

# **Biden-Harris Administration Progress on Per- and Polyfluoroalkyl Substances:**

## **Steps Taken and Ongoing Actions**

White House Council on Environmental Quality

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Per- and polyfluoroalkyl substances (PFAS) are a set of broadly-used, human-made chemicals linked to severe health problems that pose a serious threat across rural, suburban, and urban areas, and disproportionately affect disadvantaged communities. PFAS are environmentally persistent, and remain in living tissues for a long time. Over the past two years, the Biden-Harris Administration has taken significant action to accelerate efforts to prevent PFAS release and expand PFAS cleanup and remediation to safeguard human health and protect the environment.<sup>1</sup> Given the thousands of PFAS, and contamination across soil, water, and air, there is much work to be done. Nevertheless, the Federal Government has made systematic and substantive progress to meet PFAS challenges and has set ambitious goals for the next two years.

Efforts target six critical areas:

1. Measuring and monitoring PFAS in humans and the environment.
2. Accelerating environmental PFAS remediation and cleanup.
3. Strengthening PFAS policy and limiting PFAS procurement.
4. Expanding program capacity and resources to meet PFAS challenges.
5. Closing critical research gaps in PFAS detection, disposal, and health effects.
6. Bolstering community outreach, engagement, and information sharing.

### **Interagency Action**

The Biden-Harris Administration led the charge in coordinating scientific and policy efforts to address PFAS challenges. In October 2021, the Council on Environmental Quality (CEQ) created the first cross-government Interagency Policy Committee<sup>2</sup> (IPC) to share information and collaborate on new policy strategies to support research, remediation, and removal of PFAS in communities across the nation.<sup>1</sup> The Office of Science and Technology Policy (OSTP) created a PFAS Strategy team in November 2021 under the auspices of the National Science and Technology Council to coordinate interagency scientific exchanges around PFAS and provide scientific input to the IPC.<sup>3</sup> Altogether, nearly two dozen Federal agencies and offices are involved in PFAS-related activities, making this one of the largest scientific and policy efforts of the Biden-Harris Administration. CEQ has prepared this two-year summary of Federal action to highlight the progress made by many agencies on critical PFAS issues and delineate planned next steps for upcoming action.

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<sup>1</sup> The White House, Fact Sheet: Biden-Harris Administration Launches Plan to Combat PFAS Pollution, Oct. 18, 2021; [FACT SHEET: Biden-Harris Administration Launches Plan to Combat PFAS Pollution - The White House](#)

<sup>2</sup> The White House, Fact Sheet: Biden-Harris Administration Combatting PFAS Pollution to Safeguard Clean Drinking Water for all Americans [FACT SHEET: Biden-Harris Administration Combatting PFAS Pollution to Safeguard Clean Drinking Water for All Americans - The White House](#)

<sup>3</sup> National Defense Authorization Act for Fiscal Year 2021 (P.L. 116-283)

### Agency and White House Abbreviations:

- ATSDR – Agency for Toxic Substances and Disease Registry
- CDC—Centers for Disease Control
- CEQ – Council on Environmental Quality
- DHS – Department of Homeland Security
- DOC – Department of Commerce
- DoD – Department of Defense
- DOE – Department of Energy
- EOP – Executive Office of the President
- EPA – U.S. Environmental Protection Agency
- FAA – Federal Aviation Administration
- FDA – Food and Drug Administration
- GSA – General Services Administration
- HUD – Department of Housing and Urban Development
- NASA – National Aeronautics and Space Administration
- NASEM – National Academies of Science, Engineering, and Medicine
- NIEHS – National Institutes of Environmental Health Sciences
- NIST – National Institutes of Standards and Technology
- NOAA – National Oceanic and Atmospheric Administration
- OMB – Office of Management and Budget
- OSTP – Office of Science and Technology Policy
- USDA – U.S. Department of Agriculture
- VA – Department of Veterans Affairs

## 1. MEASURING AND MONITORING PFAS IN HUMANS AND THE ENVIRONMENT

Agencies developed policies, designed tools, and expanded implementation programs to more comprehensively measure levels of PFAS chemicals in humans, animals, ecosystems, and critical equipment.

### Steps Taken

- **The Centers for Disease Control Agency for Toxic Substances and Disease Registry (CDC ATSDR)** completed the first comprehensive multi-community measurement of PFAS in human blood and assessed exposures to PFAS in 2,384 residents from 1,212 households in 10 communities.<sup>4</sup>
- **The Department of Defense (DoD)** offered blood tests to DoD firefighters who may have been occupationally exposed to PFAS, and updated a memorandum in 2022 to include more PFAS chemicals in human serum testing.
- **The Environmental Protection Agency (EPA)** advanced research to assess human health and environmental risks from PFAS. The agency released a number of final toxicity assessments, including an updated toxicity assessment for PFBS (April 2021),<sup>5</sup> a final toxicity assessment for GenX chemicals (October 2021),<sup>6</sup> and a final Integrated Risk Information System (IRIS) assessment for PFBA (December 2022).<sup>7</sup>

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<sup>4</sup> [Final Report: Findings Across Ten Exposure Assessment \(EA\) Sites | Per- and Polyfluoroalkyl Substances \(PFAS\) and Your Health | ATSDR \(cdc.gov\)](#)

<sup>5</sup> [Human Health Toxicity Values for Perfluorobutane Sulfonic Acid \(CASRN 375-73-5\) and Related Compound Potassium Perfluorobutane Sulfonate \(CASRN 29420-49-3\) | EPA](#)

<sup>6</sup> [Human Health Toxicity Values for Hexafluoropropylene Oxide \(HFPO\) Dimer Acid and Its Ammonium Salt \(CASRN 13252-13-6 and CASRN 62037-80-3\), Also Known as “GenX Chemicals” | EPA](#)

<sup>7</sup> [IRIS Toxicological Review of Perfluorobutanoic Acid \(PFBA\) and Related Salts | EPA](#)

- **The Food and Drug Administration (FDA)** has analyzed 532 food samples for PFAS in multiple collections from the Total Diet Study (TDS) since 2019, and found detectable PFAS in 10 samples including eight types of seafood.<sup>8</sup> FDA also conducted targeted sampling for PFAS from the general food supply (seafood, bottled water, and animal feed) and, in concert with states, from areas of known PFAS contamination.
- **The National Institute of Standards and Technology (NIST)** began analyzing unused firefighting gear for 53 different PFAS to evaluate the potential release of PFAS after use by firefighters. NIST is expanding its list of PFAS measured for both targeted and untargeted techniques and will continue to use the NIST Biorepository to expand temporal trend information for additional PFAS.<sup>9</sup>
- **The National Oceanic and Atmospheric Administration (NOAA)** analyzed PFAS in marine mammals, fish, and invertebrates and continued monitoring 28 PFAS compounds in sediment and shellfish in regional assessments of U.S. coasts and the Great Lakes to provide coastal resource managers with baseline information on PFAS in their managed areas, and a measure of PFAS contamination in the Nation's coastal environments.
- **The Department of Agriculture (USDA)** conducted surveillance sampling of meat and poultry products for a number of different PFAS compounds. PFAS were rarely detected in beef, pork, chicken, and farm-raised catfish.
- **The Department of Veterans Affairs (VA)** collaborated with the Naval Health Research Center to investigate PFAS levels in occupationally exposed military firefighters compared to construction workers.

### Ongoing Actions

- **DoD** will continue offering firefighters blood testing and is consolidating FY2021 and FY2022 results for trend analysis for PFAS levels in blood.
- **EPA** will continue to develop data and tools to identify and protect communities disproportionately impacted by PFAS contamination. EPA will also continue to work with **CDC ATSDR** to evaluate multi-media PFAS exposure that may contribute to elevated PFAS in humans, and is analyzing samples collected on PFAS in homes under **the Department of Housing and Urban Development (HUD)** American Health Homes Survey II. EPA will make efforts to better characterize sources and quantities of manufactured PFAS in the U.S. and collect information on by-products, worker exposures, and disposal methods.<sup>10</sup>
- **FDA** will continue to use the Total Diet Study, and other surveys, to assess dietary PFAS exposure and will evaluate ways to link these exposures to biomarkers, including blood PFAS levels. The agency will also investigate PFAS persistence and possible bioaccumulation in animal feed.
- **NIST** has developed a database to allow for better detection of PFAS chemicals without current detection standards and is working on reference materials for Aqueous Film Forming Foam (AFFF).
- **NOAA** will increase the number of PFAS surveyed in sediment and shellfish in regional assessments, survey approximately 80 sites across the entire Gulf of Mexico in 2023, and approximately 90 sites in

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<sup>8</sup> [Analytical Results of Testing Food for PFAS from Environmental Contamination | FDA](#)

<sup>9</sup> [The NIST Biorepository | NIST](#)

<sup>10</sup> [TSCA Section 8\(a\)\(7\) Reporting and Recordkeeping Requirements for Perfluoroalkyl and Polyfluoroalkyl Substances | EPA](#)

the Pacific Southwest and Hawaii in 2024. The agency is assessing PFAS in juvenile and adult salmon in Alaska in urban and remote areas with yearly follow-up in returning fish populations.

## 2. ACCELERATING ENVIRONMENTAL PFAS REMEDIATION AND CLEANUP

Agencies expanded operations to track, assess, and clean up PFAS at contaminated sites to safeguard human health and protect the environment.

### Steps Taken

- **The Department of Homeland Security (DHS)** completed preliminary PFAS contamination assessments at over 40 sites.
- **DoD** continued preliminary assessments or site investigations at 705 installations completing over half as of September 2022, initiated remedial investigations at over 250 installations, and addressed PFAS in drinking water in communities surrounding 53 military installations or National Guard facilities.<sup>11</sup>
- **The Department of Energy (DOE)** issued a policy memo guiding DOE efforts to mitigate health and environmental risks associated with PFAS, completed and issued a PFAS Strategic Roadmap outlining its goals, objectives and specific actions to be taken to address risk from PFAS. DOE's preliminary assessment report addressed regulatory and stakeholder interactions that had occurred at the time of publication. DOE has since had significantly more interactions with multiple stakeholders, regulators and tribal nations.
- **EPA** added five PFAS<sup>12</sup> to a list of health and environmental risk-based values that inform site cleanup decisions, providing EPA, federal partners, and the public with critical tools for Superfund and other cleanup programs to investigate contamination and protect people from these PFAS using the latest peer-reviewed science.
- **The National Aeronautics and Space Administration (NASA)** began an agency-wide investigation into possible environmental PFAS releases, restricted the use of PFAS-containing aqueous film-forming foam (AFFF), and installed clean-up procedures.
- **NOAA** actively encouraged use of non-PFAS containing AFFFs for fire-fighting and vapor suppression during exercises and emergency responses and requested safety reports after AFFF usage to track any PFAS releases.

