OFFICE OF INSPECTOR GENERAL
U.S. ENVIRONMENTAL PROTECTION AGENCY

CUSTOMER SERVICE ★ INTEGRITY ★ ACCOUNTABILITY

U.S. Environmental Protection Agency

Fiscal Year 2022
Top Management Challenges

Abbreviations

C.F.R.	Code of Federal Regulations
EDSP	Endocrine Disrupter Screening Program
EPA	U.S. Environmental Protection Agency
FY	Fiscal Year
GAO	U.S. Government Accountability Office
GHG	Greenhouse Gases
IRIS	Integrated Risk Information System
IT	Information Technology
OECA	Office of Enforcement and Compliance Assurance
OIG	Office of Inspector General
OPPT	Office of Pollution Prevention and Toxics
PFAS	Per- and polyfluoroalkyl substances
TSCA	Toxic Substances Control Act
U.S.C.	United States Code
WoE	Weight of Evidence

U.S. Environmental Protection Agency
Office of Inspector General

22-N-0004
November 12, 2021

At a Glance

What Are Management Challenges?

The Reports Consolidation Act of 2000 requires each inspector general to prepare an annual statement summarizing what the inspector general considers to be "the most serious management and performance challenges facing the agency" and to briefly assess the agency's progress in addressing those challenges.

To identify these top challenges for fiscal year 2022, the U.S. Environmental Protection Agency's Office of Inspector General considered the body of our work, as well as our objective and professional observations; work conducted by the U.S. Government Accountability Office; and Agency documentation and statements.

Our top management challenges report covering fiscal years 2020–2021 (Report No. 20-N-0231) identified eight such challenges facing the Agency. We've retained three of these challenges—*enhancing information technology security*, *communicating risks*, and *integrating and leading environmental justice*—for this fiscal year 2022 report but reshaped and refocused them into two.

Address inquiries to our public affairs office at (202) 566-2391 or OIG_WEBCOMMENTS@epa.gov.

List of OIG reports.

EPA's Fiscal Year 2022 Top Management Challenges

What We Found

After robust research and analysis, the EPA OIG identified seven top management challenges that we believe represent the EPA's greatest vulnerabilities to waste, fraud, abuse, and mismanagement and the EPA's most significant barriers to accomplishing its mission during fiscal year 2022. In addition to three challenges retained from our previous top management challenges report, which we reshaped and refocused into two, we identified five new top challenges that focus on emerging or increased environmental and operational threats. These seven top challenges reflect overarching issues that affect multiple EPA programs and responsibilities and that may prevent the Agency from efficiently and effectively protecting human health and the environment:

1. **Mitigating the Causes and Adapting to the Impacts of Climate Change.** The EPA must take a leadership role in limiting climate change and mitigating its effect on human health and the environment.
2. **Integrating and Leading Environmental Justice Across the Agency and Government.** As part of its effort to integrate environmental justice across its programs, the EPA must address the environmental hazards and cumulative risk facing at-risk communities and effectively communicate that risk to those communities.
3. **Ensuring the Safe Use of Chemicals.** The EPA must develop timely and accurate chemical risk assessments to identify acceptable exposure levels for humans and the environment.
4. **Safeguarding Scientific Integrity Principles.** Science-based decisions at the EPA must be based on principles of scientific integrity to ensure that human health and the environment are protected by using the best-available science.
5. **Ensuring Information Technology and Systems Are Protected Against Cyberthreats.** Information technology is a fundamental and essential resource for the EPA to carry out its mission.
6. **Managing Infrastructure Funding and Business Operations.** The EPA must effectively oversee the funding and operation of America's water, wastewater, and other environmental infrastructure.
7. **Enforcing Environmental Laws and Regulations.** Through enforcement, the EPA ensures that regulated entities are following environmental laws and will continue to do so, as enforcement actions effectively deter future noncompliance.

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

THE INSPECTOR GENERAL

November 12, 2021

MEMORANDUM

SUBJECT: EPA's Fiscal Year 2022 Top Management Challenges
Report No. 22-N-0004

FROM: Sean W. O'Donnell

TO: Michael S. Regan, Administrator

The Report Consolidation Act of 2000 requires that I prepare an annual statement summarizing what the U.S. Environmental Protection Agency's Office of Inspector General considers to be the "most serious management and performance challenges facing the agency." This statement is also to briefly assess the EPA's progress in addressing these challenges. Furthermore, the Inspector General Act of 1978, as amended, directs that I provide oversight to the EPA by conducting audits, evaluations, investigations, and other such analyses of Agency programs and operations for the dual purposes of promoting economy, efficiency, and effectiveness and detecting and preventing fraud, waste, and abuse. By virtue of our statutory responsibilities, the EPA OIG has an independent and objective perspective regarding the challenges that the EPA faces that could hinder its mission of protecting human health and the environment, as well as the directive to share our perspective with the EPA. I am, therefore, pleased to present this top management challenges report, which details the most serious management and performance challenges we observe facing the EPA's programs and operations over the coming year.

To identify the Agency's top management challenges for fiscal year 2022, we mined the OIG's prolific body of work, surveyed all EPA headquarters offices, solicited senior EPA leadership input, and held outreach meetings with Agency offices to discuss their perceptions of the challenges affecting EPA programs and operations. We also considered the work of the U.S. Government Accountability Office and public statements by EPA leaders to the press and Congress. The resulting report represents our independent and objective assessment of the areas in which the Agency will, over the next year, need to focus its resources. This report does not simply summarize these challenges, though; it also assesses the Agency's efforts to address them. As such, it represents a foundational effort that charts a forward path for the OIG to plan audits, evaluations, and investigations that will assist the EPA in mitigating these challenges and achieving its mission in the most economical, efficient, and effective manner possible.

Last year's report identified eight top management challenges facing the EPA. This report retains three of those, albeit slightly reshaped and refocused into two, and identifies five new areas of concern, for a total of seven top management challenges. While none of these seven challenges are more significant than the others, some do directly address the administration's priorities of climate change and the environment. It is also important to note that the five management challenges not retained from last fiscal year have not been completely addressed; rather, they have only been superseded as "top" challenges.

We hope that you find this report both helpful and insightful. Thank you for your continued efforts to address these challenges, and we look forward to working with you, on behalf of the American public, to safeguard the air we breathe, the water we drink, and the land we sow.

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Introduction and Management Challenges

INTRODUCTION

The Reports Consolidation Act of 2000 requires each inspector general to prepare an annual statement summarizing what the inspector general considers to be "the most serious management and performance challenges facing the agency" and to "briefly assess[] the agency's progress in addressing those challenges." To this end, the U.S. Environmental Protection Agency's Office of Inspector General annually assesses the top management and performance challenges affecting the programs and operations of the EPA. As part of this assessment, the OIG solicits input from senior EPA leadership, reviews congressional hearings and public statements, analyzes oversight work conducted by the U.S. Government Accountability Office, and considers issues raised by media coverage and the civil sector. We also considered how the EPA's programs addressed top management challenges identified in previous fiscal years, as well as our oversight work over fiscal year 2021. This top management challenges report provides Congress and the Agency an independent and objective assessment of the management and performance challenges facing the Agency over FY 2022.

The FY 2022 top EPA management challenges are:

1. Mitigating the causes and adapting to the impacts of climate change.
2. Integrating and leading environmental justice across the Agency and government.
3. Ensuring the safe use of chemicals.
4. Safeguarding scientific integrity principles.
5. Ensuring information technology and systems are protected against cyberthreats.
6. Managing infrastructure funding and business operations.
7. Enforcing environmental laws and regulations.

These challenges are not listed in order of priority, importance, or magnitude. Each challenge is critical to ensuring that the EPA meets its mission of protecting human health and the environment. For this reason, the top management challenges are forward-looking so that they may assist the Agency in effectively achieving its mission and the OIG in planning oversight for the next fiscal year.

Overview of FY 2021 Management Challenges

With respect to the *Fiscal Year 2021 Oversight Plan*, the OIG issued 32 project notifications and 33 reports, containing 124 recommendations.

Table 1: OIG metrics for FY 2021 management challenges

FY 2021 Management Challenges	Notification memorandums	Issued recommendations*
1. Maintaining operations during pandemic and natural disaster responses.	6	4
2. Complying with key internal control requirements.	10	55
3. Overseeing states, territories, and tribes responsible for implementing EPA programs.	2	28
4. Improving workforce/workload analyses to accomplish EPA's mission efficiently and effectively.	0	11
5. Enhancing information technology security to combat cyberthreats.	3	5
6. Communicating risks to allow the public to make informed decisions about its health and the environment.	2	9
7. Fulfilling mandated reporting requirements.	8	9
8. Integrating and leading environmental justice across the Agency and government.	1	3
TOTAL	**32**	**124**

Source: OIG summary of metrics. (OIG table)

*Some reports issued recommendations addressing multiple management challenges which were not the primary challenge addressed by the report.

Summary of FY 2022 Management Challenges

The first challenge***, Mitigating the Causes and Adapting to the Impacts of Climate Change,*** focuses on the EPA's role in providing leadership in addressing climate change. The EPA reported that "the Earth's climate is warming and changing faster than at any point in history of modern civilization, primarily because of emissions of heat-trapping greenhouse gases from fossil fuel combustion, deforestation, and land-use change." To address climate change and to mitigate any consequences, Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*, requires a governmentwide approach. The EPA, with its mission of protecting human health and the environment, is uniquely positioned to provide leadership in addressing climate change nationally and working internationally to mitigate the causes and promote measures to adapt to the impacts of climate change. Leadership on this issue will require coordination with local, state, federal, and international government partners to develop effective strategies and plans to mitigate and curtail climate change. To best leverage its resources and ensure a cohesive approach, the EPA needs to implement its strategic plan to effectively address climate change, using science as a foundation for decision-making and considering the impacts to communities with disproportionate impacts.

The second challenge, ***Integrating and Leading Environmental Justice Across the Agency and Government***, highlights the EPA's continuing challenge of integrating environmental justice considerations throughout the government. Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. These underserved communities are, however, among the hardest hit by pollution and environmental hazards. President Joe Biden has made this challenge a top priority for his administration through executive order and in proposing increased funding to directly support environmental justice efforts. The EPA, with its mission to protect human health and the environment, will be called upon to provide leadership in these efforts. To start, the EPA will need to assess the environmental hazards and

cumulative risks facing at-risk communities and effectively communicate these risks to these communities.

The third challenge, ***Ensuring the Safe Use of Chemicals***, focuses on the EPA's mission to protect human health and the environment from harmful chemicals and pesticides. The EPA assesses chemicals and their risks to find ways to prevent or reduce pollution before it gets into the environment. The EPA also regulates the manufacture and use of all pesticides to safeguard the nation's food supply. To effectively protect public health and the environment, the EPA must be able to depend on its ability to conduct credible and timely assessments of the risks posed by pesticides, toxic chemicals, and other environmental chemical risks. The 2016 expansion of the EPA's regulatory authority under the Toxic Substances Control Act has increased the need for conducting rapid and accurate risk assessments. Further, the EPA must continue to conduct registration and reregistration of hundreds of pesticides per year, as well as assure that it is setting appropriate exposure levels for contaminants in drinking water. Without appropriate resource and implementation plans in place to demonstrate the EPA can accomplish this work, and without the ability to accurately conduct scientifically sound risk assessments, the public's trust and confidence in the EPA's ability to accomplish its mission of protecting human health and the environment will be at risk.

The fourth challenge, ***Safeguarding Scientific Integrity Principles***, addresses the importance of scientific integrity in the EPA's decision-making. As the EPA recognizes in its Scientific Integrity Policy, "[t]he Agency's ability to pursue its mission to protect human health and the environment depends on the integrity of the science on which it relies. Scientific integrity, therefore, results from adherence to professional values and practices when conducting and applying the results of science and scholarship." It ensures objectivity, clarity, reproducibility, and utility, while insulating science from falsification, plagiarism, outside interference, censorship, and inadequate procedural and information security systems. Yet, there have been recent instances where scientific integrity has been lost, or appeared to be lost, because of allegations of misconduct and abuse of authority. The EPA must develop new processes and update its regulations, policies, and guidance to protect scientific integrity. Taking these actions will help make EPA decisions more legally defensible and maintain public trust in the decision-making.

The fifth challenge, ***Ensuring Information Technology and Systems are Protected against Cyberthreats***, is a challenge that has come into renewed focus because of the actions of malicious actors. Information systems are necessary for organizations to conduct the day-to-day transactions necessary to meet mission objectives. And critical infrastructure systems, such as drinking water facilities, are being maintained on computers. For this reason, criminals and other malicious actors view our critical infrastructure systems as ready targets. Indeed, in a hearing on vulnerabilities of our nation's drinking water supplies, Senator Tom Carper, Chairman, Committee on Environment and Public Works, warned of the "mounting cybersecurity challenges facing our nation's drinking water and wastewater systems." Given the EPA's oversight role regarding the water and wastewater systems, the EPA needs to be on the forefront of proactively identifying and thwarting cyberattacks on these critical infrastructures. The EPA will also need to ensure that its own systems are protected from these same malicious actors because, without secure and reliable information systems, the EPA is at risk of being unable to perform its important mission.

The sixth challenge, ***Managing Infrastructure Funding and Business Operations***, highlights the challenge to EPA leadership in financing, developing, and rebuilding water infrastructure projects. The EPA has long recognized that clean and safe drinking water is the cornerstone of public health. Every year, the EPA provides billions of dollars to drinking water and wastewater infrastructure projects, of which a vast majority is distributed to states, tribes, and nongovernmental organizations in the form of grants, loans, and contracts. These investments require the EPA to provide effective oversight and ensure proper internal controls over these funds. It is expected that, over the next five years, the EPA will help lead the nation in one of the largest infrastructure investment programs in our history. Some new projects will be influenced by the effects of climate change. And some completed projects may be in need of upgrades due to the possible effects of climate change. Effectively overseeing these projects will require dedicated EPA leadership and resources.

The seventh challenge is ***Enforcing Environmental Laws and Regulations***. A robust enforcement program is vital to deterring regulated entities from violating environmental laws and regulations and to protecting human health and the environment. National level, regional level, and statute-specific EPA compliance monitoring activities, enforcement actions, and most enforcement results, including output and some outcome measures, generally declined from FYs 2007 through 2020. Considering its limited resources, and despite potential funding increases in FY 2022, the EPA is challenged to assess its resource requirements for the enforcement program and identify innovative and cost-effective means of detecting and deterring noncompliance in the future.

Enduring and Cross-Cutting Issues

Finally, over FY 2021, the OIG recognized that some of the challenges facing the EPA were enduring and cut across numerous media and other challenges. Building the appropriate workforce is an issue that surfaced in many OIG audits and evaluations to include the safety of chemicals and enforcement. We expect this to continue as the EPA is expecting additional resources that could add up to 1,000 new hires. Also, the EPA will need to ensure effective oversight of tribes, states, and local governments through infrastructure spending, enforcement and compliance assurance, and environmental justice. Furthermore, the EPA counts on these partners to implement and manage a large portion of EPA regulations. Finally, over the last two years, the OIG developed a significant body of oversight work regarding the regulatory process. As the EPA prioritizes climate change, environmental justice, chemical safety, and enforcement, it will need to ensure that the regulatory process, and the laws and policies related to that process, is adhered to.

