 2022, we were unable to participate but are providing the following materials for the Committee. We will also commit to answering any follow-up questions from the Committee in writing.

The following summary and documents enclosed provide an overview of EPA's activities under EPA's PFAS Strategic Roadmap. The Roadmap outlines EPA's whole-of-agency approach to addressing PFAS. The Roadmap sets timelines by which EPA plans to take specific actions and commits to bolder new policies to safeguard public health, protect the environment, and hold polluters accountable. The actions described in the PFAS Roadmap each represent important and meaningful steps to safeguard communities from PFAS contamination. Cumulatively, these actions will build upon one another and lead to more enduring and protective solutions.

The EPA is leveraging the full range of statutory authorities to confront the human health and ecological risks of PFAS. At the same time, the Roadmap highlights that every level of government—federal, state, and local—needs to exercise increased and sustained leadership to accelerate progress to clean up PFAS contamination, prevent new contamination, and make game-changing breakthroughs in the scientific understanding of PFAS.

Thank you to the Committee for your engagement on the issues surrounding these persistent "forever" chemicals and to the New Mexico Environment Department for your coordination with this request and continued partnership as we work to affect meaningful change and achieve our shared environmental goals. Please feel free to send me any questions or any follow-ups. My email is vela.austin@epa.gov and my phone number is 214-665-9792.

Contents

The following sections give information about the attachments provided and short summary of the contents within those documents. The materials include fact sheets, slide presentations, state specific-recent actions, and a timeline of actions from the past year (approximately).

Health Advisories: Fact Sheet

Although these presentations and fact sheets were for an audience of public water systems, I believe that these resources are transferable to state officials (generally).

Please see **Attachment A**: "Drinking Water Health Advisories for PFAS: Fact Sheet for Public Water Systems."

Health Advisories: Presentation

Please also see this supplemental presentation in **Attachment B** entitled "Webinar on Drinking Water Health Advisories for Four PFAS (GenX, PFBS, PFOA, PFOS) and Bipartisan Infrastructure Law Announcement" (*June 2022*). Similarly, as mentioned before this

presentation was created for a different audience, however we believe that it is a helpful resource for a *current status* on the subject matter.

New Mexico Specific Actions

- **Attachment C:** NM Governor Petition Requesting PFAS as Hazardous Waste under RCRA Subpart C
- **Attachment D**: EPA Response to New Mexico Governor's PFAS Petition October 2021
- **News Release (link):** https://www.epa.gov/newsreleases/epa-responds-new-mexico-governor-and-acts-address-pfas-under-hazardous-waste-law

EPA's PFAS Roadmap

- **Attachment E:** PFAS Roadmap (Document)
- **Attachment F:** PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024 (Presentation)

Timeline: EPA Actions to Address PFAS *(in the past 12-14 months)*

- **New Drinking Water Health Advisories and $1 Billion in Bipartisan Infrastructure Law Funding -** In *June 2022*, EPA released four drinking water health advisories for PFAS. EPA also announced that it is inviting states and territories to apply for $1 billion in Bipartisan Infrastructure Law grant funding to address PFAS and other emerging contaminants in drinking water, specifically in small and disadvantaged communities.
    - Health Advisories (link): https://www.epa.gov/sdwa/drinking-water-health-advisories-has#published
    - Emerging Contaminants Grant (**OPEN – Deadline: August 15, 2022**): https://www.epa.gov/dwcapacity/emerging-contaminants-ec-small-or-disadvantaged-communities-grant-sdc

- **National PFAS Testing Strategy Test Order -** On *June 6, 2022*, EPA issued its first test order under EPA's National PFAS Testing Strategy, a key component of the Agency's PFAS Strategic Roadmap. Test orders under the Toxic Substances Control Act are the first step under the National PFAS Testing Strategy to protect human health and the environment from the potential risks of PFAS. The information from these initial orders will provide the Agency with critical information on more than 2,000 similar PFAS that fall within these categories.

- **Adding Five PFAS to Contaminated Site Cleanup Tables -** *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 for site cleanups. These values, known as Regional Screening Levels and Regional Remedial Management Levels, help EPA determine if response or remediation activities are needed. EPA's action provides the Agency with critical tools needed for Superfund and other Agency programs to investigate contamination and protect people from these PFAS chemicals using the latest peer-reviewed science.

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- **Clean Water PFAS Actions -** In April 2022, EPA announced three clean water actions that advance progress under EPA's PFAS Strategic Roadmap: Draft Aquatic Life Criteria for PFOA and PFOS.

    1. EPA proposed the first Clean Water Act aquatic life criteria for PFAS, focusing on two of the most well-studied chemicals in this group: PFOA and PFOS. These draft recommendations reflect the latest peer-reviewed scientific knowledge regarding the toxicological effects of PFOA and PFOS on freshwater aquatic organisms.

    2. EPA issued a memo to proactively use its 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. The memo will help minimize PFAS pollution in surface water as EPA works to set effluent guidelines, develop analytical methods, and issue water quality criteria for PFAS. This memo applies to Clean Water Act programs EPA oversees; EPA plans to issue a subsequent memo that provides guidance to state permitting authorities.

    3. EPA published a new draft method to measure for Adsorbable Organic Fluorine in water samples. This new method, known as draft EPA method 1621, can broadly screen for the presence of chemical substances that contain carbon-fluorine bonds, including PFAS.

- **Expanding PFAS Monitoring in Drinking Water -** On December 27, 2021, EPA published the final fifth Unregulated Contaminant Monitoring Rule, which will require sample collection for 29 PFAS between 2023 and 2025. Consistent with EPA's PFAS Strategic Roadmap, UCMR 5 will provide new data that are critically needed to improve EPA's understanding of the frequency that 29 PFAS (and lithium) are found in the nation's drinking water systems and at what levels.

- **Science Advisory Board Review of Draft PFOA/PFOS Scientific Documents -** In November 2021, EPA asked the agency's Science Advisory Board to review four draft scientific documents including recent scientific data and new analyses that indicate that negative health effects may occur at much lower levels of exposure to PFOA and PFOS than previously understood and that PFOA is a likely carcinogen.

- **Initiation of Two Rulemaking Efforts Under RCRA -** In October 2021, EPA announced important steps toward evaluating the existing data for four PFAS under the Resource Conservation and Recovery Act (RCRA) and strengthening the ability to clean up PFAS contamination across the country through the RCRA corrective action process.

- **Final Human Health Toxicity Assessment for GenX Chemicals -** In October 2021, the Agency published a final human health toxicity assessment for GenX chemicals that was authored by expert career scientists and underwent rigorous external peer review and public comment.

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- **National PFAS Testing Strategy -** In October 2021, EPA announced that the Agency is developing a national PFAS testing strategy that intends to use its Toxic Substances Control Act (TSCA) authorities to require PFAS manufacturers to provide information on PFAS.

- **PFBA Toxicity Assessment Released for Public Comment -** In August 2021, EPA released a draft assessment of the human health hazards of PFBA for public comment and external peer review.

- **Released Preliminary Toxics Release Inventory Data on PFAS -** In July 2021, EPA released the first set of preliminary data for PFAS ever collected under the Toxics Release Inventory (TRI). The agency collected data for more than 170 PFAS and is working to further enhance the quality and quantity of reporting under the TRI by removing certain exemptions and exclusions.

- **Rule Development for designating PFOA/PFOS as CERCLA Hazardous Substances -** In June 2021, EPA restarted the process to designate PFOA and PFOS as hazardous substances, one of the most important steps the Agency can take to increase our understanding of the number and location of PFOA and PFOS releases.

ATTACHMENT A

Drinking Water Health Advisories for PFAS
Fact Sheet for Public Water Systems

Overview

As part of EPA's commitment to safeguard communities from per- and polyfluoroalkyl substances (PFAS), EPA has established **interim updated lifetime drinking water health advisories** for:

1) PFOA (perfluorooctanoic acid); and
2) PFOS (perfluorooctane sulfonate).

EPA has also established **final lifetime drinking water health advisories** for:

3) GenX Chemicals (hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt); and
4) PFBS (perfluorobutane sulfonic acid and its related compound potassium perfluorobutane sulfonate).

The interim health advisories are intended to provide information to states and public water systems until the National Primary Drinking Water regulation for PFAS takes effect.

These health advisories provide drinking water system operators, and state, Tribal, and local officials who have the primary responsibility for overseeing these systems, with information on the health risks of these chemicals, so they can take the appropriate actions to protect their residents. EPA is committed to working with our co-regulators and impacted stakeholders on solutions to reduce public health risks.

Background

What Are PFAS?

PFAS are synthetic chemicals that have been manufactured and used by a broad range of industries since the 1940s. PFAS are used in many applications because of their unique physical properties such as resistance to high and low temperatures, resistance to degradation, and nonstick characteristics. PFAS have been detected worldwide in the air, soil, and water. Due to their widespread use and persistence in the environment, most people in the United States have been exposed to PFAS. There is evidence that continued exposure above specific levels to certain PFAS may cause adverse health effects.

What Are Drinking Water Health Advisories?

Drinking water health advisories provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water. EPA's health advisories are non-enforceable and non-regulatory and provide technical information to drinking water system operators, as well as federal, state, Tribal, and local officials on health effects, analytical methodologies, and treatment technologies associated with drinking water contamination.

EPA's lifetime health advisories identify levels to protect all people, including sensitive populations and life stages, from adverse health effects resulting from a lifetime of exposure to these PFAS in drinking water. They also take into account other potential sources of exposure to these PFAS beyond drinking water (for example, food, air, consumer products, etc.), which provides an additional layer of protection.

EPA's Health Advisories for PFOA, PFOS, GenX Chemicals, and PFBS

PFOA and PFOS

In 2016, EPA published health advisories for PFOA and PFOS based on the evidence available at that time. The science has evolved since then, and EPA is now replacing the 2016 advisories with **interim updated lifetime health advisories** for PFOA and PFOS that are based on human epidemiology studies in populations exposed to these chemicals.

Based on the new data and EPA's draft analyses, the levels at which negative health effects could occur are much lower than previously understood when EPA issued the 2016 health advisories for PFOA and PFOS – including near zero for certain health effects. These new health advisory levels are below the levels at which analytical methods can measure PFOA and PFOS. The minimum reporting levels for measuring these contaminants are in Table 1. The EPA Science Advisory Board is reviewing EPA's analyses, and therefore, these interim health advisory levels are subject to change. However, EPA does not anticipate changes that will result in health advisory levels that are greater than the minimum reporting levels.

GenX Chemicals and PFBS

EPA's final lifetime health advisories for GenX chemicals and PFBS are based on final agency toxicity assessments (2021).

Summary of the Four Health Advisories

Chemical	**Lifetime Health Advisory Level/Value (parts per trillion or ppt)**	**Minimum Reporting Level[1] (ppt)**
PFOA	0.004 (Interim)	4
PFOS	0.02 (Interim)	4
GenX Chemicals	10 (Final)	5
PFBS	2,000 (Final)	3

[1] Unregulated Contaminant Monitoring Rule (UCMR) 5 MRL is the minimum quantitation level that, with 95 percent confidence, can be achieved by capable analysts at 75 percent or more of the laboratories using a specified analytical method. These MRLs are based on the UCMR 5 requirement to use Method 533.

Recommended Actions for Drinking Water Systems

Steps to Assess Contamination

If water sampling results show the presence of PFOA, PFOS, GenX chemicals or PFBS in drinking water above the health advisory levels, EPA recommends that water systems undertake additional sampling to assess the level, scope, and localized source of contamination to inform next steps. EPA also recommends that water systems work with state authorities on this step to determine if they have state requirements or guidance on concentrations of PFOA, PFOS, GenX chemicals and/or PFBS that warrant action or concern. Drinking water systems and public health officials should also provide consumers with information about the levels of PFAS in their drinking water.

Steps to Inform

If water sampling results show the presence of PFOA, PFOS, or levels of GenX chemicals or PFBS in drinking water above the health advisory levels, water systems should notify their state drinking water safety agency (or EPA in jurisdictions for which EPA is the primary drinking water safety agency) and consult with the relevant agency on the best approach to conduct additional sampling. EPA also recommends that water systems work with state authorities to determine if they have state requirements or guidance on concentrations of PFOA,

PFOS, GenX chemicals and/or PFBS that may represent levels of concern. Drinking water systems and public health officials should continue to provide consumers with information about the levels of PFAS in their drinking water.

Steps to Limit Exposure

There are different ways to reduce risks from PFAS. In some cases, drinking water systems may be able to reduce concentrations of PFAS by closing contaminated wells or changing the rates of blending of water sources, where the available quantity of drinking water is not compromised. Systems may also remove PFAS by installing technologies such as granular activated carbon, ion exchange or high-pressure membranes. These technologies can be installed at the treatment plant, or for some smaller systems or for private wells it may be more effective to use point of use devices that have been demonstrated to remove PFAS.

Funding to Address PFAS in Drinking Water

As part of a government-wide effort to confront PFAS pollution, EPA is announcing $1 billion in grant funding through President Biden's Bipartisan Infrastructure Law to help communities that are on the frontlines of PFAS contamination. This funding from the Emerging Contaminants in Small or Disadvantaged Communities Grant Program is the first of $5 billion through the Bipartisan Infrastructure Law that can be used to reduce PFAS in drinking water in communities facing disproportionate impacts. EPA will be reaching out to states and territories with information on how to submit their letter of intent to participate in this grant program to EPA. EPA will also engage with Tribes and Alaskan Native Villages regarding the Tribal set-aside for this grant program. EPA will be issuing guidance later this year detailing eligible uses for the funds and providing more information on how water systems can apply to states for this funding.