### Ongoing Actions

- **DOE** plans to issue environmental sampling and disposal guidance for DOE sites to manage and dispose PFAS-contaminated waste.
- **EPA** is updating guidance on PFAS destruction and disposal for release by the end of 2023 and will continue to incorporate new scientific information into its cleanup programs. EPA is also committed

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<sup>11</sup> DoD PFAS Cleanup Status; [ASD\(EI&E\) - Per- and Polyfluoroalkyl Substances \(PFAS\) \(osd.mil\)](#)

<sup>12</sup> [EPA Adds Five PFAS Chemicals to List of Regional Screening and Removal Management Levels to Protect Human Health and the Environment | US EPA](#)

to proactively using its enforcement tools to investigate releases of PFAS and to require appropriate follow-up action where needed.

- **NIST** plans to make its PFAS detection database public-facing by 2024, and will make the AFFF reference materials available following value assignment and characterization.

### 3. STRENGTHENING PFAS POLICY AND LIMITING PFAS PROCUREMENT

Agencies created new and expanded policy initiatives to reduce PFAS procurement and use to protect human and ecosystem health, food, and water supplies, and to better regulate PFAS in emergency response operations.

#### Steps Taken

##### *Food and water*

- **DoD** issued 10 internal policies directing the use of new EPA Regional Screening Levels in DoD cleanups, the use of specific EPA analytical methods for media other than drinking water, and the reporting of PFAS results for DoD drinking water off-installation in covered areas.<sup>13</sup>
- **EPA** took a key step to protect public health by proposing to establish legally enforceable levels for six PFAS known to occur in drinking water.<sup>14</sup> The proposed rule leverages the most recent science and builds on existing state efforts to limit PFAS and provide a nationwide, health-protective level for these specific PFAS in drinking water. EPA also proposed designating PFOA and PFOS as hazardous substances under CERCLA, or Superfund;<sup>15</sup> proposed new reporting enhancements for PFAS under the Toxics Release Inventory;<sup>16</sup> removed 12 PFAS from the list of approved inert ingredients in pesticide products;<sup>17</sup> and took further steps to reduce the potential for PFAS contamination in pesticide and chemical packaging.<sup>18</sup>
- **FDA** identified the level of PFOA in samples of canned clams from China as a health concern leading to voluntary recall of products by two firms,<sup>19</sup> and continued to monitor the market phase-out of food packaging containing certain PFAS, following commitments from certain manufacturers in 2020.<sup>20</sup>
- **NIST** developed reference materials for PFAS in porcine, dairy cow, steer, and fish tissues, corn silage, spinach, eggs, milk, and drinking water to support potential agency regulations.

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<sup>13</sup> DoD PFAS Task Force Policies; [ASD\(EI&E\) - Per- and Polyfluoroalkyl Substances \(PFAS\) \(osd.mil\)](#)

<sup>14</sup> [EPA's Safe Drinking Water Act Rulemaking on Per- and Polyfluoroalkyl Substances \(PFAS\) | EPA](#)

<sup>15</sup> [Proposed Designation of Perfluorooctanoic Acid \(PFOA\) and Perfluorooctanesulfonic Acid \(PFOS\) as CERCLA Hazardous Substances | EPA](#)

<sup>16</sup> [Changes to TRI Reporting Requirements for Per- and Polyfluoroalkyl Substances and to Supplier Notifications for Chemicals of Special Concern | EPA](#)

<sup>17</sup> [Pesticides: Proposed Removal of per- and polyfluoroalkyl Substance Chemicals from Approved Inert Ingredient List for Pesticide Products \(regulations.gov\) | EPA](#)

<sup>18</sup> [Per- and Polyfluoroalkyl Substances \(PFAS\) in Pesticide and Other Packaging | EPA](#)

<sup>19</sup> [FDA Shares Results on PFAS Testing in Seafood | FDA](#)

<sup>20</sup> [FDA Announces Voluntary Agreement with Manufacturers to Phase Out Certain Short-Chain PFAS Used in Food Packaging | FDA](#)

- **USDA** amended the Dairy Indemnity Payment Program in 2021 to include compensation for contaminated milk, milk products and cows for farmers.

### ***Healthcare***

- **CDC ATSDR** and the **National Institutes of Environmental Health (NIEHS)** asked the **National Academies of Science, Engineering, and Medicine (NASEM)** to evaluate clinical PFAS health effects<sup>21</sup> and release the first authoritative opinion on how clinicians can discuss PFAS health concerns with patients and recommend actions for follow-up.

### ***Emergency response***

- **The Federal Aviation Administration (FAA)** issued policy guidance to airports to reduce or eliminate the discharge of firefighting foam during the Aircraft Rescue and Fire Fighting (ARFF) timed response as part of yearly airport safety certification and authorized use and funding for equipment that would allow airports to test proportioning systems without foam discharge.
- **DoD** established guidelines for reporting emergency response use or accidental release of AFFF on military installations. The guidance specifies that the DoD will follow existing spill response plans and procedures to contain and recover the AFFF to the extent practicable, dispose of these materials appropriately, and report the usage or release.<sup>22</sup>

### ***Federal procurement***

- **Executive Order 14057**, “Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,” signed by President Biden in December 2021, directs agencies to prioritize substitutes for products that contain perfluoroalkyl or polyfluoroalkyl substances (PFAS), as explained further in the **Office of Management and Budget (OMB)** Memorandum M-22-06.<sup>23</sup>
- **DoD** issued a new Military Specification (MILSPEC<sup>24</sup>) that does not use PFAS-containing AFFF in January 2023, thus taking an important step toward eliminating PFAS exposures. DoD also issued a Defense Federal Acquisition Regulation Supplement (DFARS) class deviation<sup>25</sup> in 2022 to prohibit procurement of certain items that contain PFOS or PFOA. Each military department established a transition plan covering its facilities and mobile assets to ensure a methodical conversion over the next few years.
- **DOE** updated procurement guidance to reduce the purchase of PFAS-containing products, and established a new requirement to report the environmental release of any PFAS-bearing material to DOE Headquarters to identify historic and current uses of PFAS at its sites.

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<sup>21</sup> [Guidance on PFAS Testing and Health Outcomes | National Academies](#)

<sup>22</sup> [DoD AFFF Reporting](#)

<sup>23</sup> [FACT SHEET: President Biden Signs Executive Order Catalyzing America’s Clean Energy Economy Through Federal Sustainability | The White House; Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability \(whitehouse.gov\)](#)

<sup>24</sup> [DoD Fluorine Free Firefighting Foam MILSPEC](#)

<sup>25</sup> [DFARS Class Deviation PFAS Prohibition](#)

- **EPA** is proactively implementing Executive Order 14057 to prioritize federal purchasing of products without added PFAS and collaborating with private sector standards and ecolabel organizations to encourage them to update or incorporate new criteria into their product standards to eliminate PFAS.<sup>26</sup>

### **Ongoing Actions**

#### ***Federal procurement***

- **DoD** will develop processes to identify and track PFAS in federal procurement. **CEQ** is collaborating with the Office of Federal Procurement Policy, the **General Services Administration (GSA)**, **EPA**, and **DoD** to implement policies and processes for agencies to avoid procurement of products containing PFAS. **EPA** is identifying product ecolabels that cover PFAS as part of this effort.

#### ***Regulation of PFAS use and consumer protection***

- **DoD** will replace AFFF at all shore-based installations using new fluorine-free products and facility improvements for fire protection.
- **FDA** will continue to monitor the progress of the market phase-out of food packaging containing certain PFAS, with progress reports due from manufacturers in 2023, and a final report due in January 2024.
- **NOAA** will prepare a training module on PFAS for the Science of Oil Spills training class and a "response-ready" science brief that can be used by emergency responders.
- **USDA** is evaluating existing program options and funding, including the Conservation Reserve Program, and developing solutions to support producers impacted by PFAS.

#### ***Healthcare***

- **CDC ATSDR** will revise and issue their clinical guidance to align with recommendations from NASEM.
- **VA** will consult the **NASEM** report to recommend ways forward in screening, care and compensation policies for veterans in 2023.

## **4. EXPANDING PROGRAM CAPACITY AND RESOURCES TO MEET PFAS CHALLENGES**

Agencies invested in expanded infrastructure, increased operational capacity, and enhanced data management and analytics to improve PFAS detection, measurement, recordkeeping, and cleanup activities.

### **Steps Taken**

- **DHS** established and chartered the 1st DHS Emergent Contaminant Integrated Project Team and secured DHS-HQ funding for program management, technical assistance, subject matter expertise and environmental management information system development and implementation. DHS developed PFAS reporting requirements, data collection, reporting standards, and agency-wide data

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<sup>26</sup> [How EPA's Recommended Standards and Ecolabels Address Per- and Polyfluoroalkyl Substances \(PFAS\) | EPA](#)



collection efforts on use and release of PFAS-containing fire suppression foams (also known as aqueous film forming foam, AFFF).