CHALLENGE 1: *Mitigating the Causes and Adapting to the Impacts of Climate Change*

Outlook and Overview

The EPA, in its *Climate Adaption Action Plan*, observed that:

> [T]he Earth's climate is warming and changing faster than at any point in the history of modern civilization, primarily because of emissions of heat-trapping greenhouse gases, or GHG, from fossil fuel combustion, deforestation, and land-use change.[1]

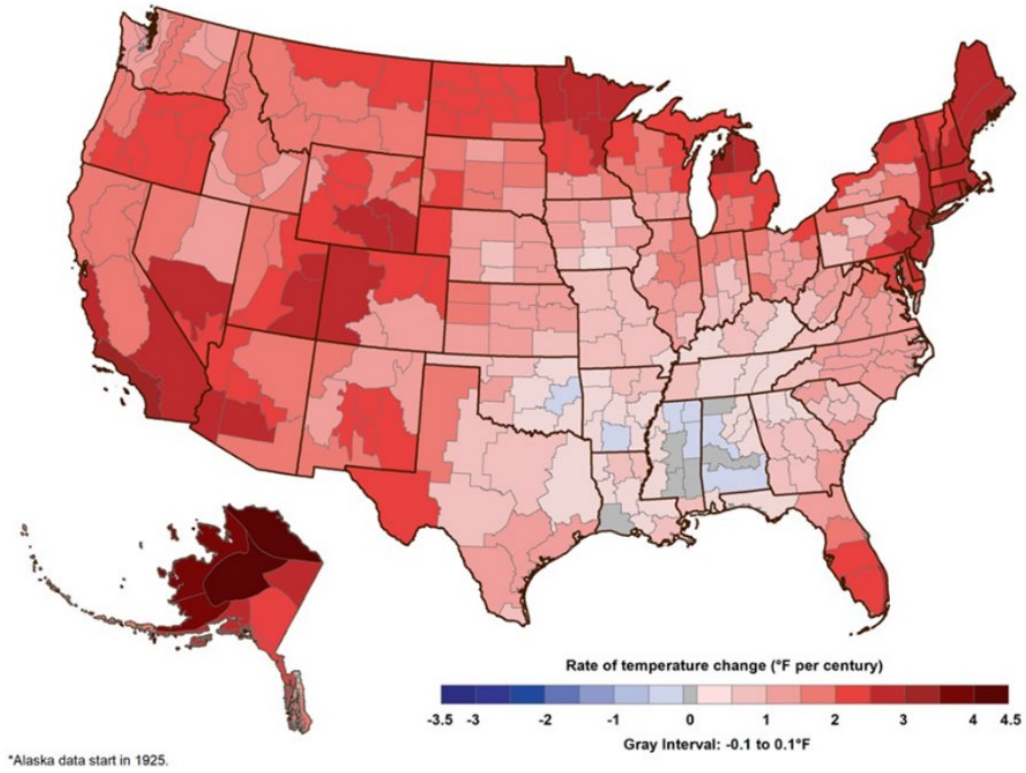
The impacts of climate change on the environment, which may continue to occur over several decades or longer, include changes in temperature, precipitation, and wind patterns.[2] These effects have consequential impacts on human health through increased extreme weather events, such as prolonged heat waves and intensified storms, and diminished access to essential resources in the impacted area because of droughts and rising sea levels.

GHG are gases that trap heat in the Earth's atmosphere. The EPA estimates that carbon dioxide accounted for 80 percent of U.S. GHG emissions in 2019, while methane accounted for 10 percent. The remaining GHG emissions were from nitrous oxide and fluorinated gases.

Atmospheric GHG levels have been increasing since the Industrial Revolution in the latter part of the 19th century; human-produced GHG levels increased by 45 percent from 1990 to 2019.[3] GHG can exist in the atmosphere for a few to thousands of years.[4] These gases act as a catalyst for climate change because they trap and prevent heat from escaping the Earth, accelerating climate change impacts as GHG levels increase. The resulting net temperature increase causes changes to weather patterns, such as increased rainfall, temperatures, and severity and frequency of severe weather events. Climate change will affect areas in the United States differently depending on geographic location. Figure 1.1 shows the variation in average annual temperature change across the United States.

[1] EPA, *Climate Change Indicators: Greenhouse Gases*, last modified on July 14, 2021.
[2] EPA, *Climate Change: Frequently Asked Questions*, last assessed on November 1, 2021.
[3] EPA, *Climate Change Indicators: Greenhouse Gases*, last modified on July 14, 2021.
[4] EPA, *Overview of Greenhouse Gases*, last modified on October 12, 2021.

Figure 1.1: Annual average temperature change from 1901 to 2020 in different geographic areas of the United States



Source: EPA Climate Change Indicators website. (EPA image)

Addressing climate change requires mitigation, adaptation, and resilience.

Mitigation refers to actions limiting the magnitude and rate of future climate change by reducing net GHG emissions.

Adaptation refers to the adjustment or preparation of natural or human systems to a new or changing environment which moderates harm or exploits beneficial opportunities.

Resilience refers to the capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.

According to climate scientists, climate change has significant impacts on human health.[5] Increasing temperature, more frequent heavy rains and runoff, and the effects of storms increases the risk of illness.[6] Specific health impacts include heat-related deaths, asthma attacks, and other respiratory and cardiovascular health effects from worsening air quality, as well as water-related illnesses from contaminated water supplies.[7]

The importance of addressing climate change within the EPA has varied over the years. For example, the *FY 2014–2018 EPA Strategic Plan* included addressing climate change as one of the Agency's main

[5] Crimmins, Allison, *The Impacts of Climate Change on Human Health on the United States: A Scientific Assessment*, June 29, 2016.
[6] National Institute of Environmental Health Sciences, *Climate Change and Human Health*, last modified on October 12, 2021.
[7] EPA, *Climate Impacts on Human Health*, last modified on January 13, 2017.

goals,[8] but the EPA's FY 2018–2022 strategic plan did not include climate change as an Agency priority.[9] In 2021, the EPA has placed a renewed focus on and reaffirmed its commitment to address climate change. For example, on October 1, 2021, the EPA released a draft strategic plan that put fighting climate change at the center of the Agency's agenda. In addition, President Biden announced a goal of achieving net-zero greenhouse gas emissions by no later than 2050 and of limiting global warming to 1.5 degrees Celsius, following the recommendations of scientists. Further, the president requested $1.8 billion in FY 2022 for an EPA priority budget area titled "Tackling the Climate Crisis Through Science."

Between executive orders issued in 2021 and proposed budget increases, the EPA is being called upon to devote significant resources and leadership to strategically address climate change. The EPA is uniquely positioned to provide this leadership because climate change is a cross-cutting issue that implicates major EPA programs across air, water, and land. For example, climate change can worsen air quality through increased ground-level ozone, making it difficult for states to meet the health-based National Ambient Air Quality Standards and potentially cause increased morbidity and mortality from poor air quality.[10] In addition, natural disasters resulting from climate change, such as flooding and storm surges, could threaten remedies taken at Superfund cleanup sites and lead to the release of contaminants. Increased flooding resulting from climate change could harm local drinking water supplies, leaving communities without safe drinking water.

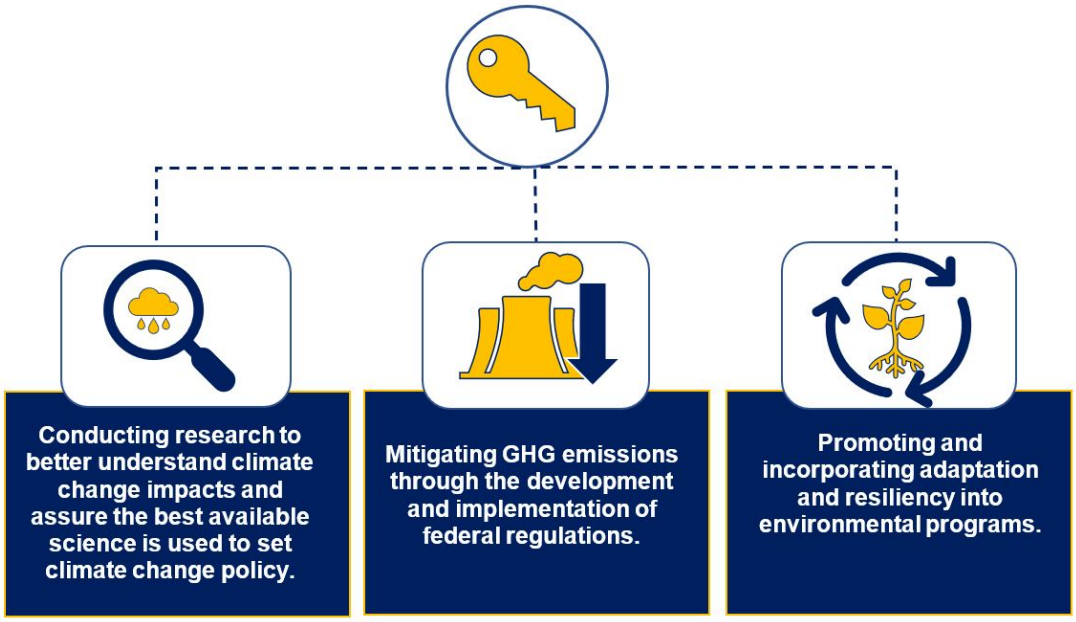
Climate change threatens the EPA's ability to meet its core mission to protect human health and the environment across multiple programs. If the EPA does not address climate change, more Americans could live in areas that fail to meet the National Ambient Air Quality Standards, be exposed to poor water quality or contaminant releases after natural disasters, or face illness or other health effects from weather events. Addressing climate change will take a whole-of-Agency approach that ensures that EPA programs, policies, rulemaking processes, enforcement and compliance assurance activities consider the current and future impacts of climate change.

EPA's Role in Addressing Climate Change

The EPA plays an important role within the federal government for addressing climate change as shown in Figure 1.2

[8] EPA, *FY 2014-2018 EPA Strategic Plan*, April 2014.
[9] EPA, *Working Together: FY 2018–2022 U.S. EPA Strategic Plan*, February 2018, last updated in September 2019.
[10] EPA, *Air Quality and Climate Change Research*, last modified on July 29, 2021.

Figure 1.2: EPA's key roles in the federal government for addressing climate change



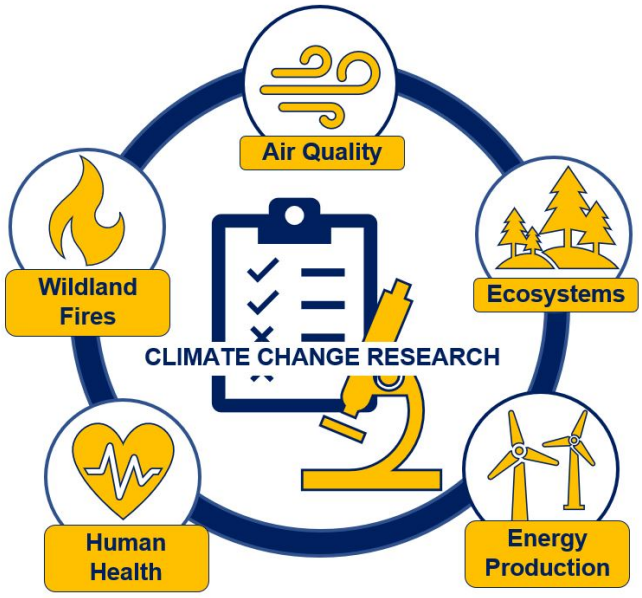
Source: OIG analysis of EPA information. (EPA OIG image)

Conducting Research

The EPA conducts multiple research initiatives and programs related to climate change. According to the EPA's climate change research website,[11] research is being conducted in air quality, ecosystems, energy production, human health, and wildland fires (Figure 1.3). In addition, the EPA is a member of larger cross-agency programs and initiatives, such as the U.S. Global Change Research Program, which is a federal program mandated by Congress to coordinate federal research and investments in understanding the forces shaping the global environment, and the Intergovernmental Panel on Climate Change, which is the United Nations body for assessing the science related to climate change.

In the *FY 2022 Budget in Brief*,[12] President Biden requested an additional $60 million to fund climate change research in support of decision-

Figure 1.3: EPA is conducting climate change research in five areas



Source: EPA's climate change research website. (EPA OIG image)

[11] EPA, *Climate Change Research*, last modified on July 2, 2021.
[12] EPA, *FY 2022 Budget in Brief*, May 2021.

making. This will give the EPA the resources to assess the impact of climate change in future regulatory decisions. The *FY 2022 Budget in Brief* states that the "EPA will ensure that policy is guided by the best science and is protected by processes that encourage integrity in the agency's decision-making."[13] Consistent with this, the EPA's FYs 2022–2026 draft strategic plan states that:

> EPA will advance a rigorous exploratory and applied climate adaptation science program by conducting climate-related research in its labs and centers, supporting research through its grants program, conducting policy-relevant assessments, communicating research and assessment results, and delivering innovative and sustainable solutions.[14]

It is important that internal EPA research efforts are closely coordinated to avoid duplication and assure that priority research needs are met. It is also important that the EPA effectively communicate results.

Mitigating GHG Emissions

Legal challenges to EPA regulations and changes in administrations have affected the Agency's ability to establish consistent rules related to GHG emissions. In April 2007, the U.S. Supreme Court ruled in *Massachusetts v. EPA* that the EPA has the authority to regulate GHG emissions from mobile sources under the Clean Air Act.[15] The EPA's efforts to implement such regulations—and, by extension, regulations for other GHG sources under the Clean Air Act—have been impacted. In 2015, the EPA's *Clean Power Plan* contained regulations to limit carbon dioxide emissions from existing electricity-producing power plants.[16] These power plants represent the largest industrial sector contributing to overall GHG emissions in the United States, accounting for nearly 25 percent of such emissions in 2019.[17] The EPA replaced the *Clean Power Plan* with the Affordable Clean Energy rule on July 8, 2019.[18] The U.S. Court of Appeals for the District of Columbia Circuit vacated the Affordable Clean Energy rule on January 19, 2021, and remanded it to the Agency for further proceedings consistent with the court's opinion.[19] As such, the EPA needs to develop and implement new regulations for existing power plants.

The regulatory vicissitudes contributed to the concomitant legal hurdles facing the Agency. During the same time period as the implementation of the Affordable Clean Energy rule, the EPA rolled back regulations to limit methane emissions from the oil and natural gas industry. In September 2020, the EPA issued a rule that removed limitations on methane emissions that were originally included in

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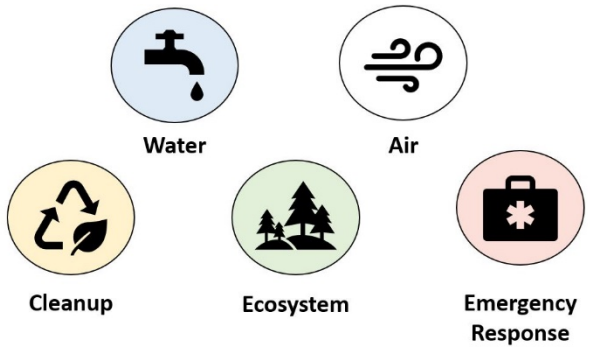
[13] Executive Order 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, 86 Fed. Reg. 7037, January 20, 2021.
[14] EPA, *FY 2018-2022 U.S. EPA Strategic Plan*, EPA-190-R-18-003, February 2018, last updated in September 2019.
[15] *Massachusetts v. EPA*, 549 U.S. 497 (2007).
[16] *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Final Rule*, 80 Fed. Reg. 64,662, October 23, 2015 (final rule).
[17] EPA, *Sources of Greenhouse Gas Emissions*, last updated on July 27, 2021.
[18] *Repeal of the Clean Power Plan; Emission Guidelines for Greenhouse Gas Emissions from Existing Electric Utility Generating Units; Revisions to Emission Guidelines Implementing Regulations,* 84 Fed. Reg. 32, 520, July 8, 2019 (final rule).
[19] *American Lung Association v. EPA*, 985 F.3d 914 (D.C. Cir. 2021).

regulations issued in 2016.[20] In January 2021, President Biden issued Executive Order 13990, *Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis*, instructing federal agencies to "immediately review and, as appropriate and consistent with applicable law, take action to address the promulgation of Federal regulations and other actions during the last 4 years that conflict with" objectives laid out in the order, including reducing GHG emissions and bolstering resilience to the impacts of climate change.[21] Executive Order 13990 specifically cited the September 2020 rule as one that the EPA should review by September 2021.[22] The EPA will again need to undertake the laborious process of developing regulations to limit GHG emissions that will withstand legal and political challenges.

Promoting and Incorporating Adaptation and Resiliency into Environmental Programs

For the EPA to fully achieve its mission, the Agency needs to incorporate adaptation and resiliency across its programs and policies. In 2014, the EPA issued the *Climate Change Adaptation Plan*, whose purpose was to ensure that the Agency fulfilled its statutory, regulatory, and programmatic requirements while adapting to climate change.[23] This plan identified vulnerabilities to EPA air, water, ecosystem, cleanup, and emergency response programs (Figure 1.4), and presented priority actions for the Agency to take to integrate climate adaptation planning into its programs, policies, rules, and operations to help assure that they are effective in a changing climate. The plan, however, noted that metrics did not exist and need to be developed. The EPA has been tasked with updating this adaptation plan in accordance with Executive Order 14008, titled *Tackling the Climate Crisis at Home and Abroad*, issued on January 27, 2021.[24]

Figure 1.4: Programs identified by EPA as being vulnerable to climate change



Source: EPA analysis of the 2014 Climate Change Adaption Plan. (EPA OIG Image)

The EPA offers funding opportunities, programs, and partnerships with stakeholders to make progress on climate adaptation. The Adaptation Resource Center website, launched in 2016, lists available EPA resources for state, local, and tribal authorities.[25] The website's purpose is to empower all 40,000 U.S. communities to anticipate and react to climate change through accessible tools and training. For example, communities can find tools to assess water infrastructure vulnerability to climate change, learn how to enhance their community with "green" infrastructure, or take a training on how climate change will impact environmental and public health services.