This new program complements $3.4 billion in funding that is going through the Drinking Water SRFs and $3.2 billion through the Clean Water SRFs that can also be used to address PFAS in water this year. Water systems are encouraged to contact their state SRF programs to learn more about how to apply for funds and for eligible uses to reduce PFAS. For more information on the SRFs, including a list of state DWSRF contacts, visit: https://www.epa.gov/dwsrf.

Other EPA Actions Related to PFAS and Drinking Water

As outlined in EPA's PFAS Strategic Roadmap, released in October 2021, the Agency is developing proposed National Primary Drinking Water Regulations for Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonic acid (PFOS). EPA expects to issue a proposed rule in Fall 2022 and a final rule in Fall 2023. As EPA undertakes this action, the Agency is also evaluating additional PFAS and considering actions to address groups of PFAS.

In addition, EPA's fifth Unregulated Contaminant Monitoring Rule (UCMR 5) requires monitoring for 29 PFAS between 2023 and 2025. Consistent with EPA's PFAS Strategic Roadmap, UCMR 5 will provide new data that are critically needed to improve EPA's understanding of the frequency that these PFAS are found in the nation's drinking water systems and at what levels. More information on UCMR5 is available at: https://www.epa.gov/dwucmr/fifth-unregulated-contaminant-monitoring-rule

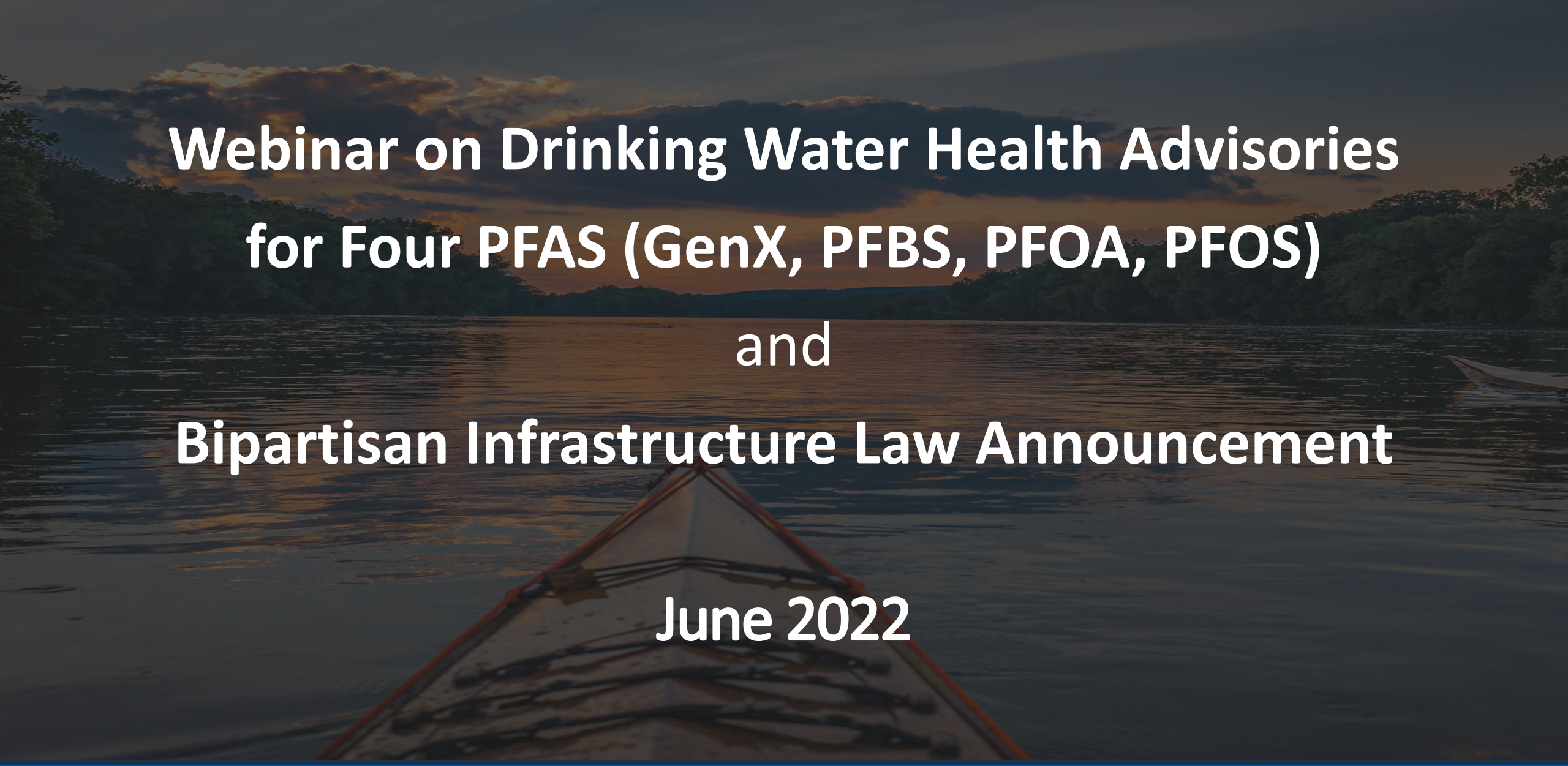
Where Can I Learn More?

- EPA's drinking water health advisories for PFOA, PFOS, PFBS and GenX Chemicals can be found at: https://www.epa.gov/sdwa/drinking-water-health-advisories-has
- EPA's Unregulated Contaminant Monitoring Rules are available at: https://www.epa.gov/dwucmr/
- PFAS NPDWR consultations and stakeholder engagements: https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas
- EPA's PFAS website explains more about our understanding of the chemical group, provides EPA's PFAS

Strategic Roadmap, actions the agency has taken to implement it, and provides other tools and resources related to addressing PFAS: https://www.epa.gov/pfas

- EPA's stewardship program for PFAS related to the Toxic Substances Control Act (TSCA): https://www.epa.gov/reviewing-new-chemicals-under-toxic-substances-control-act-tsca/pfas-low-volume-exemption
- EPA's research activities on PFAS can be found at: https://www.epa.gov/chemical-research/status-epa-research-and-development-pfas
- The Agency for Toxic Substances and Disease Registry's (ATSDR) Perfluorinated Chemicals and Your Health webpage at: https://www.atsdr.cdc.gov/pfas/index.html

ATTACHMENT B



Webinar on Drinking Water Health Advisories for Four PFAS (GenX, PFBS, PFOA, PFOS)

and

Bipartisan Infrastructure Law Announcement

June 2022

EPA United States Environmental Protection Agency

Office of Water

Overview of Today's Webinar

- Context for These Actions: PFAS and PFAS Strategic Roadmap
- What Is a Drinking Water Health Advisory?
- Health Advisory Values for the Four PFAS.
  - Interim Updated Health Advisory Documents for PFOA and PFOS.
  - Final Health Advisory Documents for PFBS and GenX Chemicals.
- Announcement of Bipartisan Infrastructure Law Funding
- Key Questions and Answers about these Actions

Context: Per- and Polyfluoroalkyl Substances (PFAS) Background

PFAS captures a large class of synthetic chemicals.

- Chains of carbon atoms surrounded by fluorine atoms.
- Wide variety of chemical structures.

Used in homes, businesses, and industry since the 1940s.

- Used by a number of industries and found in many consumer products.
- Detected in soil, water, and air samples.
- Most people have been exposed to PFAS.

Known or suspected toxicity.

- Potential developmental, liver, immune, and thyroid effects.
- Some are relatively well understood; many others are not.
- Resist decomposition in the environment and in the human body.

Context: EPA's PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024

- EPA announced the PFAS Strategic Roadmap in October 2021 – a bold, strategic, whole-of-EPA strategy to protect public health and the environment from PFAS.
- The PFAS Strategic Roadmap:
  - Lays out EPA's whole-of-agency approach to tackling PFAS;
  - Sets timelines for concrete actions from 2021 to 2024;
  - Fills a critical gap in federal leadership;
  - Supports states' ongoing efforts; and
  - Builds on the Biden-Harris Administration's commitment to restore scientific integrity.
- Among other actions, the PFAS Roadmap commits EPA to **developing drinking water health advisories** and a **national drinking water regulation**.

What is a Drinking Water Health Advisory?

- Drinking water health advisories:
  - provide information on contaminants that can cause health effects and are known or anticipated to occur in drinking water
  - **are non-enforceable and non-regulatory**
  - include information on analytical methods and treatment
- EPA has developed HAs for ~200 drinking water contaminants.
- An HA level or value is the concentration of a drinking water contaminant for a specific exposure duration, at or below which exposure is not anticipated to lead to adverse human health effects.
  - A **lifetime HA** (such as those EPA recently released) protects all Americans, including sensitive populations and life stages, from adverse health effects resulting from exposure throughout their lives.

Development of Health Advisories

- **Interim HAs for PFOA and PFOS** are based on publicly available EPA *drafts* undergoing EPA Science Advisory Board review (final Aug/Sept) to provide information to public health officials while regulatory process is ongoing.
  - Address pressing need to replace 2016 PFOA/S HAs of 70 ppt based on more recent health effects studies showing that **PFOA/S can impact human health at much lower exposure levels than the 2016 HAs.**
  - Toxicity values **will change** as a result of work to address SAB recommendations. **But the HAs (and MCLGs) are likely to remain below the PFOA and PFOS minimum reporting limit of 4 ppt.**
- **Final HAs for PFBS and GenX chemicals** are based on publicly available, and peer-reviewed final toxicity assessments published in 2021.

Summary of Four PFAS Health Advisories

- EPA is releasing health advisories for four PFAS:
  - **Interim HAs**: PFOA and PFOS
  - **Final HAs**: GenX chemicals (PFOA replacement) and PFBS (PFOS replacement)
- Analytical methods can detect GenX chemicals and PFBS at the HA values but cannot detect PFOA and PFOS at the level of the interim HAs.
- Because of this, EPA recommends that if water systems detect PFOA and PFOS, they take steps such as informing residents, undertaking monitoring, and examining steps to limit exposure.

Chemical	Health Advisory (ppt)	Minimum Reporting Level (MRL)[a] (ppt)
PFOA	0.004 (Interim)	4
PFOS	0.02 (Interim)	4
GenX Chemicals	10 (Final)	5
PFBS	2,000 (Final)	3

[a] Fifth Unregulated Contaminant Monitoring Rule (UCMR 5) MRL is the minimum quantitation level that, with 95 percent confidence, can be achieved by capable analysts at 75 percent or more of the laboratories using a specified analytical method. These MRLs are based on the UCMR 5 requirement to use EPA Analytical Method 533.

Health Advisory Materials Available on EPA's Website

- Drinking water health advisory documents and supporting scientific documents
- Questions and Answers
- Fact sheet for communities
- Fact sheet for public water systems
- Technical fact sheet
- See https://www.epa.gov/sdwa/drinking-water-health-advisories-pfoa-and-pfos

Bipartisan Infrastructure Law and PFAS

The Bipartisan Infrastructure Law provides $10 billion to invest in communities impacted by PFAS and other emerging contaminants:

$4 billion	**Drinking Water State Revolving Fund**
$1 billion	**Clean Water State Revolving Fund**
$5 billion	**Small or Disadvantaged Communities Drinking-Water Grants**

Last Week

- **EPA announced the first $1 billion (of $5 billion) in grants to help small or disadvantaged communities on the front lines of PFAS contamination.**
- **EPA is reaching out to states and territories with information about how to submit a letter of interest to participate**

Responding to Questions on Health Advisories (1)

- **Who can I contact to learn more about PFAS levels in my drinking water?**
  - *If you are concerned about PFAS in your drinking water, EPA recommends you contact your local water utility to learn more about your drinking water and to see whether they have monitoring data for PFAS or can provide any specific recommendations for your community.*
  - *If you own a private well, EPA recommends learning more about how to protect and maintain your well for all contaminants of concern. For information on private wells visit: www.epa.gov/safewater.*

Responding to Questions on Health Advisories (2)

- **My water has measurable levels of PFOA/PFOS or GenX chemicals/PFBS above the health advisory:**
  - **Should I be concerned about my health?**
    - *EPA's lifetime health advisory levels offer information that indicates the safe levels of exposure through drinking water over the course of a person's lifetime to avoid adverse health effects.*
    - *These levels are calculated to offer a margin of protection that also takes into account exposure through other sources beyond drinking water.*
    - *If you are concerned about potential health effects from exposure to these PFAS above the health advisory level, EPA encourages you to contact your doctor or health care professional.*

Responding to Questions on Health Advisories (3)

- **My water has measurable levels of PFOA/PFOS or GenX chemicals/PFBS above the health advisory:**
  - **Should I drink bottled water?**
    - *At this time, EPA is not recommending bottled water for communities based solely on concentrations of these chemicals in drinking water that exceed the health advisory levels.*
    - *If you are concerned about PFAS in your tap water, EPA recommends you contact your local water utility to see whether they can provide any specific recommendations for your community.*

Responding to Questions on Health Advisories (4)

- **My water has measurable levels of PFOA/PFOS or GenX chemicals/PFBS above the health advisory:**
  - **Should I install a filter?**
    - *EPA recommends that communities and water systems that measure any levels of PFOA or PFOS or that measure Gen X chemicals or PFBS at levels higher than the health advisory levels inform their customers and consider taking actions to reduce PFAS levels in their drinking water by installing treatment technologies or obtaining a new uncontaminated source of drinking water, if available.*
    - *Individuals who are concerned about PFAS in their wells or in their homes may consider in-home water treatment filters that are certified to lower the levels of PFAS in water.*
    - *EPA has information available on these filters on EPA's website.*
    - *If you are concerned about potential health effects from exposure to these PFAS above the health advisory level, contact your doctor or health care professional.*