- **DoD** provided ATSDR \$30 million over the last two years with another \$20 million for FY23 to perform exposure assessments and identify health implications of PFOS and PFOA in drinking water in communities near current and former installations. DoD funded \$60 million in AFFF research, development, test, and evaluation efforts through the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP).
- **DOE** completed initial research on relevant records held at DOE headquarters and Federal Records Centers to identify PFAS uses in production and research activities during the Manhattan Project and Cold War.
- **EPA** began distributing \$10 billion in funding to address emerging contaminants, including PFAS, under President Biden’s Bipartisan Infrastructure Law.<sup>27</sup> EPA has laid the foundation for enhancing data on PFAS through efforts such as the National PFAS Testing Strategy, which breaks the large number of PFAS into smaller categories and requires PFAS manufacturers to test specific PFAS chemicals that will improve the Agency’s understanding of PFAS in each category.<sup>28</sup> EPA’s efforts also include nationwide sampling of drinking water for more PFAS at more drinking water systems than ever before through the fifth Unregulated Contaminant Monitoring Rule.<sup>29</sup> Finally, EPA recently released a set of PFAS Analytic Tools to help EPA as well as the public, researchers, and other stakeholders better understand potential PFAS sources in their communities, potential PFAS exposure pathways in communities with environmental justice concerns, and to what extent PFAS pollution contributes to the cumulative burden of exposures from multiple sources.<sup>30</sup>
- **FDA** developed reliable analytical methods that can be used to detect and measure PFAS in a wide variety of food and feed.<sup>31</sup>
- **NIST** created a database for storage and analysis of analytical chemistry data for PFAS in collaboration with the DoD Strategic Environmental Research & Development Program (SERDP). This database will maintain a list of possible PFAS which have not yet been identified in the environment.
- **NOAA’s** ten institutional Sea Grant programs allocated \$1.46M across 24 research, education, and outreach initiatives. Sea Grant committed \$0.68M of FY23 base funding toward PFAS initiatives. NIST leveraged its Standard Reference Material Program to create new PFAS-related materials for soil, AFFF and food.
- **USDA** updated its environmental risk management and due diligence process in accordance with EPA’s All Appropriate Inquiry standards for real estate transactions. PFAS is now considered in USDA’s due diligence screening assessment. USDA is offering supplemental testing for PFAS in water or soil as part of its Conservation Evaluation and Monitoring Activities to help farmers determine if PFAS may be present on an agricultural operation.

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<sup>27</sup> [Emerging Contaminants \(EC\) in Small or Disadvantaged Communities Grant \(SDC\) | EPA](#)

<sup>28</sup> [National PFAS Testing Strategy | EPA](#) and [TSCA Section 4 Test Orders | EPA](#)

<sup>29</sup> [Fifth Unregulated Contaminant Monitoring Rule | EPA](#)

<sup>30</sup> [PFAS Analytic Tools | EPA](#)

<sup>31</sup> [Determination of Sulfites in Food using Liquid Chromatography-Tandem Mass Spectrometry \(LC-MS/MS\) \(fda.gov\)](#)

## **Ongoing Actions**

- **DHS** will design and implement a DHS Environmental Management Information System to aid in improving data collection, quality and analytics, internal and external reporting, and compliance.
- **EPA** will continue implementing its PFAS Strategic Roadmap, which involves investments in research, development, innovation, and remediation.
- **FAA** will continue to work with industry and airports to transition to new fluorine-free firefighting foams. To accomplish this, FAA is utilizing an existing Aircraft Rescue and Firefighting Advisory Group to develop a National Transition Strategy for fluorine-free firefighting agents.
- **FDA** will continue working to transfer methods to FDA field laboratories, state laboratories, and other laboratories to build PFAS testing capacity.
- **USDA** will update its farmers.gov website to provide information and resources on PFAS that can be used by farmers impacted by PFAS and farmers looking to prevent exposure.

## **5. CLOSING CRITICAL RESEARCH GAPS IN PFAS DETECTION, DISPOSAL, AND HEALTH EFFECTS**

Agencies continued to support scientific studies of PFAS detection, toxicity, and persistence in the environment, development of effective PFAS destruction technologies and formulation of PFAS alternatives for critical uses.

### **Steps Taken**

#### ***Health research***

- **ATSDR** launched the Multi-Site Health Study, which will look at health effects associated with serum PFAS levels in over 4,000 individuals across the country.
- **EPA** published more than 30 peer-reviewed scientific papers on PFAS; issued final toxicity assessments for two PFAS and draft assessments for three more; and added new PFAS data to key databases on chemicals, toxicity, and drinking water treatment.
- **FDA** completed laboratory studies to understand the potential bio-persistence of some PFAS and health effects in women and children. FDA continues its work on this analysis and will publish findings once completed.
- **NIEHS** funded over 70 active projects to investigate multiple aspects of PFAS, including human and environmental exposures, health impacts, novel remediation/detection technologies, community engagement, and occupational health trainings, and published research results of a comparative study of the health effects of two PFAS.
- **VA** launched a Military Exposures Research Program to fund research to better understand the health impact of military exposures including PFAS.

#### ***Agriculture and ecosystem research***

- **DoD**, together with Argonne National Labs and **EPA**, developed ecological screening values (ESVs) for eight PFAS in soil and surface water to support screening guidelines of EPA's Ecological Risk Assessment Guidance for Superfund.

- **NOAA** tested ecotoxicity of PFAS-free firefighting foams<sup>32</sup> and PFAS in coastal animals, ecosystems and food webs to help inform EPA’s work to develop saltwater aquatic life criteria.<sup>33</sup>
- **USDA** led research on the environmental fate and remediation of PFAS in solid and ground water, wastewater, and livestock as well as farming practices to reduce risks of PFAS in food crops. USDA awarded a Monitoring, Assessment, and Evaluation project to PFAS researchers with the State University of New York to study PFAS uptake.

### ***PFAS detection and cleanup technologies***

- **DoD** invested over \$160 million to support more than 200 technology development and demonstration projects focused on innovative PFAS detection and cleanup technologies.
- **DoD**, through a collaboration between the US Army Engineering and Research Development Center and academic researchers, developed a method to detect and identify PFAS in Meals Ready to Eat (MREs) packaging.
- **DoD** and **EPA** collaborated to produce EPA draft Method 1633 to test for 40 PFAS in wastewater, surface water, groundwater, soil, biosolids, sediment, landfill leachate, and fish tissue.<sup>34</sup>
- **DOE** research efforts focused on rapid detection of PFAS in water, including designing molecular probes toward selective detection, separation, and quantification of PFAS. Additionally, DOE released an initial DOE PFAS Research Plan that identifies five Research and Development (R&D) topics for potential future research needs.
- **EPA** released analytical methods, including final PFAS Draft Methods 3512 and 8327 in SW-846,<sup>35</sup> EPA’s compendium of test methods for evaluating solid waste, and draft Method 1621, a method to detect organofluorine compounds in water.<sup>36</sup>
- **FDA** developed an analytical method to detect PFAS at low parts per trillion concentrations in a wide variety of human food and animal feed. In 2022, FDA expanded the method from 16 to 20 PFAS analytes.<sup>37</sup>
- **NIST** identified candidate reference materials critical to validating AFFF exposure studies in 2021.

### ***PFAS destruction technologies***

- **DoD** is supporting EPA’s research efforts through pilot-scale studies of controlled PFAS thermal treatment.
- **DOE** national laboratories developed a plasma-based technique to destroy PFAS and related components in water and investigate the degradation of PFAS in water via a high power, energy-efficient electron beam accelerator.

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<sup>32</sup> Jones, K et al. Acute toxicity of 8 AFFFs to 14 aquatic species. *Environ. Sci. Technol.* 2022, 56, 10, 6078–6090

<sup>33</sup> Aquilina-Beck, A.A., Reiner, J.L., Chung, K.W. *et al.* Uptake and Biological Effects of Perfluorooctane Sulfonate Exposure in the Adult Eastern Oyster *Crassostrea virginica*. *Arch Environ Contam Toxicol* **79**, 333–342 (2020) and [Aquatic Life Criteria – Perfluorooctane Sulfonate \(PFOS\) | EPA](#)

<sup>34</sup> [Clean Water Analytical Methods for PFAS - Draft Method 1633 for 40 PFAS Compounds | EPA](#)

<sup>35</sup> [SW-846 Test Method 8327: Per- and Polyfluoroalkyl Substances \(PFAS\) by Liquid Chromatography/Tandem Mass Spectrometry \(LC/MS/MS\) | EPA](#)

<sup>36</sup> [Clean Water Analytical Methods for PFAS – Draft Method 1621 for Adsorbable Inorganic Fluorine | EPA](#)

<sup>37</sup> [Analysis of Per- and Poly\(fluoroalkyl\) Substances \(PFASs\) in Highly Consumed Seafood Products from U.S. Markets | Journal of Agricultural and Food Chemistry \(acs.org\)](#)

- **EPA** supported research on PFAS destruction technologies, including research on thermal treatment technologies and non-thermal destruction technologies.

#### ***PFAS alternatives***

- The Navy worked on a new fluorine-free foam MILSPEC that will allow **DoD** to identify fluorine-free alternatives that meet firefighting performance requirements.
- **FAA** and **DoD** conducted ground-breaking research on fluorine-free firefighting foams and tested new cleaning procedures for contaminated equipment. The FAA has authorized 14 CFR Part 139 certificated airports to use DoD’s new MILSPEC type fluorine-free foam as an approved firefighting agent on certificated airports.

#### **Ongoing Actions**

- **DoD** has \$60 million planned to continue supporting research and technology efforts that further advance PFAS investigation and cleanup technologies through FY25.
- **EPA** will continue to invest in research, development and innovation to fill gaps in the 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.
- **FDA** will extend detection methods from 20 to 30 PFAS in foods.
- **NIEHS** will continue to conduct and fund a broad portfolio of research to address impacts of PFAS including human and environmental exposures, health impacts, novel remediation/detection technologies, community engagement, and occupational health trainings.
- **NIST** will conduct measurements of PFAS in milk, egg materials, AFFF materials, and other environmental materials in 2023. NIST will complete reference materials for four AFFF formulations; bovine, pork, and fish tissue; other agricultural products; drinking water; and contaminated soil.
- **NOAA** will measure PFAS levels in marine mammals including in archived tissues from Southern Resident Killer Whales in Puget Sound, and compare them to levels of other legacy contaminants.
- **VA** will investigate PFAS exposures and possible health effects in Service members and Veterans using dried blood spots to serve as a proof-of-concept in support of a DoD bio-surveillance program to track exposures over the entire military career.

## **6. BOLSTERING COMMUNITY ENGAGEMENT, OUTREACH, AND INFORMATION SHARING**

Agencies focused on public communication and outreach on issues related to PFAS. They expanded their community engagement operations, established structures for regular communication with interagency partners, legislators, and other stakeholders, and used new, improved websites and other releases to report on actions taken to address PFAS.