[20] *Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Review*, 85 Fed. Reg. 57,018, September 14, 2020 (final rule).
[21] Executive Order 13990, 86 Fed. Reg. 7037, January 20, 2021.
[22] The methane rule roll back was disapproved by Congress under the Congressional Review Act on June 30, 2021.
[23] EPA, *Climate Change Adaptation Plan*, June 2014.
[24] Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*, 86 Fed. Reg. 7619, January 27, 2021.
[25] EPA, *Climate Change Adaptation Resource Center (ARC-X)*, last modified on August 26, 2021.

Many of these programs rely on the voluntary participation of communities. To have the most measurable outcomes, the EPA needs to run these programs effectively and efficiently. GAO reports issued in October 2019 and January 2020 recommended that the EPA increase technical assistance to water utilities to improve climate change resiliency and provide direction on how to integrate information on the potential impacts of climate change effects on risk assessments and risk-response decisions at Superfund sites.[26]


Aboveground drinking water distribution pipe in rural Puerto Rico broken as a result of a hurricane. (EPA OIG Photo)

In December 2020, the OIG reported that Hurricanes Irma and Maria in Puerto Rico and the U.S. Virgin Islands compromised the water quality and operations of water utilities due to lack of public outreach by the EPA, lack of rural water system infrastructure, and lack of local staff involvement in the planning stages of the water infrastructure projects.[27] The OIG recommended that the EPA improve the resilience of small water utilities and improve local response planning that incorporates local staff. GAO and OIG reports highlight the need for improved communication with external stakeholders. Since the EPA depends on these partnerships, improving communication will help ensure the success of these programs and achieve climate change goals.

Impacts of Increasing Natural Disasters Due to Climate Change on EPA Programs and Operations

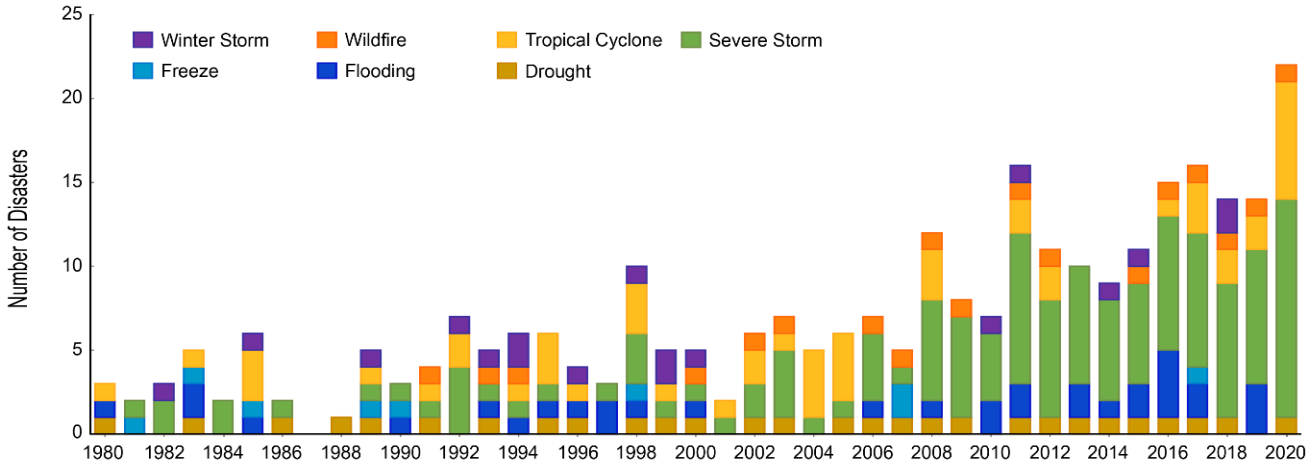
EPA programs, and state programs authorized by the EPA, regulate facilities and contaminated sites that contain hazardous substances that could be harmful to the public and the environment. The increased incidence of disasters due to climate change creates potential vulnerabilities at these facilities and sites that must be identified and addressed. For example, EPA-regulated facilities, such as chemical manufacturers, hazardous waste handlers, underground storage tanks, and contaminated sites, pose a risk of uncontrolled releases of harmful chemicals and contaminants due to increases in natural disaster incidents caused by climate change.

As shown in Figure 1.5, large-scale natural disaster events have increased in the United States since 1980. The National Oceanic and Atmospheric Administration published a report in July 2021 that documented the increased frequency of high-tide flooding, which is when water levels exceed about 1.75 feet above high tide.[28] High-tide flooding damages infrastructure and creates other economic impacts within coastal communities. In 2020, coastlines in the United States experienced high-tide

[26] GAO, *Water Infrastructure: Technical Assistance and Climate Resilience Planning Could Help Utilities Prepare for Potential Climate Change Impacts*, GAO-20-24, January 2020; GAO, *Superfund: EPA Should Take Additional Actions to Manage Risks from Climate Change Effects*, GAO-20-73, October 2019.
[27] OIG, *Region 2's Hurricanes Irma and Maria Response Efforts in Puerto Rico and U.S. Virgin Islands Show the Need for Improved Planning, Communications, and Assistance for Small Drinking Water Systems*, Report No. 21-P-0032, December 2020.
[28] National Oceanic and Atmospheric Administration, *2021 State of High Tide Flooding and Annual Outlook*, July 2021.

flooding at a rate double what it was in 2000, and high-tide flooding is likely to increase between five and 15 times without further adaptation measures. High-tide flooding and other natural disasters caused by climate change can pose risks of uncontrolled chemical releases at the thousands of facilities regulated by the EPA that store and process hazardous chemicals and waste.

Figure 1.5: U.S. billion-dollar disaster event type by year



Source: EPA Climate Change Indicators website. (EPA image)

To address climate change impacts, remedial designs may need to be revisited at cleanup sites in vulnerable areas. For example, a 2019 GAO report examined the potential effects of flooding, storm surges, wildfires, and rising sea levels caused by climate change and found that about 60 percent of all nonfederal contaminated sites on the Superfund National Priorities List are located in areas impacted by climate change. [29] The EPA responded by issuing a memorandum on June 30, 2021, that describes approaches for EPA regions to consider when evaluating the vulnerability of the cleanup remedies at nonfederal sites listed in the Superfund National Priorities List and to evaluate adaptation measures that increase the system's resilience to a changing climate.

Failure to identify potential climate change vulnerabilities at EPA-regulated facilities and to evaluate adaptation measures that increase facility resilience compromises the ability of the EPA and authorized state programs to effectively regulate major facilities to prevent uncontrolled releases of contaminants. If climate change impacts on vulnerable facilities are not addressed, the EPA's ability to meet its core mission to protect human health and the environment will be threatened, impacting vulnerable and overburdened populations who reside near those facilities. Planning for increases in natural disasters and providing guidance for authorized state programs would help limit the risk of uncontrolled releases of contaminants.

[29] GAO, *Superfund: EPA Should Take Additional Actions to Manage Risks from Climate Change,* GAO-20-73, October 2019.

Considerations for Disproportionally Impacted Communities

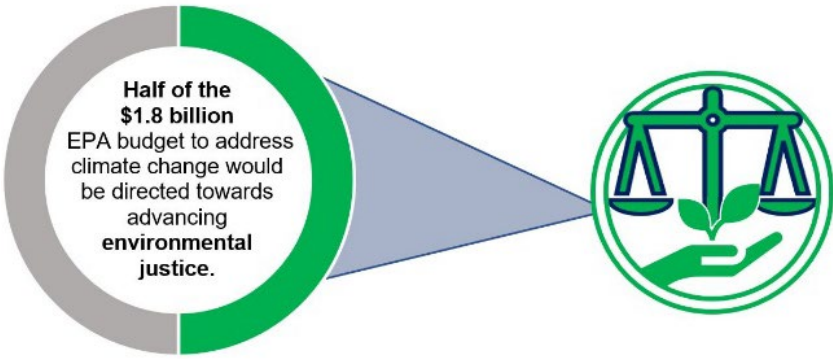
The *FY 2022 EPA Budget in Brief* describes climate change as a "public health and environmental justice crisis that is already impacting air and water quality, as well as posing increasing risks for the future."[30] The EPA has stated that while all people are vulnerable to the impacts of climate change,[31] some communities or groups are disproportionately affected by climate change and are less able than others to adapt to or recover from climate change impacts.[32] These groups include people of color, low-income communities, immigrants, and people who are not fluent in English. The EPA identified multiple factors that can affect a person's or community's ability to prepare for, respond to, and cope with the impacts of climate change on health, including:

- Living in areas particularly vulnerable to climate change, like coastal communities.
- Coping with higher levels of existing health risks when compared to other groups.
- Living in low-income communities with limited access to health care services.
- Having high rates of uninsured individuals who have difficulty accessing quality health care.
- Having limited availability of information and resources in a person's native language.
- Having difficulties to relocate or rebuild after a disaster.[33]

In its *FY 2022 EPA Budget in Brief*, the EPA stated that half of the $1.8 billion it was requesting to address climate change would be directed towards advancing environmental justice (Figure 1.6).[34] The EPA stated that:

> [T]his investment recognizes that policies to tackle climate change must also clean up the legacy pollution that low-income communities and communities of color have suffered with for far too long.

Figure 1.6: EPA budget and climate change



Source: *FY 2022 EPA Budget in Brief.* (EPA OIG image)

Thus, the EPA needs to assure its efforts to address climate change consider the needs of disproportionately impacted communities.

[30] EPA, *FY 2022 EPA Budget in Brief*, EPA-190-R-21-003, May 2021.
[31] EPA, *Climate Change, Public Health and Environmental Justice: Caring for Our Most Vulnerable Communities*, January 5, 2017.
[32] EPA, *Climate Change, Health and Environmental Justice*, EPA 430-F-16-054, May 2016.
[33] EPA, *Climate Change, Health and Environmental Justice*, EPA 430-F-16-054, May 2016.
[34] EPA *FY 2022 EPA Budget in Brief*.

CHALLENGE 2: *Integrating and Leading Environmental Justice Across the Agency and Government*

Outlook and Overview

With the issuance of Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, by President Bill Clinton in 1994, the federal government recognized that minority and low-income populations are more likely to be adversely affected by pollution and more likely to reside near contaminated sites. To address the disproportionate burden placed on these populations, Executive Order 12898 commits federal agencies to make achieving environmental justice as part of their mission. The EPA is a leader among federal agencies in identifying and addressing disproportionately high and adverse human health or environmental effects of programs and policies on these populations. Despite the complexity and difficulty of the environmental hazards that face these communities today, the EPA's environmental programs remain in media-specific (air/land/water/chemicals) silos, making it difficult to implement a consistent and effective environmental justice program across the Agency. The EPA needs to takes a comprehensive approach to fully achieve its environmental justice goals across the Agency and reduce the disproportionate burdens on environmental justice communities across the United States.

Executive Order 12898 requires the EPA to integrate environmental justice principles into all its programs and across all regions to achieve environmental equity across all communities. Furthermore, in Executive Order 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, President Biden directed all federal agencies to embed equity into their programs and services to ensure the consistent and systematic fair, just, and impartial treatment of all individuals. However, until the EPA's FYs 2022–2026 draft strategic plan, the EPA did not have adequate plans to address environmental justice challenges. For example, there was no mention of, or metrics on, achieving environmental justice in the *United States Environmental Protection Agency Fiscal Year 2020 Annual Performance Report*, Report No. EPA-190-R-21-001. Furthermore, as illustrated in Table 2.1, the EPA had limited funds available to prioritize environmental justice.

Table 2.1: EPA's proposed and enacted environmental justice budgets (in millions)

Fiscal Year	President's Budget	Enacted budget
2016	$13.97	$6.74
2017	$0	$6.72
2018	$0	$6.69
2019	$2	$6.74
2020	$2.74	$9.55*
2021	$2.73	$11.84
2022	$293**	N/A

Source: OIG analysis of EPA budgets. (EPA OIG table)

*Reflects estimated enacted budget.

**Significantly increased from prior years to create new environmental justice programs. Existing programs will also receive increased budgets to incorporate environmental justice into program work.

EPA Administrator Michael S. Regan, in an April 7, 2021 message to all Agency staff, said that:

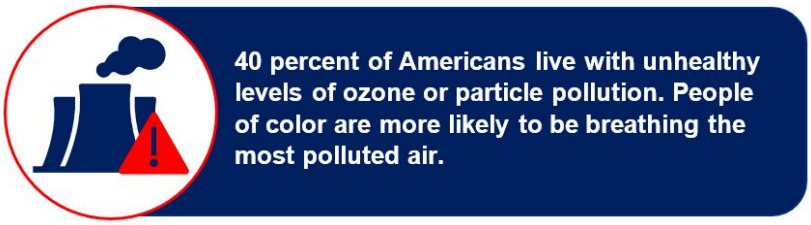
> Too many communities whose residents are predominantly of color, Indigenous, or low-income continue to suffer from disproportionately high pollution levels and the resulting adverse health and environmental impacts.

As a result, the EPA indicated that it would prioritize considerations of environmental justice into all EPA plans and actions. As part of this initiative, the president's FY 2022 budget proposal includes an increase of $282 million and an additional 172 full-time equivalents for the Agency's environmental justice program. If enacted, this would be the most significant budgetary increase for the environmental justice program since 2016.

The FY 2022 budget proposal includes the following commitment to developing measures for environmental justice:

> Specifically, the EPA is currently evaluating its suite of measures and indicators related to environmental justice, including available data and programs where improved data sets are needed, in order to identify and/or develop useful performance measures for environmental justice programs.

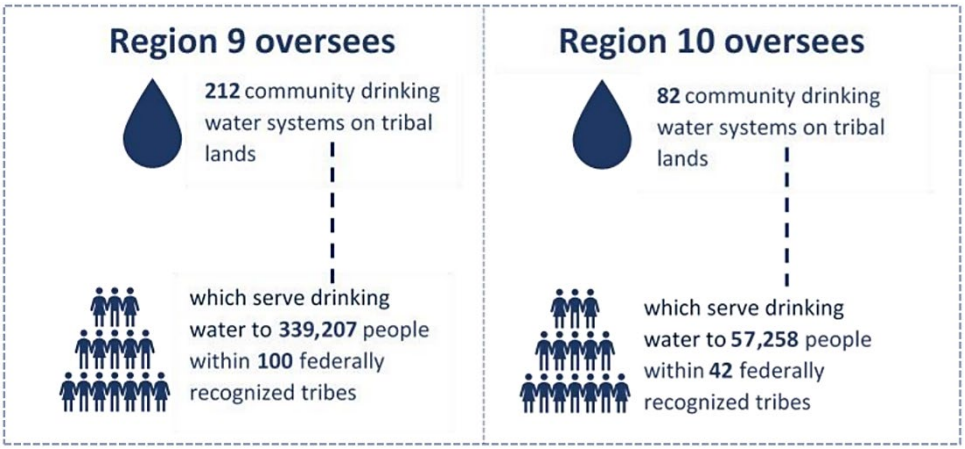
The increased budget request for FY 2022, however, does not clearly seek to achieve the Justice40 Initiative's goals, which is a federal government initiative that includes delivering 40 percent of the overall benefits of relevant federal investments to disadvantaged communities. The budget proposal does include more than $930 million in funding across Agency programs, including $50 million in new grant funding and $5.9 million to further EJSCREEN, the EPA's environmental justice screening and mapping tool.



(EPA OIG image)

Congress allocated $100 million to the EPA to address health outcome disparities from pollution and the coronavirus pandemic—that is, the SARS-CoV-2 virus and resultant COVID-19 disease, as part of the American Rescue Plan Act of 2021, signed into law in March 2021. The EPA's largest allocation of the American Rescue Plan Act — $16.6 million—went toward environmental justice grants to help cities, states, tribes, and territories to fund education regarding the impact of pollution on the environment and public health, as well as training for jobs in the environmental sector. In announcing these grants, Administrator Regan highlighted that the COVID-19 pandemic magnified the daily injustices facing communities of color and low-income communities, the same communities that will likely suffer disproportionately from climate change. For example, in Report No. 21-E-0254, *Pandemic Highlights Need for Additional Tribal Drinking Water Assistance and Oversight in EPA Regions 9 and 10*, issued September 27, 2021, we found that the coronavirus pandemic negatively impacted the oversight and assistance that Regions 9 and 10 provide to the tribal drinking water systems under their purview, as well as the capacity of these systems to provide safe drinking water (Figure 2.1).