Responding to Questions on Health Advisories (5)

- **Should I be concerned even if PFOA/PFOS are not detected in my drinking water?**
  - *The lower the levels of PFOA and PFOS, the lower the risk. This means that while PFOA and PFOS may be present in drinking water in trace concentrations that cannot be measured, water provided by these systems that test but do not detect PFOA or PFOS is of lower risk than if they are found at measurable levels.*
  - *EPA recommends that public water systems that find PFOA or PFOS in their drinking water take steps to inform customers, undertake additional sampling to assess the level, scope, and source of contamination, and examine steps to limit exposure. While water systems may not be able to eliminate all risks from PFOA and PFOS, they can successfully reduce those risks.*

Responding to Questions on Health Advisories (6)

- **What treatment technologies exist to remove PFOA, PFOS, GenX chemicals, and PFBS?**
  - *Activated carbon, anion exchange and high-pressure membranes have all been demonstrated to remove PFAS from drinking water systems. These treatment technologies can be installed at a water system's treatment plant and are also available in-home filter options.*
  - *Each of the four Health Advisory documents identifies the treatment technologies that have been demonstrated to remove the specific PFAS and the factors that impact performance of the technologies.*
  - *Learn more about these treatment technologies.*

Responding to Questions on Health Advisories (7)

- **Is EPA going to establish a national drinking water regulation for PFOA, PFOS and additional PFAS?**
  - *EPA is developing a proposed National Drinking Water Regulation for publication by the end of 2022 for PFOA and PFOS. As EPA undertakes this action, the agency is also evaluating additional PFAS and considering regulatory actions to address groups of PFAS. EPA anticipates finalizing the rule by the end of 2023.*
  - *The proposal will include both a non-enforceable Maximum Contaminant Level Goal (MCLG) and an enforceable standard, or Maximum Contaminant Level (MCL) or Treatment Technique.*
  - *The MCLG is the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, allowing an adequate margin of safety.*
  - *The enforceable standard is set as close as feasible to MCLG. EPA considers the ability to measure and treat a contaminant as well as costs and benefits in setting the enforceable standard.*

Responding to Questions on Health Advisories (8)

- **What if my state already has a different regulatory or health advisory level for one of these chemicals?**
  - *EPA is committed to working with state agencies and drinking water systems on solutions to reduce public health risks posed by exposure to these PFAS.*
  - *EPA's health advisories reflect our analysis of the best available, peer-reviewed science and provide non-regulatory and non-enforceable information to assist federal, state, Tribal and local officials, and managers of public or community drinking water systems in protecting public health when spills or contamination situations occur.*
  - *States may issue different values, including regulatory levels, based on their own analyses and based on their primacy role under the Safe Drinking Water Act.*
  - *EPA recommends that water systems work with state authorities to determine if they have state requirements or guidance on concentrations of PFOA, PFOS, GenX chemicals, or PFBS that warrant action or concern.*

Next Steps

- Consistent with the PFAS Roadmap, EPA is developing a proposed national primary drinking water regulation for PFOA and PFOS
  - Also evaluating additional PFAS chemicals and considering groups of PFAS as supported by the best-available science
  - Will utilize final input from the Science Advisory Board to develop the proposed Maximum Contaminant Level Goals (MCLGs) – the non-enforceable health-based goals to inform the standard-setting process.
  - The enforceable standard (Maximum Contaminant Levels (MCLs) or treatment technique) will be set as close as feasible to the MCLG.
    - EPA considers the feasibility of measuring and treating the contaminant in setting the standard as well as the costs and benefits.
- Expect a proposed rule in fall 2022 and a final rule in fall 2023

Related EPA and Federal PFAS Actions

- **These actions build on the other important and meaningful actions in EPA's PFAS Strategic Roadmap to safeguard communities from PFAS contamination:**
  - **December 2021:** Finalizing the Fifth Unregulated Contaminant Monitoring Rule to improve understanding of the frequency and levels at which 29 PFAS are found in the nation's drinking water
  - **April 2022:** Publishing draft aquatic life water quality criteria for PFOA and PFOS, and issuing a memo to proactively address PFAS in Clean Water Act permitting
  - **May 2022:** Adding five PFAS to EPA's contaminated site cleanup tables
  - **June 2022:** Issuing the first Toxic Substances Control Act PFAS test order under the National PFAS Testing Strategy.
- **On June 15, the White House announced new Biden-Harris Administration actions to restrict PFAS from entering Americans' water, air, land, and food, including coordinated actions from EPA and our Federal partners (HHS, USDA, DHS, and DOD)**

Moving Forward

- EPA is committed to partnering with federal agencies, states, Tribes, territories, and water utilities to address PFAS in drinking water.
- These health advisories represent a key data point that federal, state, and local agencies can use to inform decisions on water quality monitoring, optimization of existing technologies that reduce PFAS, new investments in controls, and regulatory approaches.

ATTACHMENT C

State of New Mexico

Michelle Lujan Grisham
Governor

June 23, 2021

Dear Administrator Regan:

Attached is my petition to the Environmental Protection Agency requesting a timely listing of per and polyfluorinated substances (PFAS) as a class of chemicals within Subpart C of the Resource Conservation and Recovery Act (RCRA), or in the alternative, list individual PFAS chemicals under RCRA. PFAS chemicals present an imminent and substantial endangerment to human health and the environment. I submit this petition pursuant to 42 U.S.C. § 6921(c), and I look forward to your response on or before September 21, 2021.

Thank you for your consideration of this petition and prompt action to protect the people of my state and the United States as a whole by providing a uniform regulatory process for PFAS regulation.

If your staff have any questions regarding this petition, please contact James Kenney, Cabinet Secretary, New Mexico Environment Department, at james.kenney@state.nm.us or (505) 470-6161.

Sincerely,

Michelle Lujan Grisham

Governor Michelle Lujan Grisham

cc: James Kenney, Cabinet Secretary, New Mexico Environment Department

I. Introduction

My name is Michelle Lujan Grisham, and I serve as the Governor of the State of New Mexico. Pursuant to 42 U.S.C. § 6921(c), I submit this Petition to the Administrator of the U.S. Environmental Protection Agency ("EPA") requesting listing of the class of per- and polyfluoroalkyl substances ("PFAS") as a hazardous waste pursuant to Subtitle C of the Resource Conservation and Recovery Act ("RCRA"), or in the alternative, list individual PFAS chemicals under RCRA known to have harmful effects to humans and the environment. I implore EPA to do what is immediately necessary to protect the people and environment of the United States from the real and potentially devastating effects of exposure to PFAS.

Without regulatory action addressing PFAS chemicals from their manufacturing to disposal, the people of the United States will continue to remain at risk from the toxic characteristics of this class of chemicals. I recognize that other entities have submitted petitions to EPA requesting that the Administrator list PFAS as hazardous waste. Specifically, the Environmental Law Clinic at the University of California, Berkeley ("UCB Petition") and the Public Employees for Environmental Responsibility ("PEER Petition") both filed petitions that are currently pending before EPA.[1] Those organizations have provided a wealth of technical data as well as individualized instances of PFAS impacts across the country. I urge the Administrator to consider these petitions in conjunction with mine and expeditiously act to protect the citizens of the United States from the present and future impacts from unregulated PFAS and GenX manufacture, use, disposal, and contamination.

Through the New Mexico Environment Department ("NMED"), I am responsible for protecting and restoring the environment and fostering a healthy and prosperous New Mexico for present and future generations.[2] NMED administers New Mexico's Hazardous Waste Act, NMSA 1978, Sections 74-4-1 to -14, and New Mexico's RCRA program.

New Mexico has demonstrated and documented PFAS contamination in several areas; most of these sites are directly related to U.S. Department of Defense ("DOD") activities at Cannon and Holloman Air Force Bases. These actions have directly contaminated or threatened dairy farms surrounding Cannon Air Force Base, areas on the bases themselves, and Lake Holloman, thereby causing substantial harm to human health, New Mexico's agricultural industries, recreation, and tourism.

II. Statement of Need and Justification

Listing of PFAS under RCRA is absolutely necessary to provide EPA and states the framework to regulate PFAS from the cradle to the grave. Without a uniform regulatory process addressing PFAS from manufacture to disposal, states like New Mexico will be left attempting to use a patchwork of statutory and regulatory authorities that may or may not provide enough oversight

[1] https://www.epa.gov/sites/production/files/2020-04/documents/pfas_petition_for_haz_waste_jan_2020_metadata_added.pdf; https://eee.epa.gov/sites/production/files/2020-04/documents/peer_pfas_rulemaking_petition_metadata_added.pdf.
[2] Testimony of James Kenney, U.S. Senate Committee on Environment and Public Works, June 9, 2021, https://www.epw.senate.gov/public/?a=Files.Serve&File_id=0466E61D-85E2-4678-8196-3C2EA1025351.

to protect workers, consumers, users, and disposers of PFAS from the known harms associated with exposure.

PFAS are a large class of synthetic fluorinated organic compounds.[3] Each of these chemicals utilizes a chain of carbon atoms which may be fully (per) or partly (poly) fluorinated.[4] Because of their ability to repel oil and water, manufacturers produced PFAS for a variety of industries and products, including surface treatments for soil, stain, and water resistance; surface treatments of textiles, paper, and metals; and for specialized applications, including fire suppression.[5] In 2014, EPA considered PFAS to be emerging contaminants, the effects of which were not completely understood.[6] Since that time we have continued to learn more about the characteristics and dangers of PFAS for human health and the environment.

The dangers are becoming all too evident. Exposure to certain PFAS has been associated with cancer, diabetes, liver damage, high cholesterol, obesity, thyroid disease, asthma, immune system dysfunction, reduced fertility, low birth weight, and effects on children's cognitive and neurobehavioral development.[7] The toxicity, mobility and bioaccumulation potential of Perfluorooctanesulfonic acid ("PFOS") and Perfluorooctanoic acid ("PFOA"), as well as other PFAS, result in adverse effects on the environment and human health,[8] and when more than one PFAS compound is present, those adverse effects become more severe.[9] New Mexico recognized the dangers of PFAS in 2018 when its Water Quality Control Commission added three PFAS to the list of toxic pollutants as they relate to ground water and surface water. 20.6.2.3103(A)(2) NMAC and 20.6.2.7(T)(2)(s) NMAC.[10]

New Mexico faces particular impact from the use of Aqueous Film Forming Foam ("AFFF"), the concentrate of which contains PFOA and PFOS. [11] AFFF is a firefighting foam developed in the 1960s to be used for flammable liquid fire extinguishment.[12] Training with AFFF is a critical part of proper AFFF use, and my state has contaminated areas directly associated with those training activities. AFFF was primarily used on Air Force installations, including Cannon and Holloman Air Force Bases, at fire training areas, but has also been used, stored, or released in other locations from

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[3] *See* U.S. EPA Technical Fact Sheet—PFOS and PFOA (Nov. 2017), *available at* https://www.epa.gov/sites/production/files/2017-12/documents/ffrrofactsheet_contaminants_pfos_pfoa_11-20-17_508_0.pdf.
[4] *Id*.
[5] *Id*.
[6] U.S. EPA, *Emerging Contaminants Fact Sheet – Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)* (March 2014), https://nepis.epa.gov/Exe/ZyPDF.cgi/P100LTG6.PDF?Dockey=P100LTG6.PDF.
[7] See: https://www.epw.senate.gov/public/_cache/files/2/2/22ca7c4b-b1dc-4a12-9264-7a4f16608933/BF2D70A4FB747A3F61E584CC30D58D0A.birnbaum-testimony-03.28.2019.pdf
[8] ATDSR, *An Overview of Perfluoroalkyl and Polyfluoroalkyl Substances and Interim Guidance for Clinicians Responding to Patient Exposure Concerns*, at 1 (June 7, 2017), *available at* https://www.atsdr.cdc.gov/pfc/docs/pfas_clinician_fact_sheet_508.pdf.
[9] *See* U.S. Dep't of Health and Human Services and Centers for Disease Control and Prevention, *Fourth National Report on Human Exposure to Environmental Chemicals*, Updated Tables (March 2018), *available at* https://www.cdc.gov/exposurereport/pdf/FourthReport_UpdatedTables_Volume1_Mar2018.pdf.
[10] https://www.srca.nm.gov/parts/title20/20.006.0002.html
[11] Although manufacturers of AFFF in the United States now use PFAS other than PFOS, early studies of the replacement PFAS, including what are known as C6 products, indicate that they are nearly as harmful.
[12] U.S. EPA, *Emerging Contaminants Fact Sheet – Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)*, *supra* note 4, at 2.

hangar fire suppression systems, at firefighting equipment testing and maintenance areas, and during emergency response actions for fuel spills and mishaps.

One specific example of contamination due to PFAS use and disposal in southern New Mexico is Lake Holloman, located about one mile from Holloman Air Force Base. Lake Holloman has been recognized as a state Watchable Wildlife viewing area since 1996. This area provides foraging and nesting habitat for over 73 species of migrating and resident wetland birds. It is the most important area in the Tularosa Basin for shorebirds like Wilson's phalarope and snowy plovers.[13] The results of recent sampling from Lake Holloman taken by the New Mexico Department of Health with the assistance of NMED confirm extremely high levels of PFAS throughout the lake that put the State's citizens and natural resources at risk of harm. Specifically, PFOA was detected at levels as high as 5,900,000 parts per trillion (ppt), more than 84,000 times the EPA's health advisory of 70 ppt, and PFOS was detected as high as 1,600,000 ppt, more than 22,000 times the EPA health advisory.