#### **Steps Taken**

- **CDC ATSDR** provided webinars to clinicians, and published their blood estimator tool to help individuals who have consumed PFAS-contaminated drinking water estimate their PFAS blood levels.
- **DHS** crafted communication plans and guidance on PFAS.
- **DOE’s** “PFAS Strategic Roadmap: DOE’s Commitments to Action 2022-2025” outlined goals, objectives, and specific actions DOE is taking to address PFAS. The DOE PFAS website went live in

August 2022 as a central hub and PFAS resource center.<sup>38</sup> DOE established communication channels to receive stakeholder-provided information, answer public inquiries, and support transparency in PFAS policy and actions.

- **DoD** developed a new comprehensive and user-friendly PFAS website<sup>39</sup> in 2022, which includes PFAS-related information and a searchable database of PFAS sampling data and PFAS cleanup status by installation as part of an interactive map.
- **EPA**, since release of its PFAS Strategic Roadmap, has held public webinars and stakeholder meetings, testified before Congress, and engaged with EPA federal advisory committees with scientific, environmental justice, and local government equities.
- **OSTP's** Interagency Strategy Team prepared a Report to Congress on the state of PFAS-science for release in early 2023. The report provides a high-level overview of research on PFAS in the following strategic areas: removal and destruction; safer alternatives; sources and pathways of exposure; and toxicity, and identifies gaps and opportunities for action by the Federal government. OSTP issued a Request for Information (RFI) to receive public comment on current gaps in research related to PFAS to help inform this Report to Congress.
- **USDA** and **FDA** provided information and assistance to States responding to PFAS contamination.
- Many agencies provided briefings to Congress on their efforts to address PFAS challenges.

### **Ongoing Actions**

- **DoD** is developing an overarching PFAS communication strategy to enhance dialogue and outreach with communities across the country. DoD will evaluate its current procedures for their Restoration Advisory Boards (RAB) and solicit feedback to improve the organization of the groups, update the RAB handbook, and better leverage resources to improve community involvement throughout the cleanup process.
- **DHS** will expand its internal and external stakeholder engagement with a focus on mutual aid agreements and interagency collaboration at co-located facilities.
- **EPA** in early 2023 will engage directly with communities in each EPA region, building on earlier recommendations from the National Environmental Justice Advisory Council, to better understand the effects of PFAS contamination on lives and livelihoods, and to inform future actions.<sup>40</sup>
- **FDA** will continue to post information, including data releases when available, on its PFAS website.<sup>41</sup>

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<sup>38</sup> [PFAS \(Per- and Polyfluoroalkyl Substances\) | Department of Energy](#)

<sup>39</sup> [DoD PFAS Website; ASD\(EI&E\) - Per- and Polyfluoroalkyl Substances \(PFAS\) \(osd.mil\)](#)

<sup>40</sup> [EPA's PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024: Engagement | EPA](#)

<sup>41</sup> [FDA PFAS Website: Per- and Polyfluoroalkyl Substances \(PFAS\)](#)

## **Compendium: PFAS Action Updates From Federal Departments and Agencies (March 2023)**

The following departments and agencies submitted more detailed accounts of their PFAS-related activities over the past two years and their upcoming plans of action. These are supplied in this section for review.

1. Department of Agriculture
2. Department of Commerce
  - National Institute of Standards & Technology
  - National Oceanic & Atmospheric Administration
3. Department of Defense
4. Department of Energy
5. Department of Homeland Security
6. Department of Health & Human Services
  - Centers for Disease Control & Prevention; Agency for Toxic Substances & Disease Registry
  - Food and Drug Administration
  - National Institute of Environmental Health Sciences
7. Department of Transportation
  - Federal Aviation Administration
8. Department of Veterans Affairs
9. Environmental Protection Agency
10. Executive Office of the President
  - Council on Environmental Quality
  - Office of Science & Technology Policy
11. National Aeronautics & Space Administration

## United States Department of Agriculture (USDA)

USDA is working comprehensively across its eight mission areas and with a number of Federal Agencies, including the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) to both understand and react to the impacts of PFAS contamination on our agricultural producers, our environment and our food system. PFAS can present unique and complex challenges to farmers and ranchers who may find themselves dealing with contamination through no fault of their own and USDA remains committed to participating in a whole-of-government effort to address PFAS concerns in the agricultural and food sectors by advancing science-based research, risk assessments and mitigation of PFAS exposure, and identifying resources that may be needed in the future to support impacted farms.

### **PFAS Research Updates**

The National Institute of Food and Agriculture (NIFA) and the Agricultural Research Service (ARS) have supported a variety of research projects focused on the detection of these substances, how to mitigate uptake and accumulation in field crops, and ways to better understand the occurrence and degradation pathways of micropollutants like PFAS in the agroecosystem.

ARS is providing leadership to the scientific community through its research on the environmental fate and remediation of PFAS in solid and ground water and partnering with industry to identify and evaluate technologies to mitigate PFAS in contaminated and exposed livestock. ARS is additionally conducting research to identify effective farming practices to reduce risks of PFAS in food crop production and assessing the temporal aspects of PFAS (and other contaminants of concern) emission dynamics in wastewater effluent from municipal treatment systems. USDA's NRCS is additionally engaging scientists across the nation in a multi-state coordinated effort to fill gaps in our knowledge about PFAS transport, fate, mitigation, and remediation on farms.

### **Producer Assistance Updates**

USDA's Farm Service Agency (FSA) and Natural Resource Conservation Service (NRCS) are working as comprehensively as they can within their limited authorities and funding to provide support to producers. In 2021, FSA amended the Dairy Indemnity Payment Program (DIPP) to include compensation for contaminated milk, milk products and cows, including deceased or depopulated cows, for dairy producers whose cows and milk are contaminated with PFAS. Loan options, including operating loans, could be used to purchase livestock and farm equipment or fixtures and include water filtration systems to mitigate the impacts of PFAS contamination on farmland. FSA is actively evaluating existing program options through its limited authorities and funding, including the Conservation Reserve Program, and working toward innovative solutions to support producers impacted by PFAS.

This year, the Farm Service Agency (FSA) has awarded a Monitoring, Assessment, and Evaluation (MAE) project to PFAS researchers with the State University of New York to study PFAS uptake in perennial grasses and legumes used for forage crops and for cool season grass cover in Maine. This study will complement current plant uptake studies being conducted by the State of Maine. The MAE project evaluates the use of FSA conservation programs (e.g., Conservation Reserve Program) to support agricultural producers that have historically applied biosolids on their lands by enhancing the scientific knowledge of PFAS migration from impacted soils to cool season grass species.

FSA has also updated its environmental risk management and due diligence process for real property being offered as basic or additional security and certain loan servicing actions in accordance with EPA's

All Appropriate Inquiry (AAI) standards for real estate transactions. PFAS is now considered in FSA's due diligence screening assessment similar to hazardous substances or petroleum products.

The USDA's Natural Resource Conservation Service (NRCS) is offering supplemental testing for PFAS testing in water or soil as part of its Conservation Evaluation and Monitoring Activities to help farmers better understand their situation and determine if PFAS may be present on an agricultural operation.<sup>42</sup> This pre-screening testing is intended to complement, not replace, PFAS testing offered by State agencies or EPA.

NRCS will be releasing a new webpage in the coming weeks on its farmers.gov website that will provide a realm of information and resources on PFAS that can be used by farmers whose operations have been impacted by PFAS, farmers looking to prevent exposure, or those just looking to stay informed.

### **Food Safety Updates**

FSIS conducts surveillance sampling of meat and poultry products for a number of different PFAS compounds. Over the past two years, PFAS were rarely detected in beef, pork, chicken, and farm-raised Siluriformes fish.

FSIS continues to work closely with FDA to provide information and assistance to States responding to known or suspected locations with PFAS contamination. FSIS has tested State-collected muscle tissue and blood samples from affected farms to support State-led risk management actions.

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<sup>42</sup> [USDA PFAS Testing in Water or Soil](#)



## Department of Commerce (DOC)

### National Institute of Standards and Technology (NIST)

As the National Metrology Institute (NMI) for the United States, NIST conducts research and provides services regarding the measurement of chemicals. This work includes the measurement of per- and polyfluoroalkyl substances (PFAS) in environmental, human, and food materials. Current federal partners in this work include the USFDA, USDA, USEPA, NOAA, CDC, and DoD. In addition, NIST works with state government agencies regarding PFAS measurements. The current and planned activities for PFAS at NIST can be broken down into the following categories:

#### **Interlaboratory Studies**

NIST routinely conducts interlaboratory studies, sometimes called interlaboratory comparisons or round robins, that focus on understanding and/or evaluating the measurement capabilities of analytical laboratories, including government, industry, and academic laboratories. For PFAS, NIST has previously administered interlaboratory studies for PFAS in biotic and abiotic materials. The most recent study (2021) includes the targeted measurement of PFAS in Aqueous Film Forming Foam (AFFF) materials.<sup>43</sup>

In addition, studies planned for the upcoming year (2023) include:

- Targeted measurement of PFAS in milk and egg materials
- Targeted measurement of PFAS in AFFF materials by DoD AFFF01 qualified laboratories
- Non-targeted measurement of PFAS in environmental materials

#### **Reference Materials**

As an NMI, NIST produces reference materials (RMs) or Standard Reference Materials® (SRMs) that enable analytical laboratories to calibrate and/or validate their analytical methods for the measurement of PFAS in various matrices. Currently, NIST sells ten RMs and SRMs that have measured quantities of PFAS, including environmental materials, human and animal tissues, and calibration solutions. The development of reference materials includes extensive analytical method development in each respective matrix, including a fundamental understanding of the measurement process, which results in accurate and precise quantitative values for individual PFAS.