Figure 2.1: Tribal drinking water systems in Regions 9 and 10.



Source: OIG analysis of EPA data. (EPA OIG image)

The pandemic also underscored the limitations of EPA resources, as well as of tribal drinking water system capacity and resiliency. According to the Harvard T.H. School of Public Health, people living in places with high amounts of pollution are more likely to die from COVID-19 than those living with less pollution.[35] These findings align with known connections between particulate matter 2.5 (micrometers or smaller) exposure and higher risk of death from cardiovascular and respiratory ailments.[36] Particulate matter is a regulated form of air pollution.

Given this expanded set of responsibilities and possible increase in funding, the Agency's challenges include identifying the communities at risk, addressing the environmental hazards and cumulative risks

[35] EPA Administrator Michael Regan, *Remarks For Michigan EJ Conference, As Prepared for Delivery*, last updated on May 18, 2021.
[36] Administrator Regan's remarks at Michigan's environmental justice conference.

communities face, communicating effectively with these communities, and focusing disparate media programs on integrating environmental justice across the Agency. Environmental justice and civil rights activists have stressed that efforts to evaluate and regulate complex environmental hazards are hindered by the stovepiping of environmental statutes and EPA programs the statutes authorize into media-specific silos. Activists argue that these silos impair the Agency's ability to address broader enforcement and permitting issues. It is essential for the Agency to consider and endeavor to achieve a consistent and collaborative integration of environmental justice across the EPA.

In FY 2021, we identified environmental justice as a challenge to the Agency. Specifically, we found, that to effectively integrate environmental justice across EPA programs, the Agency should strengthen its federal leadership role; continue to build and employ an environmental justice strategic plan, measures, and grant outreach programs; ensure the development and implementation of a comprehensive, nationwide plan; and consider the impact of all activities on environmental justice communities in actions revoked and taken by the Agency.

Integrating environmental justice into Agency programs remains a challenge. However, based on our work in FY 2021, it is clear that the Agency should also focus its attention on (1) risk communication and (2) cumulative risk assessment, which is a process by which pollutants from across various exposure pathways and multiple pollution sources are assessed together to show the entirety of the exposure to at-risk communities.

Agency Initiatives

The EPA's work on achieving environmental justice has garnered significant attention from political, regulatory, and civil entities. This is because environmental justice is inherently tied to multiple other management challenges such as climate change, disaster response, infrastructure, and enforcement. In his April 2021 message to Agency staff, Administrator Andrew Wheeler focused on strengthening enforcement environmental statute violations and civil rights laws in communities overburdened by pollution.

In FYs 2020 and 2021, the OIG issued several reports on the challenges of administering and enforcing environmental statutes to protect overburdened populations. For example, in Report No. 21-P-0132, *Resource Constraints, Leadership Decisions, and Workforce Culture Led to a Decline in Federal Enforcement,* issued May 13, 2021, we found that EPA-led compliance monitoring activities, enforcement actions, monetary enforcement results, and environmental benefits generally declined from FYs 2007 through 2018 nationwide. The environmental and health hazards posed by regulated entities not in compliance with environmental statutes and regulations can disproportionately impact low-income, minority, tribal, and indigenous communities, who are collectively more likely to be burdened with high levels of environmental pollution and other adverse societal and economic conditions. Detecting and deterring environmental noncompliance is important to maintaining and advancing environmental justice.

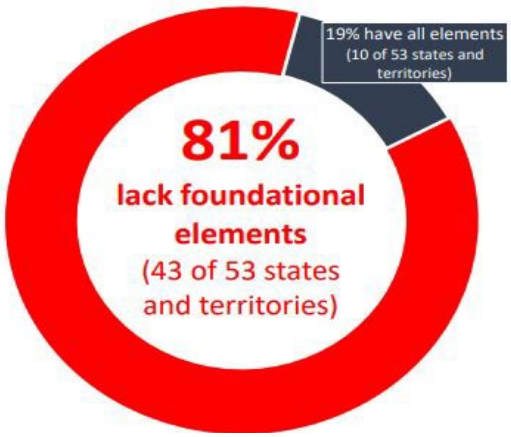
In Report No. 21-P-0122, *Improved Review Processes Could Advance EPA Regions 3 and 5 Oversight of State-Issued National Pollutant Discharge Elimination System Permits*, issued April 21, 2021, we found that Region 5 repeatedly declined to make a formal determination under Clean Water Act § 401(a)(2) regarding whether discharges from the PolyMet NorthMet project may impact the quality of waters within the jurisdiction of the Fond du Lac Band of Lake Superior Chippewa, whose tribal lands are 125 miles downstream from the site of the PolyMet NorthMet project. The tribe was therefore unable to avail itself of the National Pollutant Discharge Elimination System permit objection process set forth in Clean Water Act § 401(a)(2).

Wild rice lake in the Fond du Lac Band of the Lake Superior Chippewa Reservation. The Fond du Lac Band tribal lands are located along the St. Louis River in northeastern Minnesota, 125 miles downstream from a proposed mine and processing site. (EPA OIG photo)

In addition, the EPA did not meet the intent of its tribal and environmental justice policies, including its *Policy on Consultation and Coordination with Indian Tribes* and *Policy on Environmental Justice for Working with Federally Recognized Tribes and Indigenous Peoples*, which aim to ensure consultation, fair treatment, and meaningful involvement of tribes in EPA decisions affecting their health or environment.

The EPA has also faced challenges in administering and enforcing bedrock civil rights laws. In Report No. 20-E-0333, *Improved EPA Oversight of Funding Recipients' Title VI Programs Could Prevent Discrimination,* issued September 28, 2020, we found issues with how the EPA ensures compliance with Title VI of the Civil Rights Act of 1964 (Figure 2.2). Title VI requires federal agencies to ensure that any program or activity receiving federal financial assistance does not discriminate based on race, color, or national origin. The EPA allows the public to use the Title VI complaint process to report alleged discrimination by EPA funding recipients. Under this process, the EPA External Civil Rights Compliance Office has the authority to withdraw financial assistance to compel a recipient to comply with Title VI. We found that the EPA has not fully implemented an oversight system to provide reasonable assurance that organizations receiving EPA funding are properly implementing Title VI.

Figure 2.2: Review of state environmental agencies' websites



Source: OIG analysis of state agencies' websites. (EPA OIG image)

We recommended that the External Civil Rights Compliance Office develop and implement a plan to address permitting and cumulative impacts as they relate to Title VI, complete systematic compliance reviews to determine full compliance with Title VI, verify that funding recipients are addressing Title VI noncompliance before issuance of funding, use data to identify and target funding recipients for reviews, and train EPA staff on their respective Title VI roles and responsibilities.

The EPA has proposed to create a new national environmental justice program office, led by a Senate-confirmed assistant administrator, to coordinate and maximize the benefits of the Agency's programs. The current Office of Environmental Justice, a 26-person policy-focused office, is working with White House components, such as the Council on Environmental Quality and Domestic Policy Council, on implementing President Biden's environmental justice goals. The Office of Environmental Justice is working on a "more consistent base of information, tools, and resources" for all EPA programs, which have been tasked by Administrator Regan to include environmental justice in their daily work. The EPA has about 80 employees working on some aspect of environmental justice.

(EPA OIG image)

Environmental justice is driving action in every program office in the Agency.[37] Drinking water concerns are on the forefront of the EPA's environmental justice program. The Biden administration's infrastructure plan, released on March 31, 2021, calls for replacing all lead drinking water pipes throughout the United States to avoid lead contamination in drinking water. According to EPA, as many as 10 million homes in the United States have lead service lines.[38]

The EPA also plans to address air quality issues in environmental justice communities. The Agency's Office of Air Quality Planning and Standards is developing a new air toxics strategy that will incorporate a new structure for the air toxics program with a renewed focus on environmental justice. While there have been reductions in air toxics emissions nationally, many air toxics issues are localized and may disproportionately affect communities of color, low-income communities, and indigenous communities.

In addressing Superfund cleanups, a July 1, 2021 memorandum from the acting assistant administrator of Enforcement and Compliance Assurance directed EPA regions to address opportunities for preventative or interim relief in overburdened communities to address acute threats and negotiate more comprehensive cleanup settlements.[39] The memorandum authorized the EPA to proactively address potential releases of contaminants, prioritize early enforcement efforts on units and facilities

[37] EPA, "EPA Administrator Announces Agency Actions to Advance Environmental Justice," News Release, April 7, 2021.
[38] EPA, *Lead Service Line Replacement*, last modified on September 24, 2020.
[39] Acting Assistant Administrator Larry Starfield, *Memorandum Regarding Strengthening Environmental Justice Through Cleanup Enforcement Actions*, July 1, 2021.

that most impact environmental justice communities, and promote the issuance of orders for interim relief in conjunction with more comprehensive cleanup.

Changes are also occurring in the Office of Enforcement and Compliance Assurance, or OECA, and the Office of General Counsel. OECA issued a memorandum on June 21, 2021, that elevates environmental justice in the criminal enforcement of environmental laws. It states that:

> The criminal enforcement program can further environmental justice by strengthening tools for the detection of environmental crimes in overburdened communities, improving outreach to the victims of such crimes, and ensuring that our investigations are structured to provide maximum assistance to the Department of Justice (DOJ) in its exercise of prosecutorial discretion and pursuit of remedies that will guarantee adequate protection for those communities.

OECA aims to boost inspections and enforcement in "equity areas," as well as increase engagement with environmental justice communities. The EPA is also shifting toward a proactive system of civil rights compliance by states and other recipients of federal funds, including (1) equipping staff with resources and training and (2) establishing metrics on improved environmental and public health outcomes within environmental justice communities, including identifying and reducing disparities. This proactive system requires substantive collaboration between the Office of General Counsel and environmental justice programs in addressing priorities and concerns in overburdened and vulnerable communities that arise through civil rights investigations or environmental justice program engagement. This collaboration should result in impactful resolutions and provide increased transparency to the EPA's civil rights work.

Risk Communication

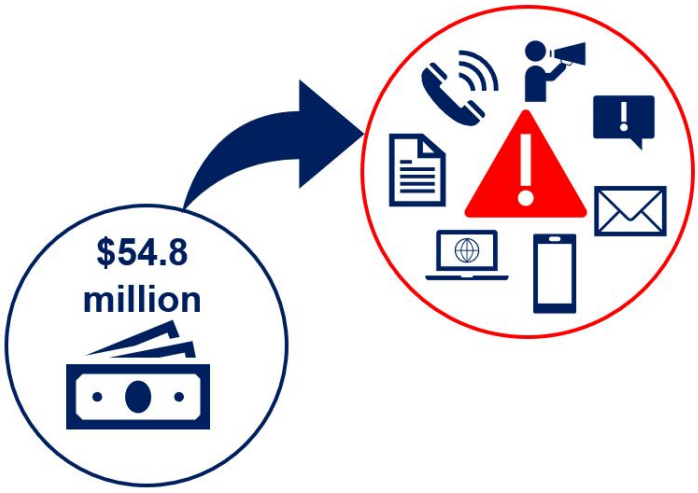
Communicating risk to communities; individuals; businesses; the media; and state, local, and tribal partners is an important aspect of the EPA's mission. This is because communicating risk allows individuals and communities to make informed decisions about risks to their health, safety, and environment. Risks are not always perceived the same by affected populations as they are by risk experts; risk communication seeks to bridge those information gaps.[40] Risk communication can be difficult to implement effectively when information exchange between laypersons and experts does not consider differing risk perceptions among individuals. Risk perception, which describes how people identify and measure risk based on information they have about that risk, does not always match calculated risk or *real* risk. For example, an individual living in a major evacuation zone may not evacuate during a hurricane, despite officials warning them to do so, if they have experience with hurricanes and do not feel they are in danger. The disconnect between risk perceptions and *real* risk can also occur due to knowledge about a risk; cultural, social, and ethnic contexts; biases from media and other information sources; and previous experience. The key influencing factor for both risk

[40] Sansom, Garett T., Aarvig, Kathleen, Sansom, Lindsay, Thompson, Courtney, Fawkes, Leanne, Katare, Anjali, "Understanding Risk Communication and Willingness to Follow Emergency Recommendations Following Anthropogenic Disasters," *Environmental Justice*, April 2021, Vol. 14 No. 2, p. 159-167.

perception and risk communication is information. When, how, and from whom people obtain information all critically influence how people perceive risks and empower them to make decisions.

We have reported on many instances of inconsistent, ineffective, or untimely risk communication across EPA programs, including in some environmental justice communities. For example, in FYs 2020-2021, we issued several reports related to ethylene oxide. In Report No. 21-P-0129, *EPA Should Conduct New Residual Risk and Technology Reviews for Chloroprene- and Ethylene Oxide-Emitting Source Categories to Protect Human Health*, issued May 6, 2021, we found that minority and low-income populations are disproportionately impacted by the hazardous air pollutants chloroprene and ethylene oxide. To better communicate risk to these communities, we recommended that the EPA conduct regulatory reviews using newly developed risk values to achieve environmental justice in communities near facilities that emit these pollutants.

Figure 2.3: EPA requested $54.8 million to strengthen its risk communication



Source: FY 2022 EPA budget request. (EPA OIG graphic)

In Report No. 20-N-0128, *Management Alert: Prompt Action Needed to Inform Residents Living Near Ethylene Oxide-Emitting Facilities About Health Concerns and Actions to Address Those Concerns*, issued on March 31, 2020, we recommended that the EPA provide communities living near 25 high-priority ethylene oxide-emitting facilities identified by the Agency with a forum for an interactive exchange of information. In Report No. 21-P-0123, *EPA Delayed Risk Communication and Issued Instructions Hindering Region 5's Ability to Address Ethylene Oxide Emissions*, issued on April 15, 2021, we recommended that the EPA develop a standard operating procedure for communicating preliminary air toxics risk information to the public. Both recommendations remain unresolved.

In cases like those reported in our chloroprene and ethylene oxide reports, communities may not know of their prolonged exposure to harmful contaminants. In FY 2022, the Agency requested $54.8 million to strengthen the EPA's ability to carry out effective and consistent risk communication and position the Agency to meet future risk communication challenges. Risk communication will also focus on the current administration's priorities of environmental justice and climate change. Addressing these issues and meeting the challenges of the future will require the EPA to, among many other activities, establish strategic goals or objectives directly addressing risk communication and define and implement timely, current, accurate, and accessible risk communication information to successfully achieve its mission, especially for communities facing disproportionate health effects from the exposures to harmful contaminants.

Cumulative Risk

According to the EPA's *Framework for Cumulative Risk Assessment*:

> Several reports have highlighted the importance of understanding the accumulation of risks from multiple environmental stressors. Among these reports are the National Research Council's 1994 Science and Judgment in Risk Assessment and the 1997 report by the Presidential/Congressional Commission on Risk Assessment and Risk Management, Risk Assessment and Risk Management in Regulatory Decision-Making.

The framework aims at being the first step in a long-term effort to develop cumulative risk assessment guidelines. Although there is no specific budget for cumulative risks specifically, it is a component of many EPA programs. For example, the proposed FY 2022 budget includes $342.9 million for grants to support state, local, and tribal air quality management programs, which support low-income and marginalized communities that are and have been overburdened with disproportionate environmental or public health risks resulting from exposure to pollution.

The proposed FY 2022 budget also provides additional resources to build Agency capacity in managing chemical safety and toxic substances. This work is particularly important to protect vulnerable populations, including low-income, minority, and indigenous populations, as well as children who may be disproportionately affected by, and particularly at risk from, chemical exposure. The proposed FY 2022 budget provides approximately $1.53 billion to the Hazardous Substance Superfund; virtually all of the programs funded by the Superfund, including the research, enforcement, emergency response, and cleanup programs, stipulate some work for environmental justice and equity to address overburdened communities (Figure 2.4).

Figure 2.4: EPA's proposed FY 2022 budget

Source: EPA's proposed FY 2022 budget. (EPA OIG image)

At a July 2021 meeting of the Environmental Council of the States, Administrator Regan said he is working to bolster the EPA's authority to address the cumulative impacts of pollution releases, including determining whether and how the Agency can interpret regulations "in a different way" and having "conversations with the House and Senate about potential legislative changes we need to see to give us clear authority to evaluate cumulative impacts."