In spite of the known and continuing contamination at Lake Holloman and multiple other locations, New Mexico faces continued roadblocks from federal facilities who refuse to act quickly to remediate PFAS contamination. In particular, even though PFAS meets the statutory definition of a hazardous waste, the DOD filed an action in federal district court challenging New Mexico's legal authority to regulate PFAS pursuant to RCRA and attempting to reshape congressional intent and authority given to EPA and the states. Because of this unwarranted challenge, New Mexico continues to expend our limited resources defending its ability to regulate, rather than spending those resources on ensuring remediation of the PFAS contamination and protection of human health and the environment.

From an economic perspective, agriculture is an integral part of New Mexico's cultural and economic identity. We are the top state in the country in chile production, second in pecans, in the top 10 in milk production and have the largest average dairy herd size in the nation. According to the most recent U.S. Census of Agriculture, there are 24,800 farms in our state and agriculture and food products are among New Mexico's top five exports. Our agricultural industry employs over 23,000 people in the state with cash receipts approaching $3 billion annually. Yet, PFAS is putting our cultural and economic identity at risk.

In October 2018, a Curry County, New Mexico dairy farmer that borders Cannon Air Force Base learned his water was contaminated with PFAS. The milk was tested and the New Mexico Department of Agriculture worked with the U.S. Food and Drug Administration (FDA) to risk warning levels for PFAS in milk. The milk was immediately pulled off the market. Since then, the dairy farmer has had to destroy tens of millions of gallons of milk, losing millions of dollars in revenue that otherwise would have recirculated in our state and national economy. This economic impact is in addition to the as yet unknown health impact the dairy farmer and his family may endure because of the DOD's PFAS contamination of the water. New Mexico's agricultural reputation is essential to both the nation's milk supply and our state economy. Other farms near Cannon Air Force Base could face a similar catastrophic fate. Given that Curry County is one of the nation's top milk producers, we will continue to safeguard our agricultural products from PFAS contamination through

[13] *See* Lake Holloman Recreational Area Development Environmental Assessment (Aug. 2009), *available at* https://apps.dtic.mil/dtic/tr/fulltext/u2/a636343.pdf.

prevention and analytical testing in the absence of clear national standards from the EPA and through our efforts to get the DOD to clean up the water it has contaminated with PFAS.

Tourism is also essential to New Mexico's economy. Our Tourism Department reports that we have a high percentage of out-of-state visitors who come to New Mexico for outdoor recreation activities, such as river rafting, fly fishing, camping, boating and wildlife viewing along our State's scenic waters. Visitors spent $846 million on recreation in New Mexico in 2017, supporting 13,000 direct jobs. This is more than twice as many jobs as supported by the energy and mining sectors in our state, combined. The New Mexico Department of Game and Fish reports there are 160,000 anglers who fish in New Mexico, spending $268 million on these activities annually. The nationally leading New Mexico Outdoor Recreation Division, created through legislation in 2019, is tasked with increasing outdoor recreation-based economic development, tourism and ecotourism; recruiting new outdoor recreation business to New Mexico; and promoting education about outdoor recreation's benefits to public health.

As an example of how PFAS contamination could impact tourism, extremely high levels of PFAS were detected in Lake Holloman as discussed above, where PFAS was released into the environment through decades of the USAF's use of AFFF. Lake Holloman is considered an important habitat for birds, and also serves as a valuable recreational resource to the community surrounding the base, as it is used for boating, bird watching, and camping. In 2019, the New Mexico Attorney General requested the USAF close Lake Holloman and the New Mexico Department of Health directed the public to avoid all contact with the water in Lake Holloman, including drinking or swimming, in order to protect the public from the ongoing PFAS contamination.

Finally, from a consumer standpoint, water or stain resistant sprays containing PFAS are offered to customers by some retailers who sell furniture, rugs and textiles. When these household goods are purchased, retailers offer and apply water- or stain-resistant sprays containing PFAS. Often, the water- or stain-resistant application takes place at a retail store or local warehouse prior to the consumer picking up their purchase. The retailer applies the spray to the household product, cleans up any waste, and disposes of any waste generated from the process. The use of these chemicals by retailers is largely unregulated and may present a risk to consumers, employees, municipal wastewater treatment facilities, and solid waste management facilities. Ultimately, the consumer may not be aware that their stain- or water-resistant furniture, rug or textile may contain PFAS chemicals. This area needs greater study, disclosure and possibly regulation to prevent human and wildlife exposure to PFAS.

III. RCRA is the Correct Method of Regulation for PFAS

As our body of PFAS-related knowledge grows, it is becoming clear that the breadth and threat presented by PFAS requires listing as a hazardous waste pursuant to RCRA Subpart C. Subpart C is appropriate because PFAS demonstrates the characteristics of a toxic waste. Listing as a hazardous waste would allow New Mexico and other similarly situated states to implement regulations uniformly and through existing local programs.

Congress enacted RCRA in 1976 in response to "a rising tide of scrap, discarded, and waste materials" that had become a matter of national concern. In enacting RCRA, Congress declared it a national policy "that, wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible. Waste that is nevertheless generated should be treated,

stored, or disposed of so as to minimize the present and future threat to human health and the environment." Congress recognized, however, that "the collection of and disposal of solid wastes should continue to be primarily the function of State, regional, and local agencies. …", and RCRA allows any state to administer and enforce a hazardous waste program subject to authorization from the EPA. EPA authorized New Mexico's hazardous waste program pursuant to RCRA in 1985. 40 C.F.R. § 242.1601(a). EPA delegated New Mexico primary responsibility for enforcing its hazardous waste management program. 40 C.F.R. § 272.1601(b).

By definition, a solid waste is, "any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial commercial, mining, and agriculture operations, and from community activities." 42 U.S.C. § 6903(27). A hazardous waste is "a solid waste which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed or, or otherwise managed." 42 U.S.C. § 6903(5). Notably, the definition of hazardous waste includes solid wastes that pose a threat to human health and the environment as well as those that *may* pose a threat. *American Chemistry Council v. EPA*, 337 F.3d 1060, 1064 (D.C. Cir. 2003) (emphasis added). As stated above, PFAS are dangerous; specifically, PFAS are toxic. New Mexicans have experienced this first-hand. In my state, discarded AFFF containing PFAS directly caused groundwater contamination. This contamination led to ongoing direct threats to human health and the environment.

In order for a waste to be considered characteristic for toxicity, it must contain one of the constituents listed in Table 1 of 261.24. 40 C.F.R. § 261.24(a). Federal regulations require that the Administrator shall list a solid waste as a hazardous waste upon determining that the solid waste exhibits any of the characteristics of hazardous waste identified in Subpart C of RCRA; it is found to be fatal to human in low doses; or it contains any of the listed toxic constituents in Appendix VIII combined with consideration of factors listed in (a)(3)(i) – (xi). 40 C.F.R. § 261.11(a)(1) – (3). Additionally, substances are only placed on Appendix VIII if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms.

Fluorine is listed as a toxic constituent in Appendix VIII to 40 C.F.R. part 261. As mentioned above and more thoroughly demonstrated by UCB and PEER in their petitions, at their foundation, PFAS include a chain of carbon atoms bonded to fluorine atoms. Both UCB and PEER provide a thorough and well-reasoned explanation as to how PFAS meets the criteria for listing required by 40 C.F.R. § 261.11, particularly 40 C.F.R. § 261.11(a)(3)(i) – (xi). Based on their well explained and reasoned arguments, I hereby incorporate by reference Sections IV. through VI. of the UCB Petition and Sections III. through V. of the PEER Petition and the associated legal and scientific arguments made in those sections. With this information, EPA should have sufficient evidence and data to begin the process of amending Table 1 of 40 C.F.R. § 261.24 to include PFAS. This will allow uniform and meaningful regulation of PFAS. Furthermore, the scientific record provides that PFAS could be a candidate for listing in Appendix VIII itself.

Further, the Administrator has the authority to list classes of hazardous waste when there is reason to believe that individual wastes within this class or type of waste typically or frequently are hazardous under the definition of hazardous waste found at 40 C.F.R. § 261.5(c). In their petitions UCB and PEER provide a thorough and extensive discussion explaining the consistent toxic characteristics of many of the various PFAS. Based on this reasoning, I request that the Administrator not only list individual PFAS as hazardous wastes, including PFOS and PFOA, but go further and list PFAS as a class of chemicals, which will cover the thousands of PFAS variations.

IV. Conclusion

Without consistent and standardized regulation of such a large class of chemicals as PFAS, the United States will continue to experience wide scale and unrestricted manufacture, use, and disposal of these chemicals. It is incumbent upon the Administrator to act quickly to solidify this necessary tool for the states to be able to take concerted and effective action to prevent and, where necessary, compel clean-up of PFAS contamination. My state needs this designation in order to act quickly and protect it citizens, its water, its economy, and its environment from further contamination by this state's largest PFAS polluters.

ATTACHMENT D

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 26 2021

THE ADMINISTRATOR

The Honorable Michelle Lujan Grisham
Governor of New Mexico
New Mexico State Capitol
490 Old Santa Fe Trail, Room 400
Santa Fe, New Mexico 87501

Dear Governor Lujan Grisham:

With this letter, the U.S. Environmental Protection Agency is acting upon your petition of June 23, 2021. In the petition, you requested that perfluoroalkyl and polyfluoroalkyl substances be listed as hazardous wastes, either individually or as a class, under Subtitle C of the Resource Conservation and Recovery Act.

The EPA and the Biden-Harris Administration appreciate your leadership on this issue and share your concerns about the risks of PFAS-containing wastes in New Mexico and across the country. Our agency is committed to working in close collaboration with states to protect Americans from these chemicals, which can cause severe health problems and persist in the environment once released, posing a serious threat across rural, suburban and urban areas. We are proud to be part of President Biden's governmentwide approach to tackling PFAS.

On October 18, 2021, the EPA announced a comprehensive Strategic Roadmap to deliver protections from PFAS by advancing concrete actions that address the full lifecycle of these chemicals. In response to your petition the EPA will be initiating the rulemaking process for two additional actions to address PFAS under RCRA and intends to propose a partial grant of your petition.

First, the EPA will initiate the rulemaking process to propose adding PFOA, PFOS, PFBS and GenX as RCRA Hazardous Constituents under 40 CFR Part 261 Appendix VIII by evaluating the existing data for these chemicals and establishing a record to support such a proposed rule. RCRA Hazardous Constituents are subject to corrective action requirements at hazardous waste treatment, storage, and disposal facilities, and such a listing would also be a fundamental part of any subsequent hazardous waste listing determination. Specifically, the addition of one or more PFAS chemicals to 40 CFR Part 261 Appendix VIII is a necessary component of a hazardous waste listing determination under 40 CFR 261.11(a)(3), and efforts undertaken to add PFAS constituents to Appendix VIII would help advance any longer-term process to make a hazardous waste listing determination in the future.

Second, we will initiate a rulemaking to clarify in our regulations that the RCRA Corrective Action Program has the authority to require investigation and cleanup for wastes that meet the statutory definition of hazardous waste, as defined under RCRA section 1004(5). This modification would clarify that emerging contaminants such as PFAS can be addressed through RCRA corrective action.

The EPA is committed to working collaboratively with our state partners to advance solutions that stand the test of time, and I appreciate your engagement on these important issues. They are critical not only to the protection of communities in New Mexico, but across our nation.

You are most welcome to reach out to my office if you would like to discuss this further, or your staff may work with Deputy Associate Administrator for Intergovernmental Relations Casey Katims at katims.casey@epa.gov.

In the meantime, I look forward to staying in close contact as these efforts move forward.

Sincerely yours,

Michael S. Regan

cc: Mr. James C. Kenney
Secretary
New Mexico Environment Department

Mr. Barry N. Breen
Acting Assistant Administrator
Office of Land and Emergency Management

Carlton Waterhouse, Ph.D.
Deputy Assistant Administrator
Office of Land and Emergency Management

ATTACHMENT E

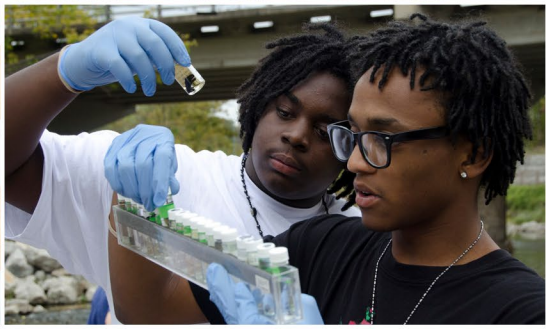
United States
Environmental Protection
Agency

PFAS Strategic Roadmap: EPA's Commitments to Action 2021–2024









A Note from EPA Administrator Michael S. Regan

For far too long, communities across the United States have been suffering from exposure to PFAS pollution. As the science has continued to develop, we know more now than ever about how PFAS build up in our bodies over long periods of time, and how they can cause adverse health effects that can devastate families. As Secretary of the North Carolina Department of Environmental Quality, I saw this devastation firsthand. For years, the Cape Fear River had been contaminated by these persistent "forever" chemicals. As I spoke with families and concerned citizens, I could feel their suffering and frustration with inaction. I knew my job was going to be trying and complex. But we were able to begin to address this pervasive problem by following the science, following the law, and bringing all stakeholders to the table.