In addition, the following materials are in progress:

- PFAS in Aqueous Film-Forming Foam formulations (four materials)
- PFAS in bovine (2), porcine, and fish muscle tissues (four materials)
- PFAS in other food and agricultural products (two materials)
- PFAS in drinking water (one material)
- PFAS in highly contaminated soil (two materials)

#### **Material Data**

To address the lack of analytical standards for many PFAS, NIST created a database infrastructure for the storage and analysis of mass spectral data for PFAS. Part of the database includes the maintenance of a

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<sup>43</sup> Reiner, J.L. and Place, B.J. Interlaboratory Results: Candidate Aqueous Film Forming Foam (AFFF) Reference Materials. *National Institute of Standards and Technology*. (2021). doi: <https://doi.org/10.6028/NIST.IR.8399>.

list of possible PFAS.<sup>44</sup> The database is intended to help researchers better detect and identify PFAS in a wide variety of materials including PFAS outside of their normal detection method. This work is supported by the DoD Strategic Environmental Research & Development Program (ER20-1056).<sup>45</sup>

### **Measurement Science Research**

As part of the Fiscal Year 2021 National Defense Authorization Act (NDAA), NIST was charged with the determination of PFAS content in new and unused personal protective equipment worn by firefighters. Researchers acquired twenty unused textiles used for firefighter gear and performed targeted measurements for fifty-three PFAS. The researchers performed multiple stressing techniques to evaluate the potential release of additional PFAS after textile use. Future work will include evaluating additional textiles and examining the firefighter environment to determine potential sources of exposure to PFAS. NIST will include recently project descriptions, contact information, and upcoming interlaboratory studies on its updated PFAS webpages.<sup>46</sup>

## **National Oceanic and Atmospheric Administration (NOAA)**

### **NOAA - National Marine Fisheries Service - Northwest Fisheries Science Center:**

In recent years, per- and polyfluoroalkyl substances (PFAS) are recognized as contaminants of emerging concern due to widespread distribution in the environment and the potential for adverse health effects. The occurrence of PFAS compounds in marine mammals is poorly understood relative to other aquatic species. The Northwest Fisheries Science Center's Environmental Chemistry Program (ECP) started collaborating with Texas A&M University in the winter of 2022 to develop methods for analyzing PFAS in marine mammal tissues. We are currently planning to expand this effort to analyze PFAS in killer whale samples and other marine mammal species in FY23. Levels of PFAS will be compared to levels of other legacy contaminants (PCBs, DDTs, PBDEs) that the ECP routinely analyzes in the same samples.

### **NOAA - National Ocean Service - National Centers for Coastal Ocean Science (NCCOS)**

- NCCOS is testing PFAS in coastal fish and invertebrate species to determine acute ecotoxicity thresholds to inform the EPA saltwater aquatic life criteria. We are also examining climate interactions (temperature, salinity, UV light) with PFAS toxicity. Mesocosm testing with PFAS and field monitoring will assess ecosystem level fate and effects. We have established uptake and bioaccumulation of PFOS in oysters. We will conduct additional bioaccumulation studies to characterize food web transfer of PFAS in coastal ecosystems.<sup>47</sup>
- NCCOS is testing PFAS alternative firefighting foam products in coastal fish and invertebrate species to determine acute ecotoxicity thresholds (funded by DoD/SERDP and is in collaboration

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<sup>44</sup> NIST Database: [Suspect List of Possible Per- and Polyfluoroalkyl Substances \(PFAS\)](#)

<sup>45</sup> [DoD Strategic Environmental Research and Development Program Overview](#)

<sup>46</sup> NIST PFAS Webpage: [Per- and Polyfluoroalkyl Substances \(PFAS\)](#)

<sup>47</sup> Aquilina-Beck, A.A., Reiner, J.L., Chung, K.W. *et al.* Uptake and Biological Effects of Perfluorooctane Sulfonate Exposure in the Adult Eastern Oyster *Crassostrea virginica*. *Arch Environ Contam Toxicol* **79**, 333–342 (2020).

with NIST and the Army Corps of Engineers ERDC. ERDC is establishing toxicity thresholds for the same PFAS-free products using freshwater organisms. These studies will rank the PFAS alternative products based on ecotoxicity and DoD can use that information, along with efficacy and human safety data in selecting products for future use.<sup>48</sup>

- The NCCOS Mussel Watch program conducts monitoring of 28 PFAS compounds in sediment and shellfish including blue mussels and oysters in regional assessments of U.S. coasts and Great Lakes. This work provides coastal resource managers with baseline information of the magnitude and distribution of PFAS in their managed areas, as well as a national perspective of PFAS contamination in the nation's coastal environments.
- In collaboration with partners from the Auke Bay Laboratories of NOAA's Alaska Fisheries Science Center, NCCOS is working to provide an assessment of PFAS in juvenile and adult salmon in Alaska. The concentrations of PFAS are first being assessed in juvenile salmon hatched near urban areas as well as in remote locations in southeast Alaska. PFAS will then be quantified yearly in returning salmon, to better understand the bioaccumulation potential of PFAS from coastal and open ocean environments.
- The Office of Science and Technology Policy (OSTP) leads an interagency working group of federal technical and scientific experts, called the OSTP/National Science and Technology Council (NSTC) Joint Subcommittee on Environment, Innovation, and Public Health Strategy Team on PFAS.
  - As part of this work, this subcommittee consults with States, tribes, territories, local governments, appropriate industries, academic institutions and nongovernmental organizations with expertise in PFAS research and development, treatment, management, and alternative development.
  - This NSTC subcommittee will deliver a report to Congress in 2023.

#### **NOAA - National Ocean Service – Office of Response and Restoration (OR&R)**

- In 2022 and to continue in 2023, a cross-divisional team within OR&R will address the science of per- and poly-fluorinated substances (PFAS) in aqueous fire-fighting foams (AFFF).
  - The OR&R team will prepare a training module on these hazardous chemicals for the Science of Oil Spills training class and a "response-ready" science brief that can be used by emergency responders.
  - The project is a collaboration between OR&R's Assessment and Restoration Division, Emergency Response Division, and Disaster Preparedness Program. OR&R's scientists also will coordinate with groups inside and outside the agency working to protect communities from PFAS.
- During exercises and emergency responses, OR&R Scientific Support Coordinators (SSCs) actively encourage use of non-PFAS containing AFFFs for fire-fighting and vapor suppression. Safety Data

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<sup>48</sup> Jones, K et al. Acute toxicity of 8 AFFFs to 14 aquatic species. *Environ. Sci. Technol.* 2022, 56, 10, 6078–6090

Sheets (SDS) are requested whenever AFFF is used in an incident so there is documentation available to determine if PFAS-containing materials were used.

**NOAA – Office of Oceanic and Atmospheric Research – National Sea Grant College Program (Sea Grant)**

- Investigation and mitigation of emerging contaminants, particularly PFAS, has continued to be an emphasis for Sea Grant. So far during the Biden-Harris Administration, ten institutional Sea Grant programs (Connecticut, Delaware, Illinois-Indiana, Lake Champlain, Maine, Mississippi-Alabama, New Hampshire, Ohio, Washington, Wisconsin) have directed \$1.46M of their individual base funding across 24 research, education, and outreach initiatives (Example from Wisconsin Sea Grant). To scope and implement these local, state and/or watershed initiatives, Sea Grant programs are working with a range of partners, which include state government agriculture, environmental protection, fish and game, natural resource, and public health agencies, as well as federal programs within the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and the U.S. Geological Survey.
- Congress has also encouraged Sea Grant's expertise and model of federal investment (integrated research, education, and outreach) in the PFAS topical area with recent appropriation bills. In FY21 and FY22, Congress directed Sea Grant to invest \$0.5M and \$1.0M, respectively, towards contaminants of emerging concern. As a result of this direction, and specific to PFAS, Illinois-Indiana Sea Grant recently received an award to address challenges in PFAS risk communication to vulnerable communities and quantify economic impacts of suggested PFAS remediation practices.
- Looking forward, \$0.68M of Sea Grant's FY23 base funding is already committed towards PFAS initiatives. Sea Grant will continue to direct our model of integrated research, education, and outreach toward the most pertinent PFAS and related needs of our coastal and Great Lakes stakeholders.

## Department of Defense (DoD)

### Introduction

The Department of Defense (DoD) is committed to addressing our releases of PFAS under the federal cleanup laws, and protecting the health of our personnel, their families, and the communities in which we serve. To that end, the Secretary of Defense established a PFAS Task Force to address PFAS in a consistent and holistic manner across the Department. The Department has developed and issued ten policy memorandums and driven progress of various PFAS efforts over the past two years through its PFAS Task Force.

One of the top priorities of the PFAS Task Force is cleanup, and DoD is committed to addressing DoD's PFAS releases under CERCLA and sharing information with our DoD families and community members in an open and transparent manner. As part of the cleanup process, the Department has continued preliminary assessments or site investigations at 705 installations, completing 251 over the past two years. Further, the Department initiated over 165 remedial investigations (the next phase in the CERCLA cleanup process) over the same time period. While each phase of the CERCLA process is a multi-year process, DoD has been identifying efficiencies to accelerate cleanup where possible.

The Department also cooperates with EPA in the area of research and development. A partnership between EPA and the Strategic Environmental Research and Development Program (SERDP) has produced draft Method 1633 in 2021, an analytical method to test for 40 PFAS in wastewater, surface water, groundwater, soil, biosolids, sediment, landfill leachate, and fish tissue. In addition, in the past two years SERDP and the Environmental Security Technology Certification Program (ESTCP) are sponsoring research by scientists and engineers on projects ranging from PFAS thermal destruction mechanisms to ecotoxicity. The Navy has also spent considerable effort over the past two years to develop a new fluorine-free foam military specification (MILSPEC) that will allow the DoD to identify fluorine free alternatives that still meet the firefighting performance requirements.

### Steps Taken in 2020-2022

For the past several years, DoD has been supporting and monitoring research and development efforts to better understand the potential health effects of PFAS exposure, and communicating this health risk information to our employees. DoD began offering blood testing for DoD firefighters that may have been exposed to PFAS through occupational exposure, and in 2022 updated the memorandum to reflect new analytical methods that include a greater number of PFAS analytes. Further, in an effort to further reduce the use of PFAS containing products, the Department issued a Defense Federal Acquisition Regulation Supplement (DFARS) class deviation in 2022 to prohibit procuring certain items that contain PFOS or PFOA.