Addressing cumulative impacts from multiple pollution sources can be complicated—legally and scientifically. It is, however, key to protecting environmental justice communities, which can be exposed to a host of chemicals and pollutants from a range of different sources, such as commercial, industrial, or agricultural facilities; road traffic; and transportation hubs. Those sources often overlap with the adverse effects of poverty and other social and economic factors—such as limited health care access, poor-quality schools, violence, and substandard housing—leading to a complex challenge for regulators tasked with protecting residents of those communities from environmental and other harms.

Environmental justice communities want to see the EPA realign its permitting and enforcement in a way that provides guidance and tools for taking cumulative impacts and risks into account, even if they cannot be precisely measured. There is no precise threshold to determine when a community is overburdened. This means that it is often easier for a community that has seven facilities to get an eighth facility approved than for a community that has no existing facilities to get one approved. In 2004, the EPA's National Environmental Justice Advisory Committee noted that:

> The issue of cumulative risks … is a unifying one, because it is a vehicle through which the impressive array of tools now available to ensure pollution prevention and risk reduction can be brought together and applied in new, innovative, and more effective ways.[41]

[41] National Environmental Justice Advisory Council, *Ensuring Risk Reduction in Communities with Multiple Stressors: Environmental Justice and Cumulative Risks/Impacts*, December 2004.

CHALLENGE 3: *Ensuring the Safe Use of Chemicals*

Outlook and Overview

The EPA's ability to effectively implement its mission of protecting human health and the environment depends on credible and timely assessments of the risks posed by pesticides, toxic chemicals, and other environmental chemical risks. The 2016 expansion of the EPA's responsibilities under the TSCA has significantly increased the need for rapid and accurate risk assessments. The EPA's ongoing work to register and reregister pesticides and the requirement to set appropriate exposure levels for contaminants in drinking water continue to rely on the Agency's ability to accurately assess chemical exposure risk. Without the ability to accurately conduct scientifically sound risk assessments, the Agency's actions, or inaction, in this area may erode public trust and confidence in the EPA's ability to protect human health—including our food supply—and the environment from current and emerging chemical risks.

Although identified in this report as a top Agency management challenge for the first time, ensuring the safe use of chemicals is a not a new area of concern for the EPA. The GAO's High-Risk Series identifies government operations that are vulnerable to fraud, waste, abuse, and mismanagement or that need transformation to address economical, efficiency, or effectiveness challenges. One of the GAO's 36 high-risk programs is *Transforming the Environmental Protection Agency's (EPA) Process for Assessing and Controlling Toxic Chemicals.* Since 2009, the GAO has continuously stated that the EPA's process of assessing and controlling toxic chemicals needs improvement. Furthermore, since 2008, the GAO has issued seven reports on the topic.

The GAO has noted that the EPA's performance in assessing and controlling toxic chemicals has regressed since 2019. It states that:

> EPA's ability to effectively implement its mission of protecting public health and the environment depends on credible and timely assessments of the risks posed by toxic chemicals.

On June 29, 2021, the GAO identified seven priority recommendations that would enhance the EPA's ability to ensure chemical safety under the TSCA and improve toxic chemical assessments for the Integrated Risk Information System, also known as the IRIS Program, which is under the Office of Research and Development.

The scope of this management challenge applies to all risk assessments used by all EPA programs, except for the EPA's regulation of air toxics or activities assessing the risk from the EPA's criteria air pollutants. The EPA uses chemical risk assessments to characterize the nature and magnitude of health risks to humans and ecological receptors from chemical contaminants and other stressors that may be present in the environment. The quality and quantity of human health and ecological risk assessments

generated by the Agency are used in key EPA decisions, such as issuing health advisories for drinking water, determining cleanup levels for hazardous waste sites, and assessing risks from new pesticides. The OIG has an extensive body of work addressing EPA programs that are in place to ensure the safe use of chemicals. In FY 2021, we completed projects related to chemical safety that identified deviations from required processes, undue influence, and poor documentation.

Out-of-Date Chemical Risk Assessments

The OIG has identified that many EPA chemical toxicity assessments or drinking water health advisories need to be updated or verified with current toxicity data and through the use of current scientific risk assessment procedures. The OIG specifically focused on two EPA programs: the IRIS Program and the Health Advisories Program.

IRIS Program

The EPA created the IRIS Program in 1985 to help develop consensus opinions within the Agency about the human health effects from chronic exposure to chemicals. The IRIS Program prepares toxicity assessments that contain the EPA's scientific position on a chemical's potential effects on human health. The IRIS Program is the primary basis that the EPA uses to conduct risk assessments of chemicals, and the timeliness and credibility of those assessments are key to the EPA meeting its statutory mandates. The IRIS Program is the only federal program that provides qualitative and quantitative assessments of both the cancer risks and the noncancer effects of chemicals. The IRIS is used by EPA programs and regional offices to set national standards and clean up hazardous sites.

The EPA established the IRIS Update Project on October 21, 2009,[42] to revisit existing IRIS assessment toxicity values and their supporting information that were more than ten years old with new and relevant scientific information on health effects. As of June 11, 2021, the IRIS database contained 562 completed toxicity assessments. The IRIS database contained 571 toxicity assessment entries, but only 562 toxicity assessments have toxicity values. The other nine IRIS toxicity assessment entries are either suspended, discontinued, or pending completion.

The OIG found that 542, or 96.4 percent, of the IRIS toxicity assessments are greater than ten years old. We also found that 477, or 85 percent, of the IRIS toxicity assessments were greater than 20 years old. This highlights the extent to which IRIS toxicity assessments need to be updated to verify that the published toxicity values remain scientifically appropriate and adequately supported.

In 2011, a National Academy of Sciences committee reviewed the EPA's draft IRIS toxicity assessment for formaldehyde and was highly critical of the clarity and transparency of the EPA's scientific methodology.[43] The committee identified that the same recurring "methodologic problems" had been

[42] *Integrated Risk Information System (IRIS) Update Project; Announcement of 2009/2010 Agenda*, 74 Fed. Reg. 54,040, October 21, 2009.
[43] National Research Council of the National Academies, *Review of EPA's Draft IRIS Assessment of Formaldehyde* (Washington, D.C.: National Academies Press, 2011).

occurring with the EPA's IRIS toxicity assessments prior to 2011. Congress directed the EPA to implement the recommendations in the National Academy of Sciences' 2011 report.[44] In a subsequent review of IRIS in 2014,[45] the National Academy of Sciences found that the EPA had implemented substantial improvements in the IRIS risk assessments based on the 2011 recommendations. Furthermore, the National Academy of Sciences committee expected that the EPA's implementation of the recommendations would result in transforming the IRIS Program. Since 2011, the IRIS program has been working to improve its toxicity assessment procedures.

These pre-2011 IRIS risk assessments need to be reviewed and scientifically verified using current toxicity study data and risk assessment procedures to assess whether they remain protective of human health.

Drinking Water Health Advisories

The EPA's Health Advisory Program, which is under the Office of Water, publishes the acceptable exposure levels for contaminants in drinking water. Without accurate and timely risk assessments and exposure determinations, the EPA will be unable to address both the current and emerging human health risks to drinking water. The EPA's drinking water health advisories, which are developed under the Health Advisory Program, provide informal technical guidance concerning unregulated drinking water contaminants to help federal, state, and local officials and managers of public or community water systems protect human health. The OIG reviewed the EPA's drinking water health advisories and found that at least 160 of the EPA's 212 health advisories were issued prior to 2000 and at least 107 were issued prior to 1990.[46] The age of these health advisories adds uncertainty as to whether they are still protective of human health.

Timely Chemical Risk Assessments

The EPA's performance in generating timely chemical risk assessments needs improvement.[47] The OIG identified the EPA's poor production in assessing the risk from toxic chemicals in three EPA programs: the IRIS Program; the Endocrine Disruptor Screening Program or EDSP; and the Health Advisory Program.

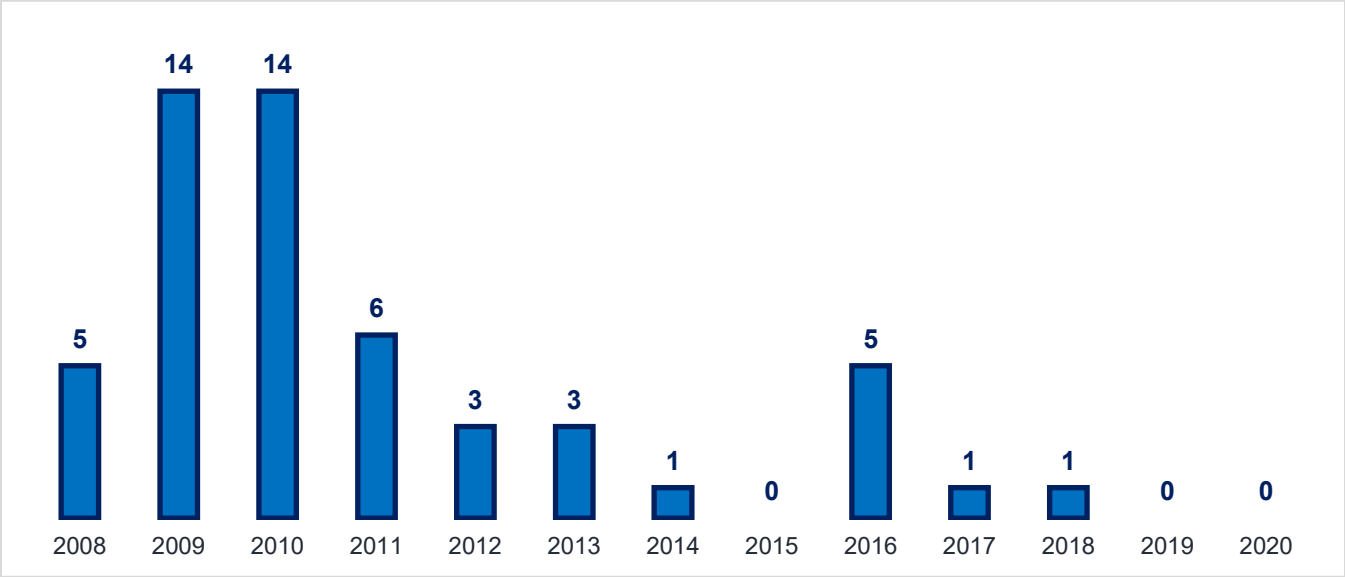
IRIS Program

The EPA's production of IRIS toxicity assessments has fallen dramatically since 2011. Only 20 of the 562 completed toxicity assessments were issued from 2011 through 2020. During this time, the EPA issued, on average, two IRIS toxicity assessments per year. In the first 35 years of the IRIS Program—from 1985

[44] The House Report (112-151) that accompanied the Consolidated Appropriations Act, 2012, Pub. L. 112-74, December 23, 2011.
[45] National Research Council, *Review of EPA's Integrated Risk Information System (IRIS) Process (2014)*, (Washington, D.C.: The National Academies, 2014).
[46] EPA, *2018 Edition of the Drinking Water Standards and Health Advisories Tables*, EPA 822-F-18-001, March 2018.
[47] The term "chemical risk assessments" is used in this document to include health advisories, risk evaluations, and toxicity assessments.

through 2020—the EPA issued 542 IRIS toxicity assessments for an average of over 20 IRIS toxicity assessments per year. Figure 3.1 shows the number of IRIS toxicity assessments issued by the EPA each year from 2008 through 2020.

Figure 3.1: Number of IRIS toxicity assessments issued by EPA from 2008 through 2020



Source: OIG analysis of EPA information. (EPA OIG image)

The EPA's completion of several IRIS risk assessments has been delayed. The IRIS Program began updating the IRIS toxicity values for formaldehyde and inorganic arsenic in 1997 and 2003. The IRIS Program began the initial toxicity assessment of ethyl tertiary-butyl ether in 2004. Table 3.1 summarizes the EPA's performance in conducting the IRIS risk assessments for these chemicals.

Table 3.1: Examples of IRIS risk assessments pending for decades

Chemical	IRIS risk assessment type	Year started	Year completed	Years the IRIS risk assessment has been in progress
Formaldehyde	Update	1997	Still in development	24
Inorganic arsenic	Update	2003	Still in development	18
Ethyl tertiary-butyl ether	Initial	2004	2021	17

Source: OIG analysis of EPA and GAO information. (EPA OIG table)

EDSP

With the passage of the Food Quality Protection Act in 1996, Congress tasked the EPA to test all pesticide chemicals for endocrine-disruption activity. Endocrine disruptors are chemicals that mimic, block, or otherwise disrupt the normal function of hormone systems, such as estrogen, testosterone, or thyroid hormones.

The EPA created the EDSP in 1998 to:

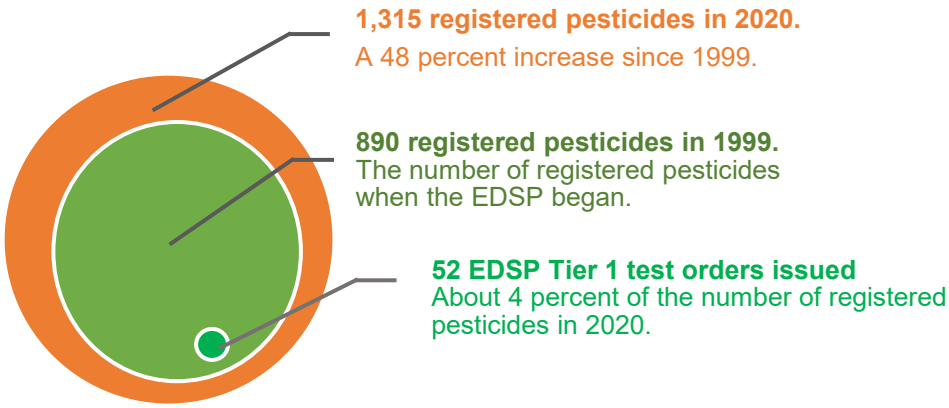
- Evaluate both human and ecological effects of endocrine disruptors.
- Test for disruption of the estrogen, androgen, and thyroid hormone systems.
- Evaluate both pesticide and nonpesticide chemicals.
- Implement a two-tiered testing strategy.

In 2021, we evaluated the EPA's progress in implementing Section 408(p)(3)(A) of the Federal Food, Drug, and Cosmetic Act, which requires the EPA to test all pesticide chemicals for human endocrine-disruption activity. Our findings and recommendations are in OIG Report No. 21-E-0186, *EPA's Endocrine Disruptor Screening Program Has Made Limited Progress in Assessing Pesticides,* issued July 28, 2021.

We found that the EPA has not made meaningful progress in complying with the statutory requirement to test all pesticides for endocrine-disrupter activity. Since the EDSP was established in 1998, it only tested 52 of the estimated 10,000 chemicals that need to be screened for endocrine-disruptor activity. The EDSP has determined that 34 of these estimated 10,000 chemicals are not endocrine disruptors. The EDSP started the process of chemical testing with the issuance of the draft List 1 chemicals on June 18, 2007. The EDSP is scheduled to complete testing of all EDSP List 1 chemicals by September 30, 2024. Without timely and effective EDSP testing, the EPA cannot adequately characterize or assess whether pesticides chemicals or other substances pose an endocrine-disruptor risk to estrogen, androgen, and thyroid hormone systems.

The OIG found that the Office of Chemical Safety and Pollution Prevention's pace of testing pesticides for endocrine-disruption activity is insufficient to keep up with the growth in pesticide registrations. Since the EDSP was established, the number of active pesticide registrations has increased at a much faster pace than the number of pesticide tests conducted by the EPA. Figure 3.2 depicts the increase in the number of pesticide registrations from 1999 through 2020 and the number of EDSP Tier 1 test orders issued by the EPA in that time frame.

Figure 3.2: Approximate number of registered pesticides in 1999 and 2020 versus EDSP Tier 1 test orders



Source: OIG analysis of EPA information. (EPA OIG image)

As a result, the EPA has been and will continue to issue registrations for new pesticides without obtaining specific information on the pesticides' potential endocrine-disruptor activity.

Drinking Water Health Advisories

The EPA issued 13 health advisories on chemicals from 1998 through 2018—eight regarding organic chemicals and five regarding inorganic chemicals.[48] The March 2018 Drinking Water Standards and Health Advisories tables provide risk information on 212 chemicals,[49] of which 175 are organic contaminants and the 37 are inorganic contaminants.