As one of my earliest actions as EPA Administrator, I established the EPA Council on PFAS and charged it with developing an ambitious plan of action to further the science and research, to restrict these dangerous chemicals from getting into the environment, and to immediately move to remediate the problem in communities across the country. EPA's PFAS strategic roadmap is our plan to deliver tangible public health benefits to all people who are impacted by these chemicals—regardless of their zip code or the color of their skin.

Since I've been EPA Administrator, I have become acutely aware of the invaluable and central role EPA has in protecting public health in America. For more than 50 years, EPA has implemented and enforced laws that protect people from dangerous pollution in the air they breathe, the water they drink, and the land that forms the foundation of their communities. At the same time, my experience in North Carolina reinforced that EPA cannot solve these challenges alone. We can only make progress if we work in close collaboration with Tribes, states, localities, and stakeholders to enact solutions that follow the science and stand the test of time. To affect meaningful change, engagement, transparency, and accountability will be critical as we move forward.

This roadmap will not solve our PFAS challenges overnight. But it will turn the tide by harnessing the collective resources and authority across federal, Tribal, state, and local governments to empower meaningful action now.

I want to thank the co-chairs of the EPA Council on PFAS—Radhika Fox, Assistant Administrator for Water, and Deb Szaro, Acting Regional Administrator in Region 1—for their leadership in guiding the development of this strategy.

Let's get to work.

Administrator Michael S. Regan

PFAS Council Members

The following policy and technical leaders serve as members of the EPA Council on PFAS. They have been instrumental in working with their respective offices to develop the Agency's strategy. The Council will continue to coordinate across all EPA offices and Regions to accelerate progress on PFAS.

Co-Chairs

Radhika Fox, Assistant Administrator for Water

Deb Szaro, Acting Regional Administrator, Region 1

Office of the Administrator

John Lucey, Special Assistant to the Administrator

Andrea Drinkard, Senior Advisor to the Deputy Administrator

Office of Air and Radiation

John Shoaff, Director, Air Policy and Program Support

Office of Chemical Safety and Pollution Prevention

Jeffrey Dawson, Science Advisor

Tala Henry, Deputy Director, Pollution Prevention and Toxics

Office of Enforcement and Compliance Assurance

Cyndy Mackey, Director, Site Remediation Enforcement

Karin Leff, Director, Federal Facilities Enforcement

Office of General Counsel

Dawn Messier, Deputy Associate General Counsel, Water

Jen Lewis, Deputy Associate General Counsel, Solid Waste and Emergency Response

Office of Land and Emergency Management

Dana Stalcup, Deputy Director, Superfund Remediation and Technology Innovation

Dawn Banks, Director, Policy Analysis and Regulatory Management

Office of Research and Development

Tim Watkins, Acting Director, Center for Public Health and Environmental Assessment

Susan Burden, PFAS Executive Lead

Office of Water

Jennifer McLain, Director, Ground Water and Drinking Water

Deborah Nagle, Director, Science and Technology

Zachary Schafer, Senior Advisor to the Assistant Administrator

EPA Regions

John Blevins, Acting Regional Administrator, Region 4

Tera Fong, Water Division Director, Region 5

Contents

Introduction

Harmful per- and poly-fluoroalkyl substances (PFAS) are an urgent public health and environmental issue facing communities across the United States. PFAS have been manufactured and used in a variety of industries in the United States and around the globe since the 1940s, and they are still being used today. Because of the duration and breadth of use, PFAS can be found in surface water, groundwater, soil, and air—from remote rural areas to densely-populated urban centers. A growing body of scientific evidence shows that exposure at certain levels to specific PFAS can adversely impact human health and other living things. Despite these concerns, PFAS are still used in a wide range of consumer products and industrial applications.

Every level of government—federal, Tribal, state, and local—needs to exercise increased and sustained leadership to accelerate progress to clean up PFAS contamination, prevent new contamination, and make game-changing breakthroughs in the scientific understanding of PFAS. The EPA Council on PFAS developed this strategic roadmap to lay out EPA's whole-of-agency approach to addressing PFAS. To deliver needed protections for the American people, the roadmap sets timelines by which the Agency plans to take specific actions during the first term of the Biden-Harris Administration. The strategic roadmap builds on and accelerates implementation of policy actions identified in the Agency's 2019 action plan and commits to bolder new policies to safeguard public health, protect the environment, and hold polluters accountable.

The risks posed by PFAS demand that the Agency attack the problem on multiple fronts at the same time. EPA must leverage the full range of statutory authorities to confront the human health and ecological risks of PFAS. The actions described in this document each represent important and meaningful steps to safeguard communities from PFAS contamination. Cumulatively, these actions will build upon one another and lead to more enduring and protective solutions.

EPA's integrated approach to PFAS is focused on three central directives:

- **Research.** Invest in research, development, and innovation to increase understanding of PFAS exposures and toxicities, human health and ecological effects, and effective interventions that incorporate the best available science.
- **Restrict.** Pursue 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.** Broaden and accelerate the cleanup of PFAS contamination to protect human health and ecological systems.

The Agency's Approach

EPA's approach is shaped by the unique challenges to addressing PFAS contamination. EPA cannot solve the problem of "forever chemicals" by tackling one route of exposure or one use at a time. Rather, EPA needs to take a lifecycle approach to PFAS in order to make meaningful progress. PFAS pollution is not a legacy issue—these chemicals remain in use in U.S. commerce. As such, EPA cannot focus solely on cleaning up the downstream impacts of PFAS pollution. The Agency needs to also look upstream to prevent new PFAS contamination from entering air, land, and water and exposing communities. As the Agency takes tangible actions both upstream and downstream, EPA will continue to pursue a rigorous scientific agenda to better characterize toxicities, understand exposure pathways, and identify new methods to avert and remediate PFAS pollution. As EPA learns more about the family of PFAS chemicals, the Agency can do more to protect public health and the environment. In all this work, EPA will seek to hold polluters accountable for the contamination they cause and ensure disadvantaged communities equitably benefit from solutions.

Consider the Lifecycle of PFAS

EPA will account for the full lifecycle of PFAS, their unique properties, the ubiquity of their uses, and the multiple pathways for exposure.

PFAS are a group of synthetic chemicals that continue to be released into the environment throughout the lifecycle of manufacturing, processing, distribution in commerce, use, and disposal. Each action in this cycle creates environmental contamination and human and ecological exposure. Exacerbating this challenge is that some PFAS persist in the environment. PFAS are synthesized for many different uses, ranging from firefighting foams, to coatings for clothes and furniture, to food contact substances. Many PFAS are also used in industrial processes and applications, such as in the manufacturing of other chemicals and products. PFAS can be released into the environment during manufacturing and processing as well as during industrial and commercial use. Products known to contain PFAS are regularly disposed of in landfills and by incineration, which can also lead to the release of PFAS. Many PFAS have unique properties that prevent their complete breakdown in the environment, which means that even removing PFAS from contaminated areas can create PFAS-contaminated waste. This is currently unregulated in most cases.

Get Upstream of the Problem

EPA will bring deeper focus to preventing PFAS from entering the environment in the first place—a foundational step to reducing the exposure and potential risks of future PFAS contamination.

Intervening at the beginning of the PFAS lifecycle—before they have entered the environment—is a foundational element of EPA's whole-of-agency approach. While hundreds of individual PFAS compounds are in production and use,[i] a relatively

modest number of industrial facilities produce PFAS feedstock,[ii] and a relatively narrow set of industries directly discharge PFAS into water or soil or generate air emissions in large quantities.[iii] This context helps to pinpoint clear opportunities to restrict releases into the environment. EPA will use its authorities to impose appropriate limitations on the introduction of new unsafe PFAS into commerce and will, as appropriate, use all available regulatory and permitting authorities to limit emissions and discharges from industrial facilities. This approach does not eliminate the need for remediation where releases and exposures have already occurred, but it is a critical step to preventing ongoing concentrated contamination of soil and surface and groundwaters.

Hold Polluters Accountable

EPA will seek to hold polluters and other responsible parties accountable for their actions and for PFAS remediation efforts.

Many communities and ecosystems are continuously exposed to PFAS in soil, surface water, groundwater, and air. Areas can be exposed due to their proximity to industrial sites, airports, military bases, land where biosolids containing PFAS have been applied, and other sites where PFAS have been produced or used and disposed of for specific and repeated purposes. When EPA becomes aware of a situation that poses a serious threat to human health or the environment, the Agency will take appropriate action. For other sites where contamination may have occurred, the presence of certain PFAS in these environments necessitates coordinated action to understand what specific PFAS have been released, locations where they are found, where they may be transported through air, soil, and water in the future, and what remediation is necessary. EPA will seek to hold polluters and other responsible parties accountable for their actions, ensuring that they assume responsibility for remediation efforts and prevent any future releases.

Ensure Science-Based Decision-Making

EPA will invest in scientific research to fill gaps in understanding of PFAS, to identify which additional PFAS may pose human health and ecological risks at which exposure levels, and to develop methods to test, measure, remove, and destroy them.

EPA's decisions regarding PFAS will be grounded in scientific evidence and analysis. The current body of scientific evidence clearly indicates that there are real, present, and significant hazards associated with specific PFAS, but significant gaps remain related to the impacts of other PFAS on human health and in the environment. Regulatory development, either at the state or federal level, would greatly benefit from a deeper scientific understanding of the exposure pathways, toxicities, and potential health impacts of less-studied PFAS. The federal government, states, industry, academia, and nonprofit organizations—with appropriate coordination and resources—have the capability to conduct this necessary research.

EPA is conducting new research to better understand the similar and different characteristics of specific PFAS and whether and how to address groups and categories of PFAS. The Agency is focused on improving its ability to address multiple chemicals at once, thereby accelerating the effectiveness of regulations, enforcement actions, and the tools and technologies needed to remove PFAS from air, land, and water.

To break the cycle of contamination and exposure from PFAS, additional research is needed to identify and/or develop techniques to permanently dispose of or destroy these durable compounds. Government agencies, industry, and private laboratories need tools and validated methods to measure PFAS in air, land, and water to identify pollution sources, demonstrate facility compliance, hold polluters accountable, and support communities during and after cleanups.

Prioritize Protection of Disadvantaged Communities

When taking action on PFAS, EPA will ensure that disadvantaged communities have equitable access to solutions.

Many known and potential sources of PFAS contamination (including military bases, airports, industrial facilities, and waste management and disposal sites) are near low-income communities and communities of color. EPA needs to ensure these affected populations have an opportunity to participate in and influence the Agency's decision-making. This may call for the Agency to seek out and facilitate the communities' engagement by providing culturally appropriate information and accommodations for people with Limited English Proficiency, facilitating community access to public meetings and comment periods, and offering technical assistance to build community-based capacity for participation. EPA's actions need to consider the unique on-the-ground conditions in these communities, such as outdated infrastructure, to help ensure they benefit equitably from policy solutions.

EPA will also collect more data and develop new methodologies to understand PFAS exposure pathways in disadvantaged communities; to what extent PFAS pollution contributes to the cumulative burden of exposures from multiple sources in these communities; and how non-environmental stressors, such as systemic socioeconomic disparities, can exacerbate the impacts of pollution exposure and vice versa.

Goals and Objectives

EPA's comprehensive approach to addressing PFAS is guided by the following goals and objectives.

RESEARCH

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

Objectives

- Build the evidence base on individual PFAS and define categories of PFAS to establish toxicity values and methods.
- Increase scientific understanding on the universe of PFAS, sources of environmental contamination, exposure pathways, and human health and ecological effects.
- Expand research on current and emerging PFAS treatment, remediation, destruction, disposal, and control technologies.
- Conduct research to understand how PFAS contribute to the cumulative burden of pollution in communities with environmental justice concerns.

RESTRICT

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

Objectives

- Use and harmonize actions under all available statutory authorities to control and prevent PFAS contamination and minimize exposure to PFAS during consumer and industrial uses.
- Place responsibility for limiting exposures and addressing hazards of PFAS on manufacturers, processors, distributors, importers, industrial and other significant users, dischargers, and treatment and disposal facilities.
- Establish voluntary programs to reduce PFAS use and release.
- Prevent or minimize PFAS discharges and emissions in all communities, regardless of income, race, or language barriers.

REMEDIATE

Broaden and accelerate the cleanup of PFAS contamination to protect human health and ecological systems.

Objectives

- Harmonize actions under all available statutory authorities to address PFAS contamination to protect people, communities, and the environment.
- Maximize responsible party performance and funding for investigations and cleanup of PFAS contamination.
- Help ensure that communities impacted by PFAS receive resources and assistance to address contamination, regardless of income, race, or language barriers.
- Accelerate the deployment of treatment, remediation, destruction, disposal, and mitigation technologies for PFAS, and ensure that disposal and destruction activities do not create new pollution problems in communities with environmental justice concerns.

Key Actions

This section summarizes the bold actions that EPA plans to take from 2021 through 2024 on PFAS, as well as some ongoing efforts thereafter. The actions described in this roadmap are subject to the availability of appropriations and other resources. Each of these actions—led by EPA's program offices—are significant building blocks in the Agency's comprehensive strategy to protect public health and ecosystems by researching, restricting, and remediating PFAS contamination. As EPA takes each of these actions, it also commits to transparent, equitable, and inclusive engagement with all stakeholders to inform the Agency's work.

These are not the only actions underway at EPA, nor will they be the last. As the Agency does more, it will learn more. And as EPA learns more, it will do more. As EPA continues to build the evidence base, as regulatory work matures, and as EPA learns more from its partnerships across the country, the Agency will deliver additional actions commensurate with the urgency and scale of response that the PFAS problem demands.