The Department recognizes that working with other Federal Agencies is essential to maintain progress and address the particularly tough challenges related to PFAS. In the past two years, DoD has participated in a range of inter-agency working groups and committees focused on PFAS. The Council on Environmental Quality leads the Interagency Policy Committee on PFAS and the Office of Science and Technology Policy continues to coordinate accelerated PFAS research within the National Science and Technology Council's Joint Subcommittee on Environment, Innovation, and Public Health. DoD is an integral participant in both groups as they continue to assess the need for new policies and scientific

research that result from emerging information about PFAS, and DoD co-chairs the Cleanup and Disposal subcommittee of the CEQ-led committee.

In the past two years, the Department has prioritized our public engagement and outreach efforts with affected communities. To improve communication of our cleanup efforts and PFAS initiatives, the Department developed a new comprehensive and user-friendly PFAS website in 2022, which includes PFAS-related information and a searchable database of PFAS sampling data and PFAS cleanup status by installation as part of an interactive map. In addition, DoD recently awarded a contract for a multi-pronged effort to enhance public outreach and communication of DoD's PFAS efforts including our CERCLA investigations and cleanup, our research and development of PFAS-related projects, and other PFAS initiatives.

#### **2022-2024**

Looking ahead, the Department will concentrate efforts on the investigation and cleanup of PFAS releases from DoD activities. The Department understands that EPA is planning to propose a regulatory drinking water standard for certain PFAS and in anticipation of this EPA drinking water regulation, and to account for emerging science that shows potential health effects of PFOS and PFOA at levels lower than 70 parts per trillion (ppt), the Department is evaluating its efforts to address PFAS in drinking water. This includes assessing what actions DoD can take to be prepared to incorporate this standard, such as reviewing our current data and additional sampling where necessary. The Department will also continue to partner with other federal agencies such as EPA, ATSDR, and HHS in support of interagency PFAS efforts and also fund efforts that 1) research the impacts of PFAS to the environment and the health effects and exposure risks of PFAS and 2) develop technologies to better detect and quantify PFAS as well as cleanup PFAS found in our environment. In addition to releasing a new MILSPEC standard for fluorine-free firefighting product in the coming month, the Department of Defense has set an aggressive schedule to replace AFFF at all shore-based installations using a combination of new fluorine-free products and facility improvements for fire protection. Finally, the Department will be developing processes to identify and track PFAS in procurement. Throughout these efforts, DoD is committed to continued collaboration with our federal-partners, and transparency and engagement with the public to keep them informed about our all PFAS-related efforts.

## Department of Energy (DOE)

The Department of Energy (DOE) is actively supporting the Biden-Harris Administration commitments to address Per- and Polyfluoroalkyl Substances (PFAS). Led by the Office of Environmental, Health, Safety, and Security, the Department is working to assess and understand PFAS presence at DOE sites, to take actions to manage risk, and to advance research and development on promising technologies.

The Deputy Secretary of Energy established the DOE's framework for addressing PFAS in a September 2021 policy memorandum (Policy). The Policy informs DOE's efforts to minimize or eliminate the use and release of PFAS, to assess, contain, reduce, and/or remove PFAS from the environment, and to protect workers and the public from exposure to PFAS as a result of Departmental operations. The Policy also directed DOE to leverage the expertise of the National Laboratories to advance knowledge about PFAS, its fate and transport in the environment, and innovative research and technology approaches, and established the PFAS Coordinating Committee (PCC) to oversee ongoing PFAS-related efforts.

DOE has recently released two PFAS-related Documents, available at the DOE PFAS website:<sup>49</sup>

- August 18, 2022: the *PFAS Strategic Roadmap: DOE's Commitments to Action 2022-2025* outlines goals, objectives, and specific actions the Department is taking to address PFAS. These include researching current and past uses and known or potential releases of PFAS into the environment; proactively preventing PFAS from entering the environment; cleaning up PFAS contamination where needed to protect human health and ecological systems; leveraging the expertise at DOE National Laboratories to enhance PFAS research; and engaging with regulators, tribal nations, local communities, and stakeholders.
- November 22, 2022: the *Initial Assessment on Per- and Polyfluoroalkyl Substances at Department of Energy Sites* summarizes the results of a preliminary evaluation of known historic and current PFAS uses, PFAS occurrence in drinking water and the environment, and regulatory and stakeholder interactions at DOE program sites.

DOE prepared updated procurement guidance to reduce the purchase of PFAS-containing products. The DOE GreenBuy Program provides specific procurement guidelines for avoiding the purchase of PFAS containing products. The latest guidance, updated in February 2022, strengthens the PFAS restrictions and aligns with Executive Order and EPA requirements for purchase of PFAS-containing products. The guidance is updated annually, and DOE expects to integrate additional PFAS-related language in the winter of 2023.

The DOE PFAS website went live in August of 2022 to serve as a central hub and PFAS resource center, and the Department has established communication channels to receive stakeholder-provided information, answer public inquiries, and support transparency in Departmental PFAS policy and actions.

DOE's ongoing research and development activities are primarily focused on evaluating promising technological approaches for PFAS detection, fate and transport, treatment, and replacement. The following are some examples of ongoing detection research at DOE sites:

- Argonne National Laboratory in Illinois is developing a field-effect transistor platform for rapid electronic detection of PFAS in water, including the use of artificial intelligence/machine learning for the design of molecular probes toward selective detection and separation of PFAS.

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<sup>49</sup> DOE PFAS website: [PFAS: Per-and Polyfluoroalkyl Substances](#)

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Appendix: Agency Submissions

- Pacific Northwest National Laboratory in Washington created a PFAS capture probe that is tailored for highly selective analyte recognition and detection, and which can be used for PFAS quantification.

The following are examples of ongoing destruction research:

- Brookhaven National Laboratory in New York is developing a plasma-based technique to destroy PFAS and related components in water.
- Fermi National Accelerator Laboratory in Illinois conducting research on the degradation of PFAS in water via a high power, energy-efficient electron beam accelerator.

Over the past several years, DOE has been working to address PFAS contamination, and the Department has outlined plans to continue these efforts in the DOE PFAS Roadmap. Many DOE sites are determining whether, or to what extent, they have PFAS concerns. DOE has developed and shared a set of applicable resources to assist DOE sites with identifying and minimizing PFAS risks. The DOE PFAS Roadmap identifies several tasks DOE will accomplish in coming months, including:

- Releasing DOE site guidance on research methods to identify historic and current uses—the first step in understanding if a release has occurred.
- Searching relevant records (classified and unclassified) held at DOE sites and Federal Records Centers to document PFAS use in production and research activities.
- Releasing an initial PFAS Research Plan that identifies laboratory capacity and establishes a framework for understanding research gaps and establishing DOE research priorities to ensure a coordinated effort across DOE laboratories and other federal research partners.
- Issuing environmental sampling guidance for DOE sites to support determining the nature and extent of PFAS releases at DOE sites.
- Promulgating disposal guidance for DOE sites to properly manage and dispose of PFAS-contaminated materials and wastes.

DOE will continue to engage with Federal and state regulators, tribal nations, local communities, and stakeholders regarding PFAS at its sites. DOE is committed to collaboration and keeping stakeholders and the public informed about its activities related to PFAS.



## Department of Homeland Security (DHS)

The Department of Homeland Security's fundamental environmental policy is to protect our natural resources; prevent pollution; reduce waste; and strive to exceed the environmental performance goals, objectives and targets established for federal agencies. This policy applies to all of DHS headquarters, Operational Components, program offices, and includes all missions and activities. Of much focus and priority are per- and polyfluoroalkyl substances (PFAS). Over the past two years of the Biden-Harris Administration, the Department has made great strides in addressing PFAS. Outlined below is a summary of high-level accomplishments to date.

### **Steps Taken from 2020-2022**

#### Program Management

- Established and chartered the 1st DHS Emergent Contaminant Integrated Project Team
- Secured funding for program management, technical assistance, subject matter expertise and environmental management information system development and implementation

#### Policy and Guidance

- DHS PFAS Internal and External Communications Guidance Policy Directive 025-03
- DHS CERCLA Policy Directive 025-04
- Data Management and Analytics
- Developed PFAS data collection, analytics, and ad-hoc reporting standards
- Conducted enterprise-wide data collection effort on the use and release of AFFF and other potential sources of PFAS
- Established annual PFAS reporting requirements

#### Environmental Compliance

- Conducted Congressional staff briefings on the DHS mission impacts of various legislation
- Conducted PFAS TRI Reporting training for DHS environmental community of practice
- USCG is working collaboratively with State regulators and local partners to identify, respond to, and mitigate PFAS contamination at a site in Traverse City, MI.

### **FY2024 – FY2025 Path Forward**

The Department has a robust plan for addressing and institutionalizing PFAS over the next few years (pending funding). The focus of the planned efforts centers around assessing mission risk and liability, as well as the launching of program structures and systems. Of note, is the design and implementation of a DHS Environmental Management Information System which will aid in improving data collection, quality and analytics, internal and external reporting, and compliance management. Additionally, the Department is looking to expand its internal and external stakeholder engagement with a focus on mutual aid agreements and interagency collaboration at co-located facilities.

## Health and Human Services (HHS)

### Centers for Disease Control and Prevention (CDC) - Agency for Toxic Substances and Disease Registry (ATSDR)

#### **PFAS Exposure Assessments**

- CDC ATSDR completed the release of PFAS exposure assessment reports for communities near current or former military bases known to have elevated PFAS in their drinking water. The communities were located in Westfield, Hampden County, Massachusetts; Berkeley County, West Virginia; New Castle County, Delaware; Spokane County, Washington; Lubbock County, Texas; Moose Creek, Fairbanks North Star Borough, Alaska; El Paso County, Colorado; and Orange County, New York.
- In September 2022, CDC ATSDR released a final report summarizing the findings of Per- and Polyfluoroalkyl Substances (PFAS) Exposure Assessments (EAs) across all 10 EA sites. The report summarized levels of PFAS in blood and urine from residents living in locations known to have had elevated levels of PFAS in their drinking water near current or former military bases and compares results to national PFAS levels. ATSDR analyzed blood samples in 2,384 residents from 1,212 households. This represents the first comprehensive evaluation across multiple communities to measure PFAS exposure in people's blood. PFAS blood levels are shown by age, race/ethnicity, sex, number of years living in the community, drinking water consumption patterns, and other exposure parameters. Significant findings included that average age-adjusted PFHxS blood levels are higher than national levels in all communities studied and average age-adjusted PFOS and PFOA blood levels are higher than national levels in most of the communities studied. This represents the first comprehensive evaluation across multiple communities to measure PFAS exposure in people's blood.