Health advisories are important to assess the health risk posed by specific per- and polyfluoroalkyl substances, or PFAS, found to be contaminating the environment. Although the EPA issued health advisories for both perfluorooctanesulfonic acid and perfluorooctanoic acid in May 2016, these two discontinued PFASs account for only a small fraction of the PFASs present in the environment. Chemical manufacturers have made over 4,000 PFASs and hundreds of these fluorinated chemicals have been detected in environmental samples. The EPA issued drinking water analytical Methods 533 and 537.1, which are PFAS evaluation methods, in December 2019 and November 2018, respectively. Together, they measure 29 unique PFAS in drinking water.[50] However, the EPA has issued health advisories for only perfluorooctanesulfonic acid and perfluorooctanoic acid and not for any of the other 27 PFASs found in drinking water. Although there is a critical need to have health advisories for these 27 PFASs, the EPA has not issued any health advisories since 2016.

[48] The eight organic chemicals are Bentazon, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, DCPA, perfluorooctanoic acid, perfluorooctanesulfonic acid, Oxamyl, and 1,1,2,2-Tetrachloroethane. The five inorganic chemicals are Bromate, Chlorine Dioxide, Chlorite, Manganese, and Perchlorate.
[49] EPA, *2018 Edition of the Drinking Water Standards and Health Advisories Tables*, EPA 822-F-18-001, March 2018.
[50] EPA, *EPA Analytical Methods for PFAS in Drinking Water,* EPA 815-B-19-021, December 2019.

Capacity to Conduct Chemical Risk Evaluations

The success of the Agency's implementation of the 2016 TSCA amendments depends upon its capacity to conduct and complete timely risk assessments. On June 22, 2016, the Frank R. Lautenberg Chemical Safety for the 21st Century Act was signed into law, amending the TSCA. Under TSCA section 6(b)(2)(A), Congress required the EPA to conduct the first set of ten chemical risk evaluations on existing chemicals within 180 days of enactment, or by December 19, 2016. Under TSCA section 6(b)(2)(B), Congress tasked the EPA to conduct at least 20 self-initiated risk evaluations on "high-priority" substances by December 2019. Under TSCA section 6(b)(4)(E)(i), the EPA must also conduct manufacturer-requested risk evaluations for between 25 to 50 percent of EPA-initiated risk evaluations, if the EPA receives a sufficient number of manufacturer requests. Therefore, to comply with the law, by December 2019, the EPA must have had the capacity to perform at least 25 TSCA risk evaluations simultaneously—20 self-initiated risk evaluations and five manufacturer-requested risk evaluations. Pursuant to TSCA section 6(b)(4)(G), once the EPA initiates a risk evaluation, it must be completed within three years. The administrator may extend this deadline by no more than six months, which was done for the initial ten existing chemical risk evaluations.

From May 2019 through June 2020, we evaluated whether the EPA met applicable deadlines imposed under 2016 TSCA amendments, and whether the Office of Pollution Prevention and Toxics, or OPPT, which is under the Office of Chemical Safety and Pollution Prevention, had staff, resources, and management controls in place to meet future statutory deadlines. The EPA is required to meet the workforce planning requirements of 5 C.F.R. Part 250, Subpart B, *Strategic Human Capital Management*. On August 17, 2020, we issued our findings and recommendations in Report No. 20-P-0247, *Lack of Planning Risks EPA's Ability to Meet Toxic Substances Control Act Deadlines*.

We found that the OPPT's Risk Assessment Division did not have enough internal capacity to timely conduct the first set of ten TSCA risk evaluations. The OPPT pulled up to 19 full-time equivalents outside its Risk Assessment Division to help it conduct the TSCA risk evaluations. Specifically, two full-time equivalents were pulled from the Pollution Prevention program and three were pulled from the Safer Choice program. Furthermore, the EPA reassigned 28 ORD IRIS staff to support the OPPT's risk evaluations between 25 percent to 50 percent of their time. Even with the additional personnel, the OPPT did not meet the 3.5-year deadline to complete the first set of ten chemical risk evaluations. Therefore, the EPA did not have sufficient capacity to complete the first set of ten TSCA risk evaluations within the three-year statutory time frame.

The EPA's TSCA risk evaluation capacity needs to dramatically increase to meet the statutory risk evaluation requirements of the 2016 TSCA amendments. In December 2019, the EPA started conducting the next set of 20 self-initiated TSCA risk evaluations on existing chemicals and continued working on four manufacturer-requested TSCA risk evaluations. As a result, the EPA is concurrently working on at least 24 TSCA risk evaluations. Therefore, in order for the EPA to have enough capacity to conduct 24 concurrent risk evaluations, it would have had to increase its TSCA risk evaluation capacity by at least 140 percent at the end of 2019. In FY 2022, the Agency requested an additional $15 million and 87.6 full-time equivalents, a 35 percent increase from the FY 2021 enacted full-time equivalent level, to meet the increased responsibilities imposed by the 2016 amendments to TSCA.

Importance of Data-Driven Decisions

We identified occurrences where the EPA could not demonstrate compliance with its regulations or did not follow guidance in conducting its risk assessments. For example:

- ***Compliance with Pesticide Registration Data Requirements in Ecological Risk Assessments.*** In Report No. 21-P-0070, *EPA Mostly Adheres to Regulations When Assessing Risks of New Pesticides but Should Improve Internal Controls*, issued February 8, 2021, we evaluated whether the EPA complied with the pesticide registration regulation under 40 C.F.R. § 152.112, which establishes the eight criteria for the issuance of an unconditional pesticide registration.

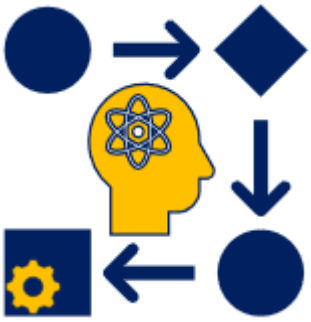
  We found that the Office of Pesticide Programs' ecological risk assessments do not certify or verify whether all the ecological data requirements under 40 C.F.R. § 158.630 have been satisfied prior to the issuance of the pesticide's registration. The EPA's ecological data requirements under 40 C.F.R. § 158.630 establish the necessary ecological studies required by the EPA to assess the risk that the pesticide's intended use poses to the environment. If the EPA cannot assure that it is in full compliance with the ecological data requirements, there is an increased risk that the Agency will issue a pesticide registration that does not comply with applicable regulations.

- ***Implementation of Endocrine Disrupter Screening Program Weight-of-Evidence Guidance.*** In our July 2021 EDSP report, we found that Office of Pesticide Programs did not follow the EDSP WoE guidance when it reevaluated the need to conduct Tier 2 testing on 17 pesticides to support the pesticide's ecological risk assessment.

  From the initial EDSP design on December 28, 1998, the EPA committed to evaluating the EDSP Tier 1 data using a WoE approach to determine whether a chemical should undergo Tier 2 testing. The EPA issued the final EDSP WoE guidance in 2011.[51] The EPA implemented this EDSP WoE guidance in 2015 in its review of the EDSP List 1-Tier 1 data.[52] In 2015, the EPA recommended that 23 EDSP Tier 2 studies need to be conducted across 18 List 1 pesticides. After 2015, the Office of Pesticide Programs' Health Effects Division continued to use the WoE approach to reevaluate whether these pesticides continued to need additional Tier 2 human health effects studies. By contrast, the office's Environmental Fate and Effects Division decided to forgo EPA's established WoE approach for evaluating EDSP Tier 1 data and, instead, in 2019 reevaluated the List 1–Tier 1 data using a different approach to justify that no additional EDSP Tier 2 testing was needed to support the Office of Pesticide Programs' ecological risk assessments for these pesticides. The OIG found that by not implementing the 2015 WoE recommendations for additional Tier 2 testing, the EPA risks losing credibility with the public that its risk decisions are impartial.

[51] EPA, *ENDOCRINE DISRUPTOR SCREENING PROGRAM: Weight-of-Evidence: Evaluating Results of EDSP Tier 1 Screening to Identify the Need for Tier 2 Testing*, last accessed on October 13, 2021.
[52] EPA, *EPA's 2015 review of the EDSP List 1- Tier 1 data*, and *EPA's Tier 2 recommendations*, last accessed on October 13, 2021.

CHALLENGE 4: *Safeguarding Scientific Integrity Principles*



Outlook and Overview

The EPA's ability to pursue its mission to protect human health and the environment depends upon scientific integrity. Science not only informs all aspects of the EPA's decision-making, but it impacts the decision-making of other domestic and international organizations that rely on the EPA's science. In February 2012, the Agency issued its *Scientific Integrity Policy*, which seeks to:

> [E]nsure scientific integrity throughout the EPA and promote scientific and ethical standards, including quality standards; communications with the public; the use of peer review and advisory committees; and professional development."[53]

The need to protect scientific integrity has become a paramount issue for the entire federal government. In his January 27, 2021 presidential memorandum to all executives, departments, and agencies titled *Memorandum on Restoring Trust in Government Through Scientific Integrity and Evidence-Based Policymaking*, President Biden stated that "[i]t is the policy of my Administration to make evidence-based decisions guided by the best available science and data." The president noted that "[s]cientific findings should never be distorted or influenced by political considerations." A robust culture of scientific integrity is necessary to meet several top management challenges, including climate change, chemical safety, and environmental justice.

The EPA's *Scientific Integrity Policy* emphasizes that the Agency's ability to pursue its mission depends upon the integrity of the science on which the EPA relies. As the policy directs, the environmental policies, decisions, guidance, and regulations that impact the lives of Americans must be grounded, at a most fundamental level, in sound, high-quality science. The EPA makes scientific integrity the responsibility of every employee, contractor, grantee, student volunteer, and collaborator who conducts, utilizes, supervises, manages, communicates, or influences scientific activities. The EPA expects employees to represent Agency scientific activities clearly, accurately, honestly, objectively, and thoroughly, without political or other interference, and in a timely manner.

The EPA's Scientific Integrity Program consists of the scientific integrity official, deputy scientific integrity officials from each EPA program and regional office, and program staff that support the implementation of the *Scientific Integrity Policy*. The EPA's scientific integrity official is also the co-chair of the White House Office of Science and Technology Policy's Scientific Integrity Task Force, which is charged with implementing the directives in the January 27, 2021 presidential memorandum.

[53] EPA, *Scientific Integrity Policy*, Section I.

Science affects all aspects of the EPA's decision-making. The EPA must devote the necessary resources to conduct, utilize, and communicate science. It must ensure proper implementation of existing processes to protect the integrity and objectivity of this science, clearly communicate where there is scientific disagreement and identify where science intersects with making policy. Relatedly, the EPA must be agile in order to update its regulations, policies, and guidance as the science evolves and not allow administrative inertia to prolong its reliance on outdated science and technology that is less effective at protecting human health and the environment. Taking these actions will help make EPA decisions more legally defensible and maintain public trust in the EPA's decision-making.

Scientific Integrity

Through the OIG Hotline and other sources, we receive complaints of mismanagement, misconduct, abuse of authority, and censorship related to scientific integrity and research misconduct. Per our statutory mandate, we have evaluated or investigated these complaints. For example, in Report No. 21-E-0146, *EPA Deviated from Typical Procedures in Its 2018 Dicamba Pesticide Registration Decision*, issued May 24, 2021, we found that the EPA's 2018 decision to extend registrations for three dicamba pesticide products did not include required internal peer reviews of scientific documents to ensure sound decisions regarding pesticides. We recommended that the Agency (1) implement a procedure requiring senior managers or policy makers to document changes to scientific opinions or analyses and their basis for such changes, (2) require an assistant-administrator-level verification statement that *Scientific Integrity Policy* requirements were adhered to during pesticide registration decisions that involve the EPA immediate office, and (3) provide annual training to affirm commitment to the *Scientific Integrity Policy* and to promote a culture of scientific integrity.

In 2018, EPA extended the conditional registrations for three dicamba pesticide products used on genetically modified dicamba-tolerant soybean plants. (EPA photo)

In March 2021, the then-acting assistant administrator for Chemical Safety and Pollution Prevention, Michal Freedhoff, sent a notification to all Office of Chemical Safety and Pollution Prevention employees with three examples of political interference that compromised the integrity of the EPA's science:

- The 2018 dicamba registration decision in which scientific information on negative impacts was discounted. The Ninth Circuit Court of Appeals vacated the pesticide registrations, impacting growers' ability to use this product.

- The alteration of the draft trichloroethylene risk evaluation, leading to a reduction in the magnitude of the risk from exposures to trichloroethylene.

- Perfluorobutane sulfonic acid toxicity assessment posted on the EPA's website (now removed) that included conclusions that were not based on science.

Then-acting Assistant Administrator Freedhoff also highlighted the role of science in risk assessments, integrity of scientific products, and the benefit of an environment free from political interference in the science. She affirmed their commitment to communication, trust, and transparency, as well as the importance of science in the Office of Chemical Safety and Pollution Prevention's regulatory decision-making process. Additionally, she encouraged employees to attend a scientific integrity training series, which include sessions on ways to express and resolve differing scientific opinions and whistleblower protections.

In FY 2021, we initiated a significant body of work related to scientific integrity concerns and the Agency's process for utilizing science that include:

- Examining the EPA's process for updating federal radiation policies and guidance (Project Notification OSRE-FY21-0208, *Process for Updating Federal Radiation Policies and Guidance*, issued June 8, 2021).

- Examining the EPA's actions on the perfluorobutane sulfonic acid toxicity assessment published on January 19, 2021 (Project Notification No. OSRE-FY21-0207, *EPA's January 2021 PFBS Toxicity Assessment*, issued June 15, 2021).

- Evaluating the extent to which the EPA followed policies and procedures in developing the cancer assessment for the 1,3-Dichloropropene pesticide registration review decision to prevent unreasonable adverse effects on human health (Project Notification No. OSRE-FY21-0214, *Cancer Assessment Review for the Pesticide 1,3-Dichloropropene*, issued June 21, 2021).

We review allegations brought to us through the EPA's scientific integrity official and confidential whistleblowers. To review these allegations, we conduct interviews; gather data; and analyze issues such as adherence to policies and procedures for chemical risk assessments, oversight by EPA management of chemical risk assessments, and resulting information and reports regarding the assessments of such chemicals.[54]

Actions on Scientific Integrity

On March 23, 2021, in an email to all employees, Administrator Regan outlined several actions the EPA would take in response to the January 27, 2021 presidential memorandum. Actions included reviewing the Agency's scientific federal advisory committees to safeguard against conflicts of interest, updating Agency policies that impede the development of critical scientific assessments, and fostering a culture

[54] OIG Notification Memorandum, *Inquiry into EPA's Chemical Risk Assessments Conducted under the Toxic Substances Control Act,* Project No. OSRE-FY21-G-0229, July 14, 2021.

of continuous learning. Also included in the administrator's email were commitments to undertake efforts in support of policy implementation, culture, and release of public information. These statements by the administrator reflected central findings in OIG Report No. 20-P-0173, *Further Efforts Needed to Uphold Scientific Integrity Policy at EPA*, issued May 20, 2020. Administrator Regan's actions also address other topics discussed in the report including employee concerns regarding the EPA's culture of scientific integrity, the EPA's management of federal advisory committees, the ability of EPA staff to express scientific opinions, and retaliation after reporting a potential scientific integrity violation. The OIG's report made 12 recommendations: seven have been implemented and five recommendations remain unimplemented, three of which are past the Agency's planned completion date.

In a June 2021 hearing before the Subcommittee on Interior, Environment, and Related Agencies of the U.S. Senate Committee on Appropriations, Administrator Regan stated that "[t]he [FY2022] Budget request invests critical resources to restore scientific integrity at the Agency and ensuring the foundation of our decision-making process is grounded in science." He highlighted additional Agency efforts to ensure science is the foundation for decision-making, including reestablishing membership of the Science Advisory Board and Clean Air Scientific Advisory Committee, rebooting the Agency's climate change website, and committing to strengthen the science used in chemical risk evaluations. A common theme throughout Administrator Regan's agencywide email and congressional testimony is that the best available scientific information is critical to achieving the EPA's mission.

Reflecting the administrator's commitment and focus, topics such as ensuring scientific integrity and ensuring science-based decision-making are discussed in the draft FYs 2022–2026 EPA strategic plan. This plan is expected to be a guiding principle for all EPA goals and objectives. Plan implementation will be key and OIG audits, evaluations, and investigations will be necessary to assess progress. Specifically, this strategy will provide critical support for the EPA's efforts in climate change, environmental justice, enforcement, clean air and water, revitalizing communities, and the safety of chemicals.