Office of Chemical Safety and Pollution Prevention

Publish national PFAS testing strategy

Expected Fall 2021

EPA needs to evaluate a large number of PFAS for potential human health and ecological effects. Most PFAS have limited or no toxicity data. To address this data gap, EPA is developing a national PFAS testing strategy to deepen understanding of the impacts of categories of PFAS, including potential hazards to human health and the environment. This will help EPA identify and select PFAS for which the Agency will require testing using Toxic Substances Control Act (TSCA) authorities. In the 2020 National Defense Authorization Act (NDAA), Congress directed EPA to develop a process for prioritizing which PFAS or classes of PFAS should be subject to additional research efforts based on potential for human exposure to, toxicity of, and other available information. EPA will also identify existing test data for PFAS (both publicly available and submitted to EPA under TSCA) that will be considered prior to requiring further testing to ensure adherence to the TSCA goal of reducing animal testing. EPA will use the testing strategy to identify important gaps in existing data and to select representative chemical(s) within identified categories as priorities for additional studies. EPA expects to exercise its TSCA Section 4 order authority to require PFAS manufacturers to conduct and fund the studies. EPA plans to issue the first round of test orders on the selected PFAS by the end of 2021.

Ensure a robust review process for new PFAS

Efforts Ongoing

EPA's TSCA New Chemicals program plays an important gatekeeper role in ensuring the safety of new chemicals, including new PFAS, prior to their entry in U.S. commerce. Where unreasonable

risks are identified as part of the review process, EPA must mitigate those risks before any manufacturing activity can commence. The 2016 TSCA amendments require EPA to review and make a determination regarding the potential risks for each new chemical submission. Since early 2021, EPA has taken steps to ensure that new PFAS are subject to rigorous reviews and appropriate safeguards, including making changes to the policies and processes underpinning reviews and determinations on new chemicals to better align with the 2016 amendments. In addition, EPA has previously allowed some new PFAS to enter the market through low-volume exemptions (LVEs), following an expedited, 30-day review process. In April 2021, the Agency announced that it would generally expect to deny pending and future LVE submissions for PFAS based on the complexity of PFAS chemistry, potential health effects, and their longevity and persistence in the environment. Moving forward, EPA will apply a rigorous premanufacture notice review process for new PFAS to ensure these substances are safe before they enter commerce.

Review previous decisions on PFAS

Efforts Ongoing

EPA is also looking at PFAS that it has previously reviewed through the TSCA New Chemicals program, including those that it reviewed prior to the 2016 TSCA amendments. For example, EPA recently launched a stewardship program to encourage companies to voluntarily withdraw previously granted PFAS LVEs. EPA also plans to revisit past PFAS regulatory decisions and address those that are insufficiently protective. As part of this effort, the Agency could impose additional notice requirements to ensure it can review PFAS before they are used in new ways that might present concerns.

In addition, EPA plans to issue TSCA Section 5(e) orders for existing PFAS for which significant new use notices (e.g., a new manufacturing process for an existing PFAS, or a new use or user) have recently been filed with EPA. The orders would impose rigorous safety requirements as a condition of allowing the significant new use to commence.

More broadly, EPA is planning to improve approaches for overall tracking and enforcement of requirements in new chemical consent orders and significant new use rules (SNURs) to ensure that companies are complying with the terms of those agreements and regulatory notice requirements.

Close the door on abandoned PFAS and uses

Expected Summer 2022

Many existing chemicals (i.e., those that are already in commerce and listed on the TSCA Inventory of chemicals), including PFAS, are currently not subject to any type of restriction under TSCA. In some instances, the chemicals themselves have not been actively manufactured for many years. In others, chemicals may have certain past uses that have been abandoned. Absent restriction, manufacturers are free to begin using those abandoned chemicals or resume those abandoned uses at any time. Under TSCA, by rule, EPA can designate uses of a chemical that are not currently ongoing—and potentially *all* uses associated with an inactive chemical—as "significant new uses." Doing so ensures that an entity must first submit a notice and certain information to EPA before it can resume use of that chemical or use. TSCA then requires EPA to review and make an affirmative determination on the potential risks to health and the environment and to require safety measures to address unreasonable risks before allowing the PFAS use to resume. EPA is considering how it can apply this authority to help address abandoned uses of PFAS as well as future uses of PFAS on the inactive portion of the TSCA Inventory.

Enhance PFAS reporting under the Toxics Release Inventory

Expected Spring 2022

The Toxics Release Inventory (TRI) helps EPA compile data and information on releases of certain chemicals and supports informed decision-making by companies, government agencies, non-governmental organizations, and the public. Pursuant to the 2020 NDAA, certain industry sectors must report certain PFAS releases to TRI. However, certain

exemptions and exclusions remain for those PFAS reporters, which significantly limited the amount of data that EPA received for these chemicals in the first year of reporting.[iv] To enhance the quality and quantity of PFAS information collected through TRI, EPA intends to propose a rulemaking in 2022 to categorize the PFAS on the TRI list as "Chemicals of Special Concern" and to remove the de minimis eligibility from supplier notification requirements for all "Chemicals of Special Concern." EPA will also continue to update the list of PFAS subject to TRI and expects to announce an additional rulemaking to add more PFAS to TRI in 2022, as required by the 2020 NDAA.

Finalize new PFAS reporting under TSCA Section 8

Expected Winter 2022

TSCA Section 8(a)(7) provides authority for EPA to collect existing information on PFAS. In June 2021, EPA published a proposed data-gathering rule that would collect certain information on any PFAS manufactured since 2011, including information on uses, production volumes, disposal, exposures, and hazards. EPA will consider public comments on the proposal and finalize it before January 1, 2023. Ultimately, information received under this rule will enable EPA to better characterize the sources and quantities of manufactured PFAS in the United States and will assist the Agency in its future research, monitoring, and regulatory efforts.

Office of Water

Undertake nationwide monitoring for PFAS in drinking water

Final Rule Expected Fall 2021

The Safe Drinking Water Act (SDWA) establishes a data-driven and risk-based process to assess drinking water contaminants of emerging concern. Under SDWA, EPA requires water systems to conduct sampling for unregulated contaminants every five years. EPA published the proposed Fifth Unregulated Contaminant Monitoring Rule (UCMR 5) in March 2021. As proposed, UCMR 5 would provide new data that is critically needed to improve EPA's understanding of the frequency that 29 PFAS are found in the nation's drinking water systems and at what levels. The proposed UCMR 5 would significantly expand the number of drinking water systems participating in the program, pending sufficient appropriations by Congress. The data gathered from an expanded set of drinking water systems would improve EPA's ability to conduct state and local assessments of contamination, including analyses of potential environmental justice impacts. As proposed, and if funds are appropriated by Congress, all public water systems serving 3,300 or more people and 800 representative public water systems serving fewer than 3,300 would collect samples during a 12-month period from January 2023 through December 2025. EPA is considering comments on the proposed UCMR 5 and preparing a final rule. Going forward, EPA will continue to prioritize additional PFAS for inclusion in UCMR 6 and beyond, as techniques to measure these additional substances in drinking water are developed and validated.

Establish a national primary drinking water regulation for PFOA and PFOS

Proposed Rule Expected Fall 2022, Final Rule Expected Fall 2023

Under the SDWA, EPA has the authority to set enforceable National Primary Drinking Water Regulations (NPDWRs) for drinking water contaminants and require monitoring of public water

supplies. To date, EPA has regulated more than 90 drinking water contaminants but has not established national drinking water regulations for any PFAS. In March 2021, EPA published the Fourth Regulatory Determinations, including a final determination to regulate Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonic acid (PFOS) in drinking water. The Agency is now developing a proposed NPDWR for these chemicals. As EPA undertakes this action, the Agency is also evaluating additional PFAS and considering regulatory actions to address groups of PFAS. EPA expects to issue a proposed regulation in Fall 2022 (before the Agency's statutory deadline of March 2023). The Agency anticipates issuing a final regulation in Fall 2023 after considering public comments on the proposal. Going forward, EPA will continue to analyze whether NPDWR revisions can improve public health protection as additional PFAS are found in drinking water.

Publish the final toxicity assessment for GenX and five additional PFAS

Expected Fall 2021 and Ongoing

EPA plans to publish the toxicity assessments for two PFAS, hexafluoropropylene oxide dimer acid and its ammonium salt. These two chemicals are known as "GenX chemicals." GenX chemicals have been found in surface water, groundwater, drinking water, rainwater, and air emissions. GenX chemicals are known to impact human health and ecosystems. Scientists have observed liver and kidney toxicity, immune effects, hematological effects, reproductive and developmental effects, and cancer in animals exposed to GenX chemicals. Completing a toxicity assessment for GenX is essential to better understanding its effects on people and the environment. EPA can use this information to develop health advisories that will help communities make informed decisions to better protect human health and ecological wellness. The Office of Research and Development is also currently developing toxicity assessments for five other PFAS—PFBA, PFHxA, PFHxS, PFNA, and PFDA.

Publish health advisories for GenX and PFBS

Expected Spring 2022

PFAS contamination has impacted drinking water quality across the country, including in underserved rural areas and communities of color. SDWA authorizes EPA to develop non-enforceable and non-regulatory drinking water health advisories to help Tribes, states, and local governments inform the public and determine whether local actions are needed to address public health impacts in these communities. Health advisories offer a margin of protection by defining a level of drinking water concentration at or below which lifetime exposure is not anticipated to lead to adverse health effects. They include information on health effects, analytical methodologies, and treatment technologies and are designed to protect all lifestages. EPA will publish health advisories for Perfluorobutane sulfonic acid (PFBS) and GenX chemicals based on final toxicity assessments. The Agency will develop accompanying fact sheets in different languages to facilitate access to information on GenX and other PFAS. Going forward, EPA will develop health advisories as the Agency completes toxicity assessments for additional PFAS.

Restrict PFAS discharges from industrial sources through a multi-faceted Effluent Limitations Guidelines program

Expected 2022 and Ongoing

Effluent Limitations Guidelines (ELGs) are a powerful tool to limit pollutants from entering the nation's waters. ELGs establish national technology-based regulatory limits on the level of specified pollutants in wastewater discharged into surface waters and into municipal sewage treatment facilities. EPA has been conducting a PFAS multi-industry study to inform the extent and nature of PFAS discharges. Based on this study, EPA is taking a proactive approach to restrict PFAS discharges from multiple industrial categories. EPA plans to make significant progress in its ELG regulatory work by the end of 2024. EPA has established timelines for action—whether it is data collection

or rulemaking—on the nine industrial categories in the proposed PFAS Action Act of 2021, as well as other industrial categories such as landfills. EPA's multi-faceted approach entails:

- Undertake rulemaking to restrict PFAS discharges from industrial categories where EPA has the data to do so—including the guidelines for organic chemicals, plastics and synthetic fibers (OCPSF), metal finishing, and electroplating. Proposed rule is expected in Summer 2023 for OCPSF and Summer 2024 for metal finishing and electroplating.
- Launch detailed studies on facilities where EPA has preliminary data on PFAS discharges, but the data are currently insufficient to support a potential rulemaking. These include electrical and electronic components, textile mills, and landfills. EPA expects these studies to be complete by Fall 2022 to inform decision making about a future rulemaking by the end of 2022.
- Initiate data reviews for industrial categories for which there is little known information on PFAS discharges, including leather tanning and finishing, plastics molding and forming, and paint formulating. EPA expects to complete these data reviews by Winter 2023 to inform whether there are sufficient data to initiate a potential rulemaking.
- Monitor industrial categories where the phaseout of PFAS is projected by 2024, including pulp, paper, paperboard, and airports. The results of this monitoring, and whether future regulatory action is needed, will be addressed in the Final ELG Plan 15 in Fall 2022.

Leverage NPDES permitting to reduce PFAS discharges to waterways

Expected Winter 2022

The National Pollutant Discharge Elimination System (NPDES) program interfaces with many pathways by which PFAS travel and are released into the environment and ultimately impact people and water quality. EPA will seek to proactively use existing NPDES authorities to reduce discharges of PFAS at the source and obtain more comprehensive information through monitoring on the sources of PFAS and quantity of PFAS discharged by these sources. EPA will use the effluent monitoring data to inform which industrial categories the Agency should study for future ELGs actions to restrict PFAS in wastewater discharges.

- **Leverage federally-issued NPDES permits to reduce PFAS discharges.**[v] EPA will propose monitoring requirements at facilities where PFAS are expected or suspected to be present in wastewater and stormwater discharges, using EPA's recently published analytical method 1633, which covers 40 unique PFAS. In addition, EPA will propose, as appropriate, that NPDES permits: 1) contain conditions based on product elimination and substitution when a reasonable alternative to using PFAS is available in the industrial process; 2) require best management practices to address PFAS-containing firefighting foams for stormwater permits; 3) require enhanced public notification and engagement with downstream communities and public water systems; and 4) require pretreatment programs to include source control and best management practices to protect wastewater treatment plant discharges and biosolid applications.
- **Issue new guidance to state permitting authorities to address PFAS in NPDES permits.** EPA will issue new guidance recommending that state-issued permits that do not already include monitoring requirements for PFAS use EPA's recently published analytical method 1633, which covers 40 unique PFAS, at facilities where PFAS is expected or suspected to be present in wastewater and stormwater discharges. In addition, the new guidance will recommend the full suite of permitting approaches that EPA will use in federally-issued permits. The guidance will enable communities to work closely with their state permitting authorities to suggest monitoring at facilities suspected of containing PFAS.