#### **Pease Health Study**

- The Pease Study is the first site of the national, Multi-site Study, looking at health effects of PFAS contaminated drinking water.
- Enrollment to participate in the Pease Study concluded in December 2021 and all specimen and data collection has ended. There were 905 participants in the study that completed all study activities (776 adults and 129 children)
- CDC's laboratory is completing biomonitoring analyses for the Pease follow-up study and sending results letters to participants. A final report will be released once all analyses are complete.
- ATSDR continues meet with the Pease Community Assistance Panel Meetings to engage with the local community and discuss ongoing concerns.

#### **PFAS Multi-site Health Study**

- Throughout the fall of 2021 and winter of 2022, seven research partners from institutions across the U.S. launched their outreach and recruitment efforts for the PFAS Multi-site Study (MSS).

- Although somewhat delayed due to COVID, the study will have a significant contribution since it is first health study since C8. ATSDR is prioritizing completion of the study and expect data collection to be complete in 2023.
- As of December 7, 2022, more 3226 individuals (3073 adults and 153 children) have completed all MSS study activities.

### **PFAS Guidance and Training**

- In August the National Academies of Sciences, Engineering, and Medicine (NASEM) released the report, "Guidance on PFAS Exposure, Testing, and Clinical Follow-Up." The Committee considered the evidence and scientific literature, created levels of risk and recommendations for the most highly exposed individuals (>20 ng/ml). Some of these may go beyond what considered part of routine clinical practice (dyslipidemia, thyroid function testing, kidney cancer, and testicular cancer) but the evidence was strong enough for the committee to recommend. ATSDR is reviewing and will revise the clinical guidance as appropriate.
- CDC/ATSDR continues to provide support to the clinical community. Since individuals and communities are receiving their PFAS testing results, CDC/ATSDR conducted a webinar in July for clinicians and will continue to provide webinars to clinicians as we revise our guidance.

### **PFAS Blood Level Estimator Tool**

On November 15 ATSDR released a public-facing PFAS Blood Level Estimator Tool that is posted on our ATSDR PFAS website. The tool is user-friendly and was created to help individuals who have consumed PFAS-contaminated drinking water estimate their PFAS blood levels. An estimate is generated using data from the user on consumption of contaminated drinking water and certain physiological parameters.

- The tool compares the estimated PFAS blood levels to PFAS blood levels reported in the most recent National Health and Nutrition Examination Survey (NHANES). Users are guided through a series of demographic and exposure questions focused on the users' drinking water sources. These responses are then turned into model inputs by the tool. Users are then provided with results and additional information to assist them in understanding their estimates and how their PFAS blood levels compare to current national averages.

### **Other activities**

- ATSDR is partnering with EPA to expand on the environmental measurements gathered as part of the exposure assessments in order to identify significant non-drinking water sources of exposure. The investigation will collect environmental samples to evaluate levels of PFAS in the indoor and outdoor environment that may contribute to elevated levels of PFAS in blood.
- Findings from a study regarding PFAS and cancer conducted in collaboration with the American Cancer Society were presented at a recent ISSE conference. The poster was titled "Case-Cohort Study of the Association Between PFAS and Cancers of the Kidney and Bladder Among Participants in the American Cancer Society's Cancer Prevention II Cohort." A key finding of the study was that pre-diagnostic serum PFOA concentrations were associated with incident renal cell carcinoma/adenocarcinoma of the kidney among women.
- Scientists from CDC are working on an ecologic study of PFAS and Cancer, Birth Outcomes, and Mortality from Selected Causes - This ecologic analysis focuses on determining whether there is

an association between higher levels of PFAS exposure and various health outcomes, including cancer, various birth outcomes and mortality. Exposure data are from EPA's UCMR3 (at the zip code level) and outcome data are being requested from state vital statistics systems.

## Food and Drug Administration (FDA)

It is well documented that PFAS are present throughout the environment, however PFAS exposure from food is an ongoing area of investigation and there remains much we do not yet know. Through the FDA's testing of foods grown or produced in areas with known environmental PFAS contamination, it's clear that PFAS in the soil, water, or air can be taken up by plants and animals, leading to contaminated foods. PFAS do not easily break down and some types have been shown to accumulate in the environment and in our bodies. Exposure to some types PFAS has been linked to serious health effects. However, the FDA's testing of a wide range of foods from the general food supply collected for the Total Diet Study (TDS) has found that, overall, very few samples have detectable PFAS and those that do have low levels. Below is a brief synopsis of the work FDA is doing to better understand and address PFAS in food. More information can be found on FDA's PFAS website.<sup>50</sup>

### ***Expanding FDA PFAS method and testing capacity to support FDA's data needs and states' requests for assistance***

- PFAS from environmental contamination
  - FDA developed an analytical method at low ppt concentrations of certain PFAS in a wide variety of food and feed matrices. In 2022, FDA expanded the method from 16 to 20 analytes by adding four additional PFAS, including PFUdA, PFDoA, PFTrDA, and PTFeDA, to its method. These long-chain PFAS were added to the method because they have been reported in seafood and their analysis will contribute to our understanding of dietary exposure.
  - FDA is completing work to extend the method from 20 analytes to 30 PFAS analytes.
- FDA is expanding its research effort into non-targeted PFAS analysis using high resolution mass spectrometry (HRMS) which will allow us to determine which additional PFAS analytes beyond those currently being assessed in the current method are present in foods and should be included in targeted methods going forward.
- FDA is developing methods to detect PFAS coatings on paper, emphasizing PFAS that are currently subject to voluntary phase-out commitments by manufacturers.
- FDA will continue working to transfer methods to FDA field laboratories, state laboratories, and other laboratories to build PFAS testing capacity.

### ***Sampling and analysis to better understand PFAS in the U.S. food supply***

- General Food Supply-
  - The Total Diet Study (TDS) represents the FDA's primary tool for assessing the presence of PFAS in the general food supply. FDA has analyzed and posted PFAS results for four of six regional collections and one national collection of TDS samples, as a part of our work to better understand whether certain foods in the general food supply are a significant pathway for PFAS dietary exposure. Of the 532 TDS samples tested by FDA for PFAS to date, there have been ten samples with detectable levels of certain PFAS, eight of which were seafood.

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<sup>50</sup> FDA PFAS Website: [Per- and Polyfluoroalkyl Substances \(PFAS\)](#)

- The FDA is finalizing results for additional collections of TDS food samples.
- Seafood-
  - In 2022 the FDA conducted a targeted survey of the most commonly consumed seafood in the United States and made the results publicly available.<sup>51</sup> This testing, of 81 samples of 8 types of seafood, showed that in comparison to previous PFAS testing in the general food supply through the TDS, a greater percentage of these seafood samples had detectable levels of PFAS, more types of PFAS were detected, and higher levels of PFAS were detected in some samples. When PFAS are detected, the FDA uses the best available science to assess the potential health concern from exposure for PFAS that have toxicological reference values. The FDA's assessment for this seafood survey shows that of the PFAS evaluated, the level of PFOA in the samples of canned clams, which were from China, is likely a health concern. The two firms with the two highest PFOA levels issued voluntary recalls for their products.
  - FDA intends to conduct additional targeted seafood sampling, in follow-up to the 2022 seafood survey. For example, the FDA is working to collect samples at port(s) of entry to further assess PFAS in processed clams from certain firms from China.
- Bottled Water-
  - In 2023, FDA intends to analyze additional bottled water samples for PFAS (in anticipation of EPA's proposed regulation for establishing MCLs for PFOA and PFOS in drinking water) including different types of bottled water. Previous limited FDA testing has not detected PFAS in bottled water.
- Animal Food-
  - In 2022, FDA issued a survey to determine the extent and level of PFAS in a limited number of animal food ingredients. This assignment is intended to understand the impact of PFAS persistence and possible bioaccumulation in raw agriculture ingredients used for animal food for food producing animals, and to understand potential risks to human and animal health.

***State engagement and collaboration to address areas of known environmental contamination***

- The FDA assists states in analyzing samples of foods from areas of potential environmental contamination, including assessing whether levels present a health concern.
- In 2023 and beyond, as resources allow and at states' requests, the FDA will continue to provide technical assistance to, and collaborate with, states to measure PFAS in food when environmental contamination is suspected.

***Food contact uses***

- FDA continues to monitor the progress of the market phase-out of food contact substances containing the short-chain PFAS 6:2 FTOH, following commitments from certain manufacturers in 2020, with progress reports from manufacturers due in 2022 and 2023, and a final report in January 2024.
- In 2022, FDA continued work to determine the extent to which fluorinated polyethylene containers are currently used in food contact applications, including developing analytical J. Amethods and reviewing information received in response to our Request for Information.<sup>52</sup>

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<sup>51</sup> Young, W., Wiggins, S., Limm, W. *et. al.* Analysis of Per- and Poly(fluoroalkyl) Substances (PFASs) in Highly Consumed Seafood Products from U.S. Markets. *J. Agric. Food Chem.* 70, 42, 13545-13553 (2022).

<sup>52</sup> [FDA Issues RFI on Fluorinated Polyethylene Food Contact Containers](#)

***Evaluating dietary exposure***

- FDA intends to conduct preliminary dietary exposure estimations for the U.S. population.
- FDA intends to evaluate and implement models to relate exposure to PFAS compounds in the diet to biomarkers (e.g., blood PFAS levels from the National Health and Nutrition Examination Survey).
- FDA will explore approaches to consider the toxicity of multiple PFAS occurring concurrently in food.

***Evaluating human health effects of PFAS***

- In 2021, FDA published a comparative analysis of the physicochemical, toxicokinetic, and toxicological properties of a subset of PFAS compounds known as ether-PFAS.
- To understand the bio-persistence potential of 6:2 FTOH and its impact to reproductive and developmental health:
  - In 2022, FDA completed studies on the bio-persistence of 6:2 FTOH and its acid metabolites in nonpregnant females and pregnant rats and their offspring to quantify basic TK parameters, such as elimination half-life, of 6:2 FTOH and major metabolites. In addition, FDA completed in vitro studies evaluating the role of renal transport mechanisms in the TK of 6:2 FTOH and metabolites.
  - Data from these studies are currently being used to construct a Physiologically based Pharmacokinetic (PBPK) model of 6:2 FTOH metabolism and disposition in pregnant females and their offspring.