CHALLENGE 5: *Ensuring Information Technology and Systems Are Protected Against Cyberthreats*

Outlook and Overview

There is a prevalence of cyberattacks on government and private sector information technology, or IT, including the compromise of a U.S. water treatment facility and other actions targeting critical infrastructure. IT and cybersecurity are fundamental to a successfully functioning modern government. Like all agencies, the EPA is vulnerable to a wide and ever-changing range of cyberthreats to its internal operations as well as external systems and programs—such as those administered by states—that the EPA oversees. Without maintaining tight, rigorous cybersecurity protections, the EPA's core mission stands under constant peril.

IT is fundamental and essential for the EPA to carry out its mission. The EPA depends on IT systems and electronic data to perform operations and to process, maintain, and report essential information. Information systems must be cost-effective and produce reliable data when needed. The EPA, like other agencies, makes a substantial investment in IT, which includes computers, networks, software, and personnel. In FY 2021, the EPA spent $385 million on IT.[55]

The transition to a remote workforce during the coronavirus pandemic, as well as cybersecurity attacks, caused IT security risks to increase. Compounding this risk, the EPA's systems and networks are interconnected with other internal and external systems and networks, including the internet. This greater connectivity expands opportunities for threats and cyberattacks. Multiple cyberincidents, such as the ones on SolarWinds, Microsoft Exchange, and the Colonial Pipeline, have impacted thousands of organizations, including multiple federal departments and agencies and critical infrastructure entities. The U.S. Department of Homeland Security's Cybersecurity and Infrastructure Security Agency has reported on the prevalence of cyberattacks and has distributed alerts regarding the compromise of a U.S. water treatment facility and the ongoing actions of advanced persistent threat actors targeting governmental, private, and critical infrastructure entities using sophisticated attack methods.

The EPA faces an urgent and ongoing requirement for effective information security and needs to be vigilant in developing, establishing, and monitoring ways to mitigate long-range emerging threats. Successful cyberattacks could compromise classified material, employee data, and other critical information related to the EPA's business processes and could severely impact and disrupt the EPA's mission and operations.

Our work highlights the continuing challenge that the EPA faces in implementing an effective cybersecurity program. For example we found several cybersecurity issues in Report No. 21-E-0124,

[55] Office of Management and Budget, *Environmental Protection Agency Information Technology Agency Summary*, last accessed on October 13, 2021.

EPA Needs to Improve Processes for Updating Guidance, Monitoring Corrective Actions, and Managing Remote Access for External Users, issued April 16, 2021.

The GAO reported that as of April 2021, two of its cybersecurity-related priority recommendations to the EPA were still open. One encourages the EPA administrator to establish a process for conducting an agencywide cybersecurity risk assessment, which would provide senior officials with the necessary information for making decisions, utilizing resources, and allowing them to consider the totality of risk within information systems. The other encourages the EPA administrator to consult with respective critical infrastructure sector partners to develop methods for determining the level and type of National Institute of Standards and Technology Cybersecurity Framework adoption by entities across their respective sectors, which would allow the EPA to evaluate and improve its efforts to protect water infrastructure.

We found that the EPA had a lack of consistency in developing, implementing, and monitoring information security programs and complying with cybersecurity regulations. For example, in September 2020, we reported on the deficiencies in the EPA's vulnerability testing of the Region 8 local area network (Figure 5.1).[56] The deficiencies included insufficient vulnerability testing, outdated Region 8 system security plans, and unidentified wireless access points within the region's laboratory. Also, during the evaluation, we investigated the Office of the Chief Financial Officer's Superfund Cost Recovery Package Imaging and Online System and found that it was outdated. We also found that it was difficult to identify records containing personally identifiable information and accessing such information on the system's regional databases. We estimated that a breach to the system and compromise of personally identifiable information could cost the EPA $11,477,250.

Figure 5.1: Vulnerability testing at Region 8

The Office of Mission Support conducts vulnerability tests of local area networks at Region 8's headquarters, laboratory, and Montana office. (EPA OIG graphic)

In April 2021, we found that the Agency consistently implemented its information security policies and procedures, but quantitative and qualitative effectiveness measures were lacking.[57] Specifically, the EPA needed to (1) update key IT procedures to align with the latest federal directives; (2) establish a process to accurately report the implementation of cybersecurity corrective actions; (3) designate a governance structure to support the Agency's identity, credentials, and access management program as required by the Office of Management and Budget; and (4) implement proper monitoring and regulation of external and privileged systems. Without user authorization enforcement, users have

[56] EPA OIG, *EPA Needs to Improve Processes for Securing Region 8's Local Area Network*, Report No. 20-E-0309, September 10, 2020.
[57] EPA OIG, *EPA Needs to Improve Processes for Updating Guidance, Monitoring Corrective Actions, and Managing Remote Access for External Users,* Report No. 21-E-0124, April 16, 2021.

access to systems that they do not need, such as the grants and Superfund management systems. Privileged users can bypass security controls and potential data breaches would be difficult to track and respond to. Additionally, not reviewing and updating IT security control procedures documentation would mean that the EPA cannot ensure compliance of its information security program with the latest federal requirements.

The EPA has begun and completed significant actions to improve its cybersecurity and address many OIG recommendations. These include:

- **Improvements in cybersecurity oversight processes**, such as establishing processes within the Office of Mission Support to improve the management of audits and corrective actions, documenting the chief information officer's information security role, developing training for contracting officer's representatives on mandatory role-based training, and establishing a tracking and reporting process to ensure that contractors with access to EPA information systems complete information security awareness training and that contractors with significant information security responsibilities complete mandatory role-based training.

- **Actions to better utilize information systems and improve their effectiveness**, such as working with the Department of Homeland Security regarding the risk of the Electronic Manifest System and agreeing to review the system's categorization annually and when significant changes to the system occur, replacing the EPA's incident tracking system and implementing controls to protect the confidentiality and sensitivity of personally identifiable information, and establishing a process to periodically review security settings for the Agency's information security weakness tracking system to validate whether the settings meet Agency standards and implement audit logging capabilities.

In addition to addressing many of the OIG's recommendations, the EPA plans to make other cybersecurity improvements. The EPA requested to double its information security budget for FY 2022 to support a variety of activities that will improve the Agency's oversight and technical capabilities in cybersecurity. These activities will have many benefits for the Agency, including:

- Covering cybersecurity and privacy components in ongoing senior leadership program reviews.
- Strengthening cloud security.
- Identifying, responding, alerting, and reporting suspicious activity.
- Supporting continuous monitoring functions.
- Mitigating and managing supply chain risks.

The EPA must continue to address risks for its own information systems. In addition, the EPA should take steps to address risks in the Water and Wastewater Systems critical infrastructure sector, of which the EPA is the designated Sector Risk Management Agency.

Water Sector Cybersecurity

Presidential Policy Directive 21 designates certain executive agencies with institutional knowledge and specialized expertise about particular sectors as "Sector-Specific Agencies" for those sectors and assigns them federal governmentwide roles related to those sectors.

As the Sector-Specific Agency and Sector Risk Management Agency for the water and wastewater systems sector under Presidential Policy Directive 21, the EPA must assist public water systems in improving their cybersecurity. Cyberattacks on critical infrastructure, including water systems and utilities, have become more prevalent. The OIG Office of Investigations has become increasingly aware of and responsive to cybercrime incidents occurring at water utilities throughout the nation. Incidents range from ransomware attacks, which restrict access to critical data, to manipulation of water chemical concentrations. While attacks on water utilities range in scope and damage, prevention and response measures varied depending on the size and funding of these utilities. Consistent communication between the EPA, public water systems, and relevant federal entities for developing strong cybersecurity practices and best determining the allocation of limited resources is vital.

EPA plans to create a new cybersecurity intelligence analyst position to conduct research, analysis, and engagement with the water and wastewater sectors and partnering agencies to promote the adoption of cybersecurity best practices. Additionally, the EPA plans to continue to interact with the water sector through training efforts and assist community water systems in developing risk and resilience assessments and emergency response plans.

Additionally, the EPA should strive to be proactive and involve its information security officers, senior officials, and other related organizational officials while reviewing, monitoring, and overseeing the Agency's information security programs, systems, and practices.

CHALLENGE 6: *Managing Infrastructure Funding and Business Operations*

Outlook and Overview

Water infrastructure is a fundamental part of the EPA's largest programs. Across the country, there are aging drinking water and wastewater facilities and systems that need repairs and upgrades. Working with state partners to improve the nation's water infrastructure is crucial to ensure that Americans have access to safe drinking water and that wastewater is properly treated and disposed. With the proposed FY 2022 budget for infrastructure-based programs and the proposed Infrastructure Investment and Jobs Act, it is crucial that the EPA exercise effective oversight of this potential massive investment.

The FY 2022 President's Budget stated that Americans will rebuild America's transportation infrastructure, water infrastructure, and broadband connectivity infrastructure. Funding such infrastructure, through loans, grants, and contracts, will take up a major portion of the EPA budget. Much of the nation's environmental protection depends on the Agency instituting effective internal controls to safeguard taxpayer dollars. Without scrupulous Agency management of these investments, key environmental benefits to communities will be lost or diminished.

The FY 2022 Presidential Budget calls for investment into infrastructure through grant and loan programs. It proposes:

- $111 billion to, among other things, replace 100 percent of lead lines and invest in PFAS remediation.

- A $589 million increase to programs, including allocating $1.871 billion for Clean Water State Revolving Fund, a $232 million increase from the FY 2021 budget; $1.358 billion for Drinking Water State Revolving Fund, a $232 million increase from FY 2021; and expanding the Water Infrastructure Finance and Innovation Act subsidy by $12.6 million, which would enable $8 billion in direct assistance and spur $16 billion in total infrastructure investments.

While promoting sound infrastructure is central to the EPA's mission, the American Society of Civil Engineers rated America's infrastructure at a C- and rated America's water-related infrastructure at a D+. There has been increased funding for programs aimed at improving America's infrastructure, such as the American Rescue Plan Act of 2021 and the ongoing Water Infrastructure Finance and Innovation Act, Brownfields, and Superfund programs. This increases the EPA's ability to carry out its essential functions, expand the impact of the Agency's work, and positively affect the health and environment of millions of Americans.

As we found in the American Recovery and Reinvestment Act of 2009 audits, such as several OIG Reports, with more funding comes heightened risk of waste, fraud, and abuse, especially in programs

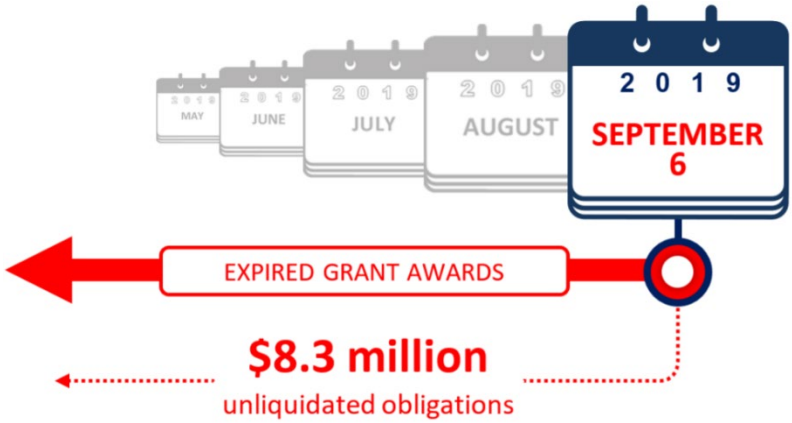
already plagued by resource challenges.[58] The EPA must proactively address these risk areas and ensure that the money goes to the right places and has the intended impact. We found that, as of September 2019, the EPA had $8.3 million in undisbursed balances for grant awards that have been expired for one year or more.[59] These funds could have been used toward EPA environmental goals related to infrastructure investments. We began an audit in September 2020 to determine whether loans made under the Water Infrastructure Finance and Innovation Act comply with the appropriate statute, regulations, and EPA policy.[60]

A vast majority of the EPA's funding geared for infrastructure improvements is distributed to states, tribes, and nongovernmental organizations through grants, loans, and contracts. The EPA awards about half of its annual budget through grants, loans, and contracts to environmental infrastructure programs. As of 2020, the EPA had almost $11 billion in open grants and loans. This amount also includes grants and loans that were awarded in previous fiscal years. The programs awarding grants and loans cover the EPA's ten regions and some of their goals include funding:

- Water quality improvements.
- Pollution control.
- Beaches protection.
- Wetlands.
- Water infrastructure.
- Technical assistance.

The largest portions of this funding go through the EPA's Clean and Drinking Water State revolving funds and state and tribal assistance grants. The funding for these programs has steadily increased since FY 2016 (Figure 6.1).

Figure 6.1: Snapshot of EPA unliquidated obligations on September 6, 2019



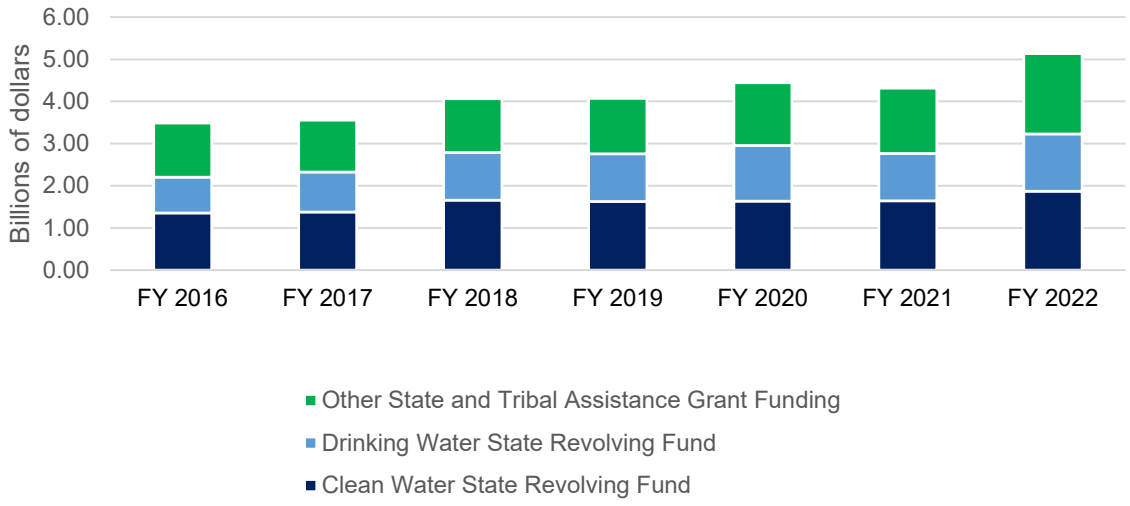
As of September 6, 2019, EPA had approximately $8.3 million in unliquidated obligations, such as undisbursed balances, for grant awards that expired more than one year prior to September 1, 2019. (EPA OIG image)

[58] EPA OIG, *EPA Should Improve Its Contractor Performance Evaluation Process for Contractors Receiving Recovery Act Funds*, Report No. 10-R-0113, April 26, 2010; EPA OIG, *EPA's Terms and Conditions as Well as Process to Award Recovery Act Interagency Agreements Need Improvement*, Report No. 11-R-0016, November 16, 2010; EPA OIG, *EPA and States Should Strengthen Oversight of Clean Water State Revolving Fund Recovery Act Projects*, Report No. 11-R-0519, August 24, 2011; EPA OIG, *American Recovery and Reinvestment Act Site Visit of Sanitary Sewer System Improvements, Ingenio Community, Toa Baja, Puerto Rico*, Report No. 11-R-0233, May 24, 2011.

[59] EPA OIG, *EPA Did Not Accurately Report Under the Grants Oversight and New Efficiency Act and Needs to Improve Timeliness of Expired Grant Closeouts*, Report No. 21-P-0126, March 31, 2020.

[60] OIG Notification Memorandum, *EPA's Process for Awarding, Overseeing, and Monitoring Loans Made Under the Water Infrastructure Finance and Innovation Act*, Project No. OA-FY21-0004, September 21, 2020.

Figure 6.2: EPA funding for CWSRF, DWRF, and STAG programs



Source: OIG analysis of the President's *Budget in Brief* from FYs 2016 through 2022. (EPA OIG image)

Note: FYs 2016 through 2020 funds are actual amounts. FY 2021 funding is the enacted amount. FY 2022 funding is the amount requested in the President's Budget.

The FY 2020 EPA *Annual Performance Report* noted a significant challenge due to the Agency not yet having an electronic system to track grant commitments under its 109 grant programs.