Publish multi-laboratory validated analytical method for 40 PFAS

Expected Fall 2022

In September 2021, EPA (in collaboration with the Department of Defense) published a single-laboratory validated method to detect PFAS. The method can measure up to 40 specific PFAS compounds in eight environmental matrices (including wastewater, surface water and biosolids) and has numerous applications, including NPDES compliance monitoring. EPA and DOD are continuing this collaboration to complete a multi-laboratory validation of the method. EPA expects to publish the multi-lab validated method online by Fall 2022. Following the publication of the method, EPA will initiate a rulemaking to propose the promulgation of this method under the Clean Water Act (CWA).

Publish updates to PFAS analytical methods to monitor drinking water

Expected Fall 2024

SDWA requires EPA to use scientifically robust and validated analytical methods to assess the occurrence of contaminants of emerging concern, such as an unidentified or newly detected PFAS chemical. EPA will update and validate analytical methods to monitor additional PFAS. First, EPA will review reports of PFAS of concern and seek to procure certified reference standards that are essential for accurate and selective quantitation of emerging PFAS of concern in drinking water samples. EPA will evaluate analytical methods previously published for monitoring PFAS in drinking water (EPA Methods 533 and 537.1) to determine the efficacy of expanding the established target PFAS analyte list to include any emerging PFAS. Upon conclusion of this evaluation, EPA will complete multi-laboratory validation studies and peer review and publish updated EPA PFAS analytical methods for drinking water, making them available to support future drinking water monitoring programs.

Publish final recommended ambient water quality criteria for PFAS

Expected Winter 2022 and Fall 2024

EPA will develop national recommended ambient water quality criteria for PFAS to protect aquatic life and human health. Tribes and states use EPA-recommended water quality criteria to develop water quality standards to protect and restore waters, issue permits to control PFAS discharges, and assess the cumulative impact of PFAS pollution on local communities. EPA will publish recommended aquatic life criteria for PFOA and PFOS and benchmarks for other PFAS that do not have sufficient data to define a recommended aquatic life criteria value. EPA will first develop human health criteria for PFOA and PFOS, taking into account drinking water and fish consumption. This initiative will consider the latest scientific information and will develop human health criteria for additional PFAS when final toxicity assessments are available. Additionally, EPA will support Tribes in developing water quality standards that will protect waters under Tribal jurisdiction under the same framework as waters in adjacent states. Aquatic life criteria are expected in Winter 2022, and human health criteria are expected Fall 2024.

Monitor fish tissue for PFAS from the nation's lakes and evaluate human biomarkers for PFAS

Expected Summer 2022

States and Tribes have highlighted fish tissue data in lakes as a critical information need. Food and water consumption are important pathways of PFAS exposure, and PFAS can accumulate in fish tissue. In fact, EPA monitoring to date shows the presence of PFAS, at varying levels, in approximately 100 percent of fish tested in the Great Lakes and large rivers. In Summer 2022, EPA will collect fish tissue in the National Lakes Assessment for the first national study of PFAS in fish tissue in U.S. lakes. This will provide a better understanding of where PFAS fish tissue contamination is occurring, which

PFAS are involved, and the severity of the problem. The new data will complement EPA's analyses of PFAS in fish tissue and allow EPA to better understand unique impacts on subsistence fishers, who may eat fish from contaminated waterbodies in higher quantities. EPA's preliminary analysis on whether concentrations of certain PFAS compounds in human blood could be associated with eating fish using the Centers for Disease Control and Prevention's National Health and Nutrition Examination Survey (NHANES) data found a positive correlation. Completing this analysis will help make clear the importance of the fish consumption pathway for protecting communities. EPA will continue to pursue collaboration with Tribal and federal partners to investigate this issue of mutual interest.

Finalize list of PFAS for use in fish advisory programs

Expected Spring 2023

EPA will publish a list of PFAS for state and Tribal fish advisory programs that are either known or thought to be in samples of edible freshwater fish in high occurrence nationwide. This list will serve as guidance to state and Tribal fish tissue monitoring and advisory programs so that they know which PFAS to monitor and how to set fish advisories for PFAS that have human health impacts via fish consumption. This information will encourage more robust data collection from fish advisory programs and promote consistency of fish tissue PFAS monitoring results in EPA's publicly accessible Water Quality Portal. By issuing advisories for PFAS, state and Tribal programs can provide high-risk populations, including communities and individuals who depend on subsistence fishing, with more information about how to protect their health.

Finalize risk assessment for PFOA and PFOS in biosolids

Expected Winter 2024

Biosolids, or sewage sludge, from wastewater treatment facilities can sometimes contain PFAS. When spread on agricultural fields, the PFAS can contaminate crops and livestock. The CWA authorizes EPA to set pollutant limits and monitoring and reporting requirements for contaminants in biosolids if sufficient scientific evidence shows that there is potential harm to human health or the environment. A risk assessment is key to determining the potential harm associated with human exposure to chemicals. EPA will complete the risk assessment for PFOA and PFOS in biosolids by Winter 2024. The risk assessment will serve as the basis for determining whether regulation of PFOA and PFOS in biosolids is appropriate. If EPA determines that a regulation is appropriate, biosolids standards would improve the protection of public health and wildlife health from health effects resulting from exposure to biosolids containing PFOA and PFOS.

Office of Land and Emergency Management

Propose to designate certain PFAS as CERCLA hazardous substances

Proposed rule expected Spring 2022; Final rule expected Summer 2023

EPA is developing a Notice of Proposed Rulemaking to designate PFOA and PFOS as Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances. Such designations would require facilities across the country to report on PFOA and PFOS releases that meet or exceed the reportable quantity assigned to these substances. The hazardous substance designations would also enhance the ability of federal, Tribal, state, and local authorities to obtain information regarding the location and extent of releases. EPA or other agencies could also seek cost recovery or contributions for costs incurred for the cleanup. The proposed rulemaking will be available for public comment in Spring 2022. The Agency commits to conducting robust stakeholder engagement with communities near PFAS-contaminated sites.

Issue advance notice of proposed rulemaking on various PFAS under CERCLA

Expected Spring 2022

In addition to developing a Notice of Proposed Rulemaking designating PFOA and PFOS as hazardous substances under CERCLA, EPA is developing an Advance Notice of Proposed Rulemaking to seek public input on whether to similarly designate other PFAS. The Agency may request input regarding the potential hazardous substance designation for precursors to PFAS, additional PFAS, and groups or subgroups of PFAS. The Agency will engage robustly with communities near PFAS-contaminated sites to seek their input and learn about their lived experiences. Going forward, EPA will consider designating additional PFAS as hazardous substances under CERCLA as more specific information related to the health effects of those PFAS and methods to measure them in groundwater are developed.

Issue updated guidance on destroying and disposing of certain PFAS and PFAS-containing materials

Expected by Fall 2023

The 2020 NDAA requires that EPA publish interim guidance on destroying and disposing of PFAS and certain identified non-consumer PFAS-containing materials. It also requires that EPA revise that guidance at least every three years, as appropriate. EPA published the first interim guidance in December 2020 for public comment. It identifies three technologies that are commercially available to either destroy or dispose of PFAS and PFAS-containing materials and outlines the significant uncertainties and information gaps that exist concerning the technologies' ability to destroy or dispose of PFAS while minimizing the migration of PFAS to the environment. The guidance also highlights research that is underway and planned to address some of these information gaps. Furthermore, the interim guidance identifies existing EPA tools, methods, and approaches to characterize and assess the risks to disproportionately impacted people of color and low-income communities living near likely PFAS destruction or disposal sites. EPA's updated guidance will address the public comments and reflect newly published research results. Since the publication of the interim guidance, EPA and other agencies have been conducting relevant research on destruction and disposal technologies. EPA anticipates that additional research data will become available starting in 2022. EPA will update the guidance when sufficient useful information is available and no later than the statutory deadline of December 2023.

Office of Air and Radiation

Build the technical foundation to address PFAS air emissions

Expected Fall 2022 and Ongoing

The Clean Air Act requires EPA to regulate emissions of hazardous air pollutants (HAPs), which are pollutants that are known or suspected to cause cancer or other serious health effects. At present, EPA actively works with Tribal, state, and local governments to reduce air emissions of 187 HAPs to the environment. While PFAS are not currently listed as HAPs under the Clean Air Act, EPA is building the technical foundation on PFAS air emissions to inform future decisions. EPA is conducting ongoing work to:

- Identify sources of PFAS air emissions;
- Develop and finalize monitoring approaches for measuring stack emissions and ambient concentrations of PFAS;
- Develop information on cost-effective mitigation technologies; and
- Increase understanding of the fate and transport of PFAS air emissions to assess their potential for impacting human health via contaminated groundwater and other media pathways.

EPA will use a range of tools, such as EJSCREEN, to determine if PFAS air pollution disproportionately affects communities with environmental justice concerns. Data from other ongoing EPA activities, such as field tests, TRI submissions, and new TSCA reporting and recordkeeping requirements, will help EPA collect additional information on sources and releases. By Fall 2022, EPA will evaluate mitigation options, including listing certain PFAS as hazardous air pollutants and/or pursuing other regulatory and non-regulatory approaches. The Agency will continue to collect necessary supporting technical information on an ongoing basis.

Office of Research and Development

Develop and validate methods to detect and measure PFAS in the environment

Ongoing Actions

Robust, accurate methods for detecting and measuring PFAS in air, land, and water are essential for understanding which PFAS are in the environment and how much are present. These methods are also essential for evaluating the effectiveness of different technologies for removing PFAS from air, land, and water and for implementing future regulations. To date, EPA has developed validated methods to measure 29 PFAS in drinking water and 24 PFAS in groundwater, surface water, and wastewater. EPA has also developed a method for measuring selected PFAS in air emissions. EPA will build on this work by developing additional targeted methods for detecting and measuring specific PFAS and non-targeted methods for identifying unknown PFAS in the environment. EPA also recognizes the need for "total PFAS" methods that can measure the amount of PFAS in environmental samples without identifying specific PFAS. EPA will increase its efforts to develop and, if appropriate, validate "total PFAS" methods, focusing on air emissions, wastewater, and drinking water. Near-term deliverables include:

- Draft total adsorbable fluorine method for wastewater for potential laboratory validation (Fall 2021);
- Draft method for measuring additional PFAS in air emissions (Fall 2022); and
- Draft methods and approaches for evaluating PFAS leaching from solid materials (Fall 2022).

Advance the science to assess human health and environmental risks from PFAS

Ongoing Actions

EPA will expand understanding of the toxicity of PFAS through several ongoing research activities. First, EPA will continue to develop human health toxicity assessments for individual PFAS under EPA's Integrated Risk Information System (IRIS) Program,

and if needed, other fit-for-purpose toxicity values. When combined with exposure information and other important considerations, EPA can use these toxicity assessments to assess potential human health risks to determine if, and when, it is appropriate to address these chemicals. Most PFAS, however, have limited or no toxicity data to inform human health or ecological toxicity assessments. To better understand human health and ecological toxicity across a wider variety of PFAS, EPA will continue to compile and summarize available and relevant scientific information on PFAS and conduct toxicity testing on individual PFAS and PFAS mixtures. This will inform the development and refinement of PFAS categories for hazard assessment. EPA will also conduct research to identify PFAS sources in the outdoor and indoor environment, to characterize PFAS movement through the environment, and to identify the relative importance of different human exposure pathways to PFAS (e.g., ingestion of contaminated food or water, interaction with household articles or consumer products, and inhalation of indoor or outdoor air containing PFAS). EPA also will work to characterize how exposure to PFAS may contribute to cumulative impacts on communities, particularly communities with environmental justice concerns. Near-term deliverables include:

- Identify initial PFAS categories to inform TSCA test orders as part of the PFAS National Testing Strategy (Fall 2021)
- Consolidate and update data on chemical/physical properties, human health toxicity and toxicokinetics, and ecotoxicity (Spring 2022 – Fall 2024)
- Complete draft PFHxS, PFHxA, PFNA, and PFDA IRIS assessments for public comment and peer review (Spring – Fall 2022)
- Complete and publish the final PFBA IRIS assessment (Fall 2022)

Evaluate and develop technologies for reducing PFAS in the environment

Ongoing Actions

EPA needs new data and information on the effectiveness of different technologies and approaches for removing PFAS from the environment and managing PFAS and PFAS-containing materials to inform decisions on drinking water and wastewater treatment, contaminated site cleanup and remediation, air emission controls, and end-of-life materials management. This information is also needed to better ensure that particular treatment and waste management technologies and approaches do not themselves lead to additional PFAS exposures, particularly in overburdened communities where treatment and waste management facilities are often located. Toward that end, EPA will continue efforts to develop approaches for characterizing PFAS in source waters, at contaminated sites, and near PFAS production and treatment/disposal facilities. EPA will also continue to evaluate and develop technologies for drinking water and wastewater treatment, contaminated site remediation, air emission controls, and destruction and disposal of PFAS-containing materials and waste streams. These efforts include conducting laboratory- and pilot-scale studies, which will inform the design of full-scale field studies done in partnership with facilities and states to evaluate real-world applications of different PFAS removal technologies and management approaches.