***Evaluating options for risk management***

- The FDA will take appropriate action to remove foods from the food supply, as required. The FDA handles instances of PFAS contamination of food in interstate commerce on a case-by-case basis.
- As the science evolves, consideration will be given to developing appropriate guidance documents, undertaking additional sampling and corresponding inspection activities, and initiating follow-up action when necessary to monitor and ensure the safety of the food supply.

## [National Institute of Environmental Health Sciences \(NIEHS\)](#)

In 2021-2022, the National Institute of Environmental Health Sciences (NIEHS) funded over 70 active academic and small business research projects across the country<sup>53</sup> investigating health effects of PFAS exposures including mechanisms of action in animal and cell models, epidemiology studies, PFAS fate and transport, advanced detection approaches for biospecimens and environmental samples, innovative remediation approaches, and occupational health and safety training and curriculum. NIEHS and the National Toxicology Program<sup>54</sup> (NTP) support research by intramural scientists and in partnership with other federal agencies to better understand the potential adverse effects associated with PFAS exposure and to refine approaches for identifying safer alternatives. In collaboration with CDC/ATSDR, NIEHS cosponsored a project by the National Academies of Science, Engineering, and Medicine to review the current evidence regarding human health effects of PFAS, the relative contribution of PFAS human exposure sources and to and make recommendations that will inform revisions to PFAS clinical

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<sup>53</sup> NIEHS: [Per- and Polyfluoroalkyl Substances \(PFAS\) \(nih.gov\)](#)

<sup>54</sup> NTP: [Per- and Polyfluoroalkyl Substances \(PFAS\) \(nih.gov\)](#)

guidance. The final project report was published in 2022 and the National Academies website features several interactive resources regarding the scientific evidence for human health effects of PFAS.<sup>55</sup>

For 2023-2024, NIEHS will continue to conduct and fund a broad portfolio of research approaches to address impacts of individual PFAS and PFAS mixtures on human health including several epidemiology cohorts, innovative high throughput technologies, and basic toxicological research. Through the Superfund Programs, NIEHS will also support the development of novel PFAS remediation and detection technologies, environmental fate studies as well as occupational health and safety training and curriculum.

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<sup>55</sup> [Guidance on PFAS Exposure, Testing, and Clinical Follow-Up | The National Academies Press](#)

## Department of Transportation (DoT)

### Federal Aviation Administration (FAA)

The Federal Aviation Administration (FAA) has implemented the following measures to reduce the environmental impact of aircraft firefighting foam containing PFAS while continuing to ensure the safety of the flying public.

- FAA has issued policy guidance to airports to eliminate the discharge of firefighting foam for testing purposes, so that discharges only occur in very rare circumstances generally involving liquid fuel fires. The FAA also provided funding for airports to purchase input-based foam testing systems that do not require the discharge of foam. These actions have helped prevent further releases of firefighting foam into the environment.
- The FAA and the Department of Defense (DoD), conducted significant research on fluorine-free firefighting foams to find a replacement foam with equivalent firefighting performance, without the negative impact to human health or the environment. Over 500 research tests have been performed since 2020. The FAA adopted DoD's fluorine-free foam MILSPEC in January of this year. The FAA is involved in joint meetings with the Strategic Environmental Research and Development Program (SERDP) / Environmental Security Technology Certification Program (ESTCP). SERDP and ESTCP harness the latest science and technology to develop and demonstrate innovative, cost-effective, and sustainable solutions to meet DoD's environmental and installation energy and water challenges.
- The FAA, the Environmental Protection Agency (EPA), and other governmental partners are working to understand and address cleanup and disposal of PFAS and PFAS-contaminated materials, including aircraft rescue and firefighting equipment, with the adoption of the fluorine-free foam. The FAA, in association with DoD researched new training techniques at China Lake, CA. New equipment cleaning procedures have been tested in conjunction with DoD and industry in Dallas, TX, and Tyndall Air Force Base, FL. The FAA is also coordinating with the EPA on Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) enforcement guidance for PFAS contamination.
- The FAA has partnered with DoD and industry to research potential new training procedures, training applications, and equipment cleaning. The FAA will continue to work with industry and airports through the multi-year transition to a new fluorine-free firefighting foam. This includes work by the existing Aircraft Rescue and Firefighting Advisory Group to develop a National Transition Strategy for fluorine-free firefighting agents.



## Department of Veterans Affairs (VA)

VA continues to work with Federal partners to address PFAS concerns in the Veteran population. Of note, VA meets with SMEs from ATSDR and EPA every other month to share updates on PFAS activities.

- VA has convened a technical working group to review the recently released NASEM report on PFAS clinical guidance and follow-up. This group of agency SMEs will make recommendations to the Secretary of VA on potential ways forward in terms of screening, care and compensation policies for Veterans this FY.
- A collaboration between VA's Health Outcomes Military Exposures, Central Arkansas VAMC, and Naval Health Research Center is utilizing assets from the Millennium Cohort Study (e.g., administrative data, surveys, serum samples banked at the DoD Serum Repository) to investigate PFAS levels in military firefighters (occupationally exposed) and construction workers (occupationally unexposed) as identified by military occupational specialty (MOS) codes. The study will also investigate correlations between PFAS levels and cardiometabolic outcomes and biomarkers. Funding for this effort has been obtained through the Joint Program Committee-5/Military Operational Medicine Research Program (FY21) and from HOME program funds (FY22/23). Initial results from this study are expected in FY23.
- A pilot study is being planned to investigate and track PFAS exposures in Service members and Veterans via dried blood spots. Correlations with biomarkers of effect will be evaluated. The study will serve as a proof of concept in support of a DoD-wide dried blood spot bio-surveillance program to track exposures throughout an individual's military career, with some analyses of samples to occur close to the time of collection and remaining samples transferred to VA at separation. Analytical results could potentially be made accessible through ILER. A proposal was submitted to Cancer Moonshot 2.0/PROMETHEUS for funding of this effort at the end of FY22
- VA's Office of Research and Development has launched a Military Exposures Research Program (MERP) that will provide enhanced support for research efforts related to military exposures. The MERP will advance research to better understand the health impact of environmental and occupational exposures during military service, including PFAS, and use that knowledge to inform veteran care and VA policy.

## Environmental Protection Agency (EPA)

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

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

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

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

In November 2022, EPA released “A Year of Progress Under EPA’s PFAS Strategic Roadmap,” which underscores key actions taken by the Agency during the first year of implementing the PFAS Roadmap. EPA continues to implement a whole-of-agency approach, advancing science, and following the law to safeguard public health, protect the environment, and hold polluters accountable. **More information on EPA’s work is provided in EPA’s November 2022 progress report.**<sup>56</sup>

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<sup>56</sup> [EPA’s PFAS Strategic Roadmap: A Year of Progress](#)

## Executive Office of the President (EOP)

### Council on Environmental Quality (CEQ)

President Biden signed Executive Order 14057, “Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,” in December 2021, which set the precedent to reduce or eliminate PFAS from the federal supply chain. CEQ issued implementation guidance to agencies with specific recommendations on how to achieve this goal.<sup>57</sup>

CEQ established an interagency policy committee in October 2021 to facilitate the coordination of PFAS response activities across government.<sup>58</sup>

### Office of Science and Technology Policy (OSTP)

OSTP developed the PFAS Strategy Team (ST) in Fall 2021. The PFAS ST builds on a previous Interagency PFAS Technical Working Group which was reconfigured as a group under OSTP’s National Science and Technology Council (NSTC) Joint Subcommittee on Environment, Innovation and Public Health in late 2021. The ST coordinates interagency PFAS research and development activities and supports the development and implementation of the PFAS strategic research plan. The ST is co-chaired by OSTP, OMB, and DoD; and consists of the following agencies: CPSC, DHS, DOC/NIST, DoD, DOE, DOT, OMB, OSTP, EPA, HHS/CDC/ATSDR, HHS/FDA, HHS/NIH/NIEHS, NASA, NOAA, NSF, SBA, USDA, USGS, and VA.

The PFAS ST is writing a Report to Congress that will be made public in early 2023. The Report to Congress (RtC) provides a high-level overview of research on PFAS as a chemical class by addressing the following strategic areas: removal and destruction; safer alternatives; sources and pathways of exposure; and toxicity. This document is a state of science report that includes gaps and opportunities for the Federal government. In order to develop this report, OSTP and the ST solicited expert input from eight PFAS technical writing teams. OSTP also issued a Request for Information (RFI) to receive public comment. Following this report, the PFAS ST will develop a strategic plan for how the Federal government can leverage these opportunities in order to make significant progress in addressing the identified data gaps.

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<sup>57</sup> The White House Council on Environmental Quality, Implementing Instructions for Executive Order 14057, Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability (Aug. 2022), [https://www.sustainability.gov/pdfs/EO\\_14057\\_Implementing\\_Instructions.pdf](https://www.sustainability.gov/pdfs/EO_14057_Implementing_Instructions.pdf).

<sup>58</sup> [FACT SHEET: Biden-Harris Administration Launches Plan to Combat PFAS Pollution | The White House](#)

## **National Aeronautics and Space Administration (NASA)**

NASA is committed to protecting human health and the environment in all of its activities and is performing an agency-wide investigation into areas where environmental releases from past work practices involving materials or products that contain PFAS may have occurred. NASA is in the process of collecting samples at these identified areas to determine if a release happened and plan further actions, where necessary. NASA has also restricted the use of aqueous film forming foam (AFFF) to emergencies only and has cleanup procedures in place to collect and dispose of the AFFF.

The sampling results from the agency-wide investigation will inform NASA's decisions on future actions. NASA is closely monitoring the federal PFAS regulatory status and the regulatory status in states where the agency has facilities and will implement regulatory requirements and protective measures as necessary. NASA is committed to open and transparent communications and will continue to coordinate with local communities, water authorities, and Federal and State Environmental Protection Agencies on PFAS investigation and remediation actions.