In the *FY 2018-2022 U.S. EPA Strategic Plan*, the EPA pledges to improve water quality by investing over $200 million in infrastructure projects through various environmental programs. The EPA will work with state and tribal partners to provide clean and safe water by updating aging infrastructure for drinking water and wastewater systems as well as wastewater and stormwater infrastructure. While over 90 percent of the nation has access to safe drinking water due to the Agency and its regulatory partners, many houses and communities, particularly in disadvantaged areas, lack access to clean and safe water. The Agency aims to continue:

> [T]o leverage the State Revolving Funds (SRFs) and Water Infrastructure Finance and Innovation Act (WIFIA) to assist states, tribes, municipalities and private entities to finance high-priority infrastructure investments that protect human health and the environment.

The American Rescue Plan Act provided $100 million for the EPA to address health outcome disparities from pollution and the COVID-19 pandemic. These focus areas directly relate to water, air, and land infrastructure. The American Rescue Plan Act provided $50 million for the EPA to identify and address disproportionate environmental or public health harms and risks in minority populations or low-income populations under the Clean Air Act; Safe Drinking Water Act; Comprehensive Environmental Response, Compensation, and Liability Act of 1980; and the Energy Policy Act of 2005. It provided another $50 million for additional Clean Air Act grants and activities.

As with the American Recovery and Reinvestment Act and the Coronavirus Aid, Relief, and Economic Security Act, the EPA is at risk of managing the influx of funds inadequately, especially in programs already facing asset management challenges. Following the Office of Management and Budget supplemental guidance to the American Rescue Plan Act, M-21-20 *Promoting Public Trust in the Federal Government through Effective Implementation of the American Rescue Plan Act and Stewardship of the Taxpayer Resources*, the EPA should work with the oversight community—states, tribes, and localities—to strengthen payment integrity to minimize the risk of waste, fraud, and abuse, and improve the overall award and administration of financial assistance programs with an increased focus on programs and services designed to achieve more equitable results. These funds and the projects associated with them create an opportunity for the EPA, but also a challenge in protecting the funds from fraud, waste, and abuse.

CHALLENGE 7: *Enforcing Environmental Laws and Regulations*

Outlook and Overview

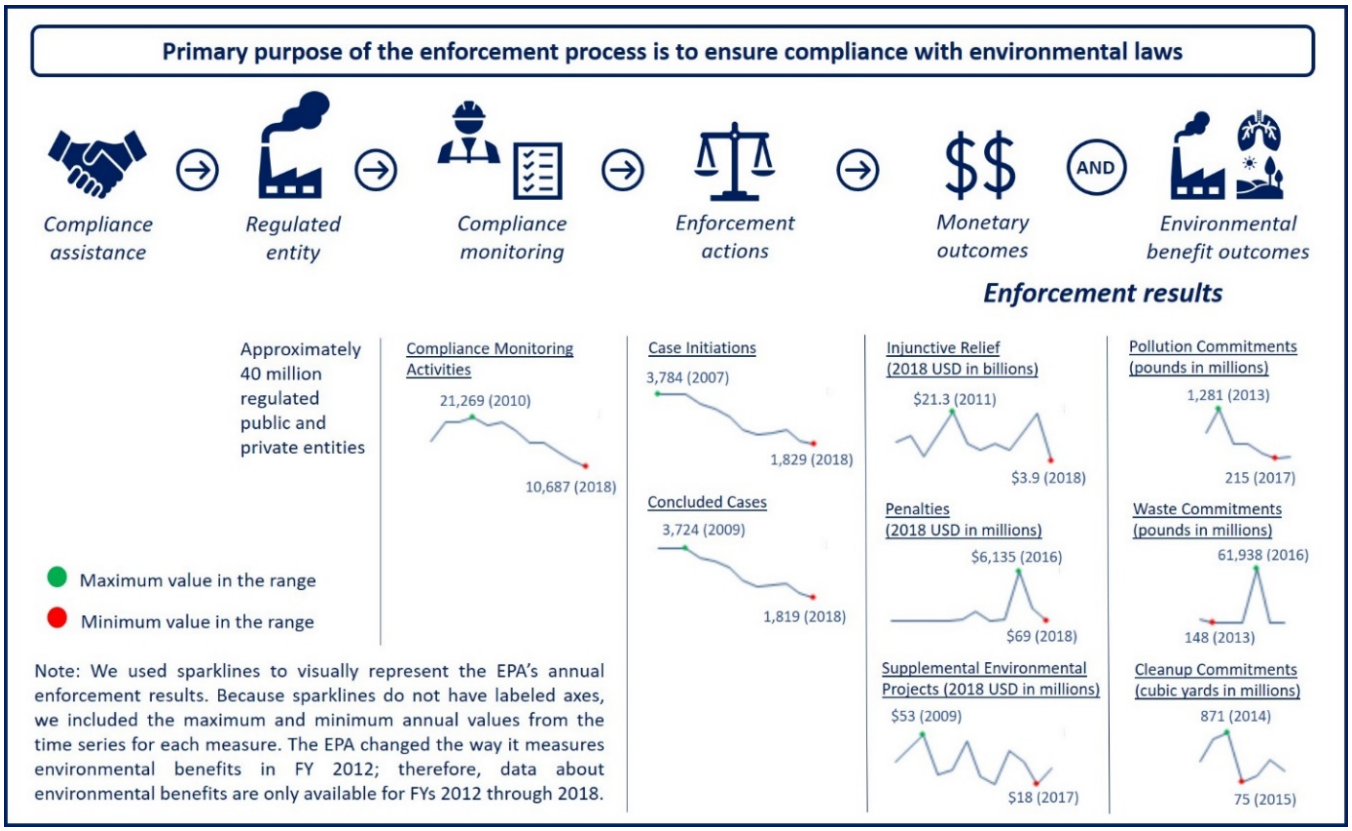
Enforcing environmental laws and regulations is a backbone of EPA operations. According to the FYs 2018–FY 2022 EPA strategic plan, "[a] robust enforcement program is critically important for addressing violations and promoting deterrence, and supports the Agency's mission of protecting human health and the environment."[61] We found that the EPA's enforcement activities, such as inspections and enforcement actions, generally declined since 2011 largely due to funding reductions for the enforcement program. Declining enforcement activities may expose the public and the environment to undetected harmful pollutants, particularly in low-income, minority, tribal, and indigenous communities. Considering its limited resources, the EPA needs to assess its resource requirements for the enforcement program and identify innovative and cost-effective means of detecting and deterring noncompliance.

The EPA's Office of Enforcement and Compliance Assurance is responsible for the Agency's enforcement program. A robust enforcement program is vital to deterring regulated entities from violating environmental laws and regulations and to protecting human health and the environment. The EPA implements enforcement programs for 12 federal environmental statutes and has authorized most states and some territories and tribes to implement many environmental programs and directly enforce many environmental laws.[62] If a state does not have enforcement authority from the EPA, the Agency directly implements the enforcement program in that state.

From FYs 2007 through 2018, key national enforcement results declined, including the numbers of compliance monitoring activities and concluded enforcement cases, the monetary value of supplemental environmental projects, and the pounds of pollution reduction committed to (Figure 7.1).[63] For example, the EPA concluded 58 percent fewer enforcement actions with injunctive relief, 53 percent fewer enforcement actions with penalties, and 48 percent fewer enforcement actions with supplemental environmental projects in FY 2018 than in FY 2007. We also found that most enforcement measures declined in FYs 2019 and 2020, although the coronavirus pandemic likely impacted the downward trend in FY 2020. The trends in enforcement results by region and by environmental statute generally followed declining national trends for compliance monitoring activities, enforcement actions concluded, and enforcement results. Each year, the conclusion of a few cases with large monetary or environmental outcomes dominated the trends in specific measures, such as cases with large amounts of injunctive relief, penalties, and waste and cleanup commitments.

[61] EPA, *Working Together: FY 2018–2022 U.S. EPA Strategic Plan*, February 2018 (last updated in September 2019).
[62] We use "state" or "states" to collectively refer to states, territories, and tribes.
[63] EPA OIG, *Resource Constraints, Leadership Decisions, and Workforce Culture Led to a Decline in Federal Enforcement*, Report No. 21-P-0132, May 13, 2021; EPA OIG, *EPA's Compliance Monitoring Activities, Enforcement Actions, and Enforcement Results Generally Declined from Fiscal Years 2006 Through 2018*, Report No. 20-P-0131, March 31, 2020.

Figure 7.1: EPA national enforcement measures from FYs 2007 through 2018



Source: EPA OIG Report No. 21-P-0132. (EPA OIG image)

Improving State's Oversight Capacity and Greater Collaboration with EPA to Achieve Greater Enforcement

The delegation of authorities under federal environmental laws makes the EPA and states coregulators. This regulatory design requires state programs to be at least as stringent as federal requirements compel and the EPA to serve an oversight role and to fill gaps left by the states. During our evaluation of EPA enforcement trends, many current and former EPA enforcement personnel expressed skepticism that states have the technical and operational capacity, along with the political will, to enforce environmental laws consistently and equitably across the country. Furthermore, EPA enforcement staff commonly described a poorly functioning relationship between the EPA and states in terms of the Agency's oversight of, support of, or collaboration with states. For example, despite the noted capacity limitations at the state level, the EPA enforcement staff reported that states do not consistently contact the appropriate regional EPA office when they need technical expertise to conduct complex inspections.

In January 2020, the Government Accountability Office reported that the EPA collects a range of information about compliance and enforcement efforts.[64] The GAO found that, while the EPA collected

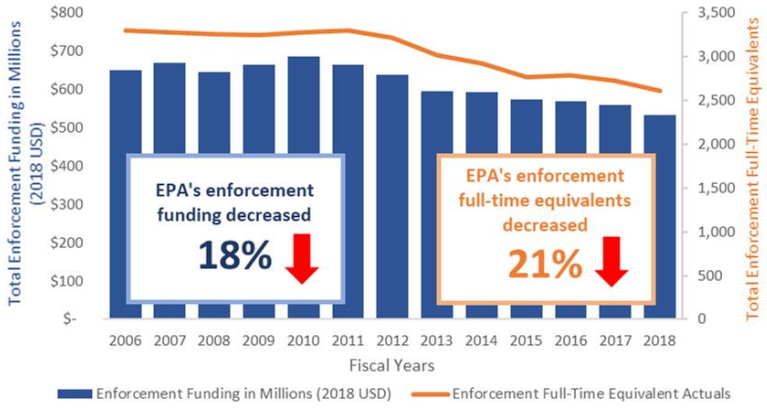
[64] GAO, *Environmental Protection: Additional Action Needed to Improve EPA Data on Informal Enforcement and Compliance Assistance Activities*, GAO-20-95, January 31, 2020.

data on formal enforcement activities, it did not consistently collect data about compliance assistance and informal enforcement activities for its national databases. In addition, the GAO found that several of the EPA's FY 2018 enforcement-related reports did not disclose known limitations about the Agency's enforcement data. Without this information, the public was at risk of drawing inaccurate conclusions about the data. The GAO recommended that the EPA clarify for regions how the definition of informal enforcement actions should be used to collect data about these activities, to share the known limitations of data in its annual reports, and to provide information on the intended use of the EPA's data.

Investment in Enforcement Activities to Increase Enforcement Results

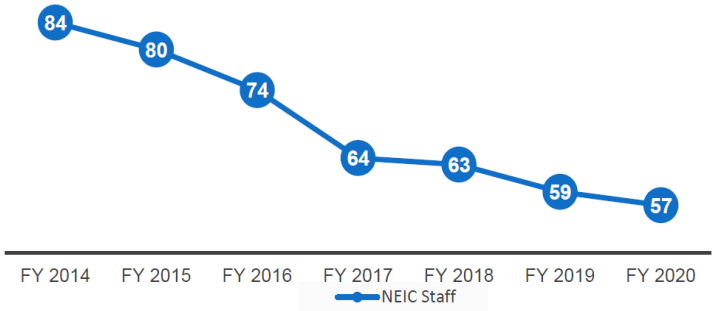
Funding for the EPA's enforcement program decreased 18 percent and the number of enforcement full-time equivalents decreased 21 percent from FYs 2006 through 2018 (Figure 7.2). Within OECA, the National Enforcement Investigations Center has been challenged by high attrition rates among staff, losing 32 percent of its full-time equivalents from 2014 levels, and has been unable to backfill vacant positions since 2016 (Figure 7.3).[65] Enforcement funding varied between 5.8 and 7.4 percent of total EPA funding since 2016.

Figure 7.2: Total EPA enforcement resources FYs



Source: EPA OIG Report No. 21-P-0132. (EPA OIG image)

Figure 7.3: NIEC's reduction in staff numbers, FYs 2014–2020



Source: EPA OIG Report No. 21-P-0131. (EPA OIG image)

While the Agency's enforcement resources diminished, a growing domestic economy increased the size and level of activity of key sectors that the EPA regulated. Congress also established additional regulatory responsibilities for the EPA through laws such as the Frank R. Lautenberg Chemical Safety for the 21st Century Act and the Energy Policy Act of 2005. According to EPA enforcement staff and managers, enforcement capacity declined to a point at which the EPA could not adequately cover the major inspection obligations. Since 2006, both oil and gas production and the number of oil and gas wells increased significantly, more than doubling petroleum production in the United States. Output from farms, such as from livestock, grains, and vegetables, and

[65] EPA OIG, *Staffing Constraints, Safety and Health Concerns at EPA's National Enforcement Investigations Center May Compromise Ability to Achieve Mission*, Report No. 21-P-0131, May 12, 2021.

manufacturing also increased over that time. The increase of such high-impact economic activities exacerbated the risks of reduced compliance monitoring and enforcement activities. At a time when the need for EPA oversight and enforcement increased, the data indicate that the EPA's capacity to meet that need decreased.

In its *FY 2022 Congressional Budget Justification*, the Agency requested $599 million for OECA, which would be a 13 percent increase over the FY 2021 enacted budget of $529 million.[66] The EPA also requested approximately 4 percent more full-time equivalents for OECA, which would bring the office from about 2,424 full-time equivalents in FY 2021 to about 2,511 in FY 2022. The Agency requested an additional $31.9 million to integrate environmental justice throughout the compliance monitoring program, $29.9 million to improve its enforcement data system, and $8 million to expand its criminal enforcement program. These additional resources may mitigate the observed declining trends in EPA enforcement results, but it is too early to forecast future trends with any certainty at this time.

Leadership Decisions Impacting Enforcement Trends

Given limited resources and a shrinking number of enforcement personnel after FY 2011, decisions about strategic shifts to the enforcement program, changes in national enforcement priorities, broader enforcement policy changes, and specific changes to the enforcement process also contribute to enforcement trends (Table 7.1). Additionally, leadership support influences the overall enforcement culture, which indirectly affects enforcement trends. Although culture is an intangible organizational trait based on enforcement staff and manager perceptions, it can have a meaningful impact on the activities of EPA staff in the enforcement program.[67] For example, staff cannot be proactive if the leadership is not. The OIG found that the workforce culture impacted the enforcement program. For example, because of diminished staff morale, some staff did not think their inspections or case development work would produce enforcement cases.

[66] EPA, *FY 2022 Justification of Appropriation Estimates for Committee on Appropriations*, EPA-190-R-21-002, May 2021.
[67] EPA OIG, *Resource Constraints, Leadership Decisions, and Workforce Culture Led to a Decline in Federal Enforcement*, Report No. 21-P-0132, May 13, 2021; EPA OIG, *Staffing Constraints, Safety and Health Concerns at EPA's National Enforcement Investigations Center May Compromise Ability to Achieve Mission*, Report No. 21-P-0131, May 12, 2021.

Table 7.1: Impact of leadership decisions on enforcement trends

Category	Examples	Potential impact on enforcement trends
Strategic shifts to the enforcement program	• Focus enforcement resources on bigger cases against the most serious violators that significantly impact human health and the environment. • Emphasis on returning violators back to compliance rather than initiating and concluding enforcement actions with monetary penalties. • Increased deference to state programs and emphasis on cooperative federalism.	• The EPA concludes fewer enforcement cases. • Depending on strategic shift, some federal enforcement results could increase, such as when the Agency focuses on bigger high-impact cases, or decrease, such as when the Agency focuses on compliance assistance over formal enforcement.
Broader enforcement policy changes	• Narrowing the scope of New Source Review violations under the Clean Air Act for which the Agency would pursue enforcement actions. • Temporarily requiring case teams to alert regional and OECA administrators before referring cases to the Department of Justice. • Temporarily requiring OECA management review of information requests under the Clean Air Act, the Clean Water Act, and the