EPA will prioritize efforts to evaluate conventional thermal treatment of PFAS-containing wastes and air emissions and assess the effectiveness of conventional drinking water and wastewater treatment processes. EPA will also continue to evaluate and advance the application of innovative, non-thermal technologies to treat PFAS waste and PFAS-contaminated materials. Building upon these evaluations, EPA will document the performance of PFAS removal technologies and establish technology-based PFAS categories that identify the list of PFAS that are effectively removed through the application of the associated technology. Near-term deliverables include:

- Collect data to inform the 2023 guidance on destroying and disposing of certain PFAS and PFAS-containing materials (Spring 2022 – Fall 2023);
- Identify initial PFAS categories for removal technologies (Summer 2022); and
- Develop effective PFAS treatment technologies for drinking water systems (Fall 2022).

Cross-Program

Engage directly with affected communities in every EPA Region

Expected Fall 2021 and Ongoing

EPA must fully understand the challenges facing individuals and communities grappling with PFAS contamination to understand their lived experiences and determine the most effective interventions. As recommended by the National Environmental Justice Advisory Council (NEJAC), EPA will meet with affected communities in each EPA Region to hear how PFAS contamination impacts their lives and livelihoods. EPA will use the knowledge from these engagements to inform the implementation of the actions described in this roadmap. EPA will also use the input to develop and share information to reduce potential health risks in the near term and help communities on the path to remediation and recovery from PFAS contamination.

Use enforcement tools to better identify and address PFAS releases at facilities

Ongoing Actions

EPA is initiating actions under multiple environmental authorities—RCRA, TSCA, CWA, SDWA and CERCLA—to identify past and ongoing releases of PFAS into the environment at facilities where PFAS has been used, manufactured, discharged, disposed of, released, and/or spilled. EPA is conducting inspections, issuing information requests, and collecting data to understand the level of contamination and current risks posed by PFAS to surrounding communities and will seek to address threats to human health with all its available tools. For example, EPA's enforcement authorities allow the Agency, under certain circumstances, to require parties responsible for PFAS contamination to characterize the nature and extent of PFAS contamination, to put controls in place to expeditiously limit future releases, and to address contaminated drinking water, soils, and other contaminated media. When EPA becomes aware of a potential imminent and substantial endangerment situation where PFAS poses a threat to human health, the Agency will swiftly employ its expertise to assess the situation and take appropriate action, including using statutorily authorized powers.

Accelerate public health protections by identifying PFAS categories

Expected Winter 2021 and Ongoing

To accelerate EPA's ability to address PFAS and deliver public health protections sooner, EPA is working to break the large, diverse class of PFAS into smaller categories based on similarities across defined parameters (such as chemical structure, physical and chemical properties, and toxicological properties). EPA plans to initially categorize PFAS using two approaches. In the first approach, EPA plans to use toxicity and toxicokinetic data to develop PFAS categories for further hazard assessment and to inform hazard- or risk-based decisions. In the second approach, EPA plans to develop PFAS categories based on removal technologies using existing understanding of treatment, remediation, destruction, disposal, control, and mitigation principles.

EPA plans to use the PFAS categories developed from these two approaches to identify gaps in coverage from either a hazard assessment or removal technology perspective, which will help EPA prioritize future actions to research, restrict, and remediate PFAS. For example, EPA may choose to prioritize research to characterize the toxicity of PFAS that are not being addressed by regulations that require the implementation of removal technologies. Conversely, EPA may prioritize research to evaluate the efficacy of technologies designed to remove PFAS that are included in a hazard-based category with relatively higher toxicities. To support coordination and integration of information across PFAS categories, EPA plans to develop a PFAS categorization database that will capture key characteristics of individual PFAS, including category assignments.

Establish a PFAS Voluntary Stewardship Program

Expected Spring 2022

Reduction of PFAS exposure through regulatory means can take time to develop, finalize, and implement. Moreover, current PFAS regulatory efforts do not extend to all of the approximately 600 PFAS currently in commerce. As a companion to other efforts described in this roadmap, EPA will establish a voluntary stewardship program challenging industry to reduce overall releases of PFAS into the environment. The program, which will not supplant industry's regulatory or compliance requirements, will call on industry to go beyond those requirements by reporting all PFAS releases in order to establish a baseline and then continuing to report to measure progress in reducing releases over time. EPA will validate industry efforts to meet reduction targets and timelines.

Educate the public about the risks of PFAS

Expected Fall 2021 and Ongoing

Addressing PFAS contamination is a critical part of EPA's mission to protect human health and the environment. This important mission cannot be achieved without effectively communicating with communities, individuals, businesses, the media, and Tribal, state, and local partners about the known and potential health risks associated with these chemicals. When EPA communicates risk, it is the Agency's goal to provide meaningful, understandable, and actionable information to many audiences. To accomplish this goal, EPA will make available key explainers that help the public understand what PFAS are, how they are used, and how PFAS can impact their health and their lives. These explainers and other educational materials will be published in multiple languages, and the Agency will work to ensure information reaches targeted communities (including those with limited access to technology and resources).

Issue an annual public report on progress towards PFAS commitments

Winter 2022 and Ongoing

EPA is committed to acting on PFAS with transparency and accountability. On an annual basis, EPA will report to the public on the status of the actions outlined in this roadmap, as well as future actions the Agency may take. EPA will also engage regularly with communities experiencing PFAS contamination, co-regulators, industry, environmental groups, community leaders, and other stakeholders to clearly communicate its actions and to stay abreast of evolving needs.

Conclusion

Every level of government—federal, Tribal, state, and local—needs to exercise increased and sustained leadership to accelerate progress to clean up PFAS contamination, prevent new contamination, and make game-changing breakthroughs in the scientific understanding of PFAS. This strategic roadmap represents the Agency's commitment to the American people on what EPA seeks to deliver from 2021 to 2024.

The risks posed by PFAS demand that the Agency take a whole-of-agency approach to attack the problem from multiple directions. Focusing only on remediating legacy contamination, for example, does nothing to prevent new contamination from occurring. Focusing only on preventing future contamination fails to minimize risks to human health that exist today. To build more enduring, comprehensive, and protective solutions, EPA seeks to leverage its full range of statutory authorities and work with its partners—including other federal agencies, state and Tribal regulators, scientists, industry, public health officials, and communities living with PFAS contamination—to implement this multi-media approach and achieve tangible benefits for human health and the environment.[vi]

Endnotes

[i] Approximately 650 PFAS are currently in commerce under TSCA, roughly half of which were grandfathered into the TSCA inventory.

[ii] EPA has identified 6-8 facilities that produce PFAS feedstock.

[iii] Key industries with significant documented discharges include PFAS production and processing, metal finishing, airports, pulp and paper, landfills, and textile and carpet manufacturing.

[iv] Examples include de minimis exemption, supplier notification requirements, and applicability of those requirements to wastes.

[v] Federally-issued permits are those that EPA issues in MA, NH, NM, DC, territories, federal waters, and Indian Country (and federal facilities in DE, CO, VT, WA).

[vi] This document provides information to the public on how EPA intends to exercise its discretion in implementing statutory and regulatory provisions that apply to PFAS. Those provisions contain legally binding requirements, and this document does not substitute for those statutory and regulatory provisions or regulations, nor is it a regulation itself.

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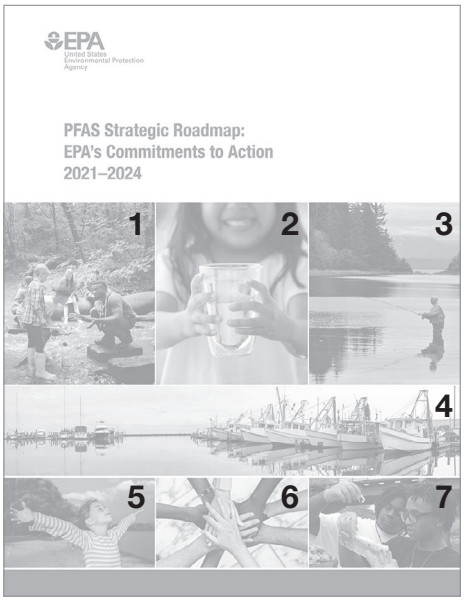

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ATTACHMENT F





PFAS Strategic Roadmap:
EPA's Commitments to Action 2021-2024

epa.gov/pfas

Overview of Today's Briefing

- **EPA Council on PFAS**: Roadmap and Early Actions
- **EPA's Approach to Tackling PFAS**: Principles and Goals
- **Actions**: Commitments and Timelines
- **Next Steps**: Engagement and Implementation

EPA Council on PFAS: Roadmap and Early Actions

- EPA Administrator Michael Regan established the EPA Council on PFAS in April 2021 and charged it to develop a bold, strategic, whole-of-EPA strategy to protect public health and the environment from the impacts of PFAS.
- The Council is comprised of senior technical and policy leaders from across EPA program offices and Regions and is chaired by Assistant Administrator for Water Radhika Fox and Acting Region 1 Administrator Deb Szaro.
- The PFAS Council developed a strategic roadmap to lay out EPA's whole-of-agency approach to tackling PFAS and set timelines by which the Agency plans to take concrete actions during the first term of the Biden-Harris Administration. The Roadmap fills a critical gap in federal leadership, provides a basic floor of federal protection, and supports states' ongoing efforts to address PFAS.
- Complementing the strategic roadmap, EPA has already taken bold actions on PFAS since January 2021, including on drinking water, hazardous substance designation, effluent guidelines, and chemical safety.

PFAS Strategic Roadmap: EPA's Commitments to Action 2021–2024

EPA's Approach to Tackling PFAS: Principles

PFAS contamination poses unique challenges, and EPA must use every tool in its tool box. EPA's approach is centered around the following principles:

- Consider the Lifecycle of PFAS.
- Get Upstream of the Problem.
- Hold Polluters Accountable.
- Ensure Science-Based Decision-Making.
- Prioritize Protection of Disadvantaged Communities.

EPA's Approach to Tackling PFAS: Goals

RESEARCH

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

RESTRICT

Pursue 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

Broaden and accelerate the cleanup of PFAS contamination to protect human health and ecological systems.

PFAS Strategic Roadmap: EPA's Commitments to Action 2021–2024

Actions: Office of Chemical Safety and Pollution Prevention

- **Publish a national PFAS testing strategy.** Expected Fall 2021.
- **Ensure a robust review process for new PFAS.** Efforts ongoing.
- **Review existing PFAS under TSCA.** Expected Summer 2022 and ongoing.
- **Enhance PFAS reporting under the Toxics Release Inventory.** Expected Spring 2022.
- **Finalize new PFAS reporting under TSCA Section 8.** Expected Winter 2022.

Actions: Office of Water

- **Undertake nationwide monitoring for PFAS in drinking water.** Final rule expected Fall 2021.
- **Establish a national primary drinking water regulation for PFOA and PFOS.** Proposed rule expected Fall 2022, final rule expected Fall 2023.
- **Publish final toxicity assessment for GenX and five additional PFAS (PFBA, PFHxA, PFHxS, PFNA, PFDA).** Expected Fall 2021 and ongoing.
- **Publish health advisories for GenX and PFBS.** Expected Spring 2022.
- **Restrict PFAS discharges from industrial sources through a multi-faceted Effluent Limitations Guidelines program.** Expected 2022 and ongoing.
- **Leverage National Pollutant Discharge Elimination System permitting to reduce PFAS discharges to waterways.** Expected Winter 2022.
- **Publish improved analytical methods.** Expected Fall 2022 and Fall 2024.
- **Publish final recommended ambient water quality criteria for PFAS.** Expected Winter 2022 and Fall 2024.
- **Enhance data availability on PFAS in fish tissue.** Expected Summer 2022 and Spring 2023.
- **Finalize risk assessment for PFOA and PFOS in biosolids.** Expected Winter 2024.

Actions: Office of Land and Emergency Management and Office of Air and Radiation

Land and Emergency Management

- **Propose to designate certain PFAS as CERCLA hazardous substances.** Proposed rule expected Spring 2022, Final rule expected Summer 2023.
- **Issue advance notice of proposed rulemaking on various PFAS under CERCLA.** Expected Spring 2022.
- **Issue updated guidance on destroying and disposing PFAS.** Expected Fall 2023.

Air and Radiation

- **Build the technical foundation to address PFAS air emissions.** Expected Fall 2022 and ongoing.

Actions: Office of Research and Development

- **Develop and validate methods to detect and measure PFAS in the environment.** Ongoing actions.
- **Advance the science to assess human health and environmental risks from PFAS.** Ongoing actions.
- **Evaluate and develop technologies for reducing PFAS in the environment.** Ongoing actions.

Actions: Cross-Program

- **Engage directly with affected communities in every EPA Region.** Expected Fall 2021 and ongoing.
- **Use enforcement tools to better identify and address PFAS releases at facilities.** Ongoing actions.
- **Accelerate public health protections by identifying PFAS categories.** Expected Winter 2021 and ongoing.
- **Establish a PFAS voluntary stewardship program.** Expected Spring 2022.
- **Educate the public about the risks of PFAS.** Expected Fall 2021 and ongoing.
- **Issue an annual public report on progress towards PFAS commitments.** Winter 2022 and ongoing.

Next Steps

- **EPA is committed to transparent, equitable, and inclusive engagement with all stakeholders to inform the Agency's work.**
- **EPA is beginning a national engagement effort as it seeks to partner for progress on PFAS.**
  - **National webinars** to share the strategic roadmap and its actions.
  - **Stakeholder listening sessions** with non-governmental organizations; Congressional stakeholders; federal partners; Tribal, state, and local governments; environmental justice organizations; and industry groups
  - **A focus on impacted communities**, engaging directly with communities in every EPA Region.
- **Through the roadmap, EPA seeks to harness the collective resources and authority across federal, Tribal, state, and local governments to empower meaningful action now.**





PFAS Strategic Roadmap

EPA's Commitments to Action 2021-2024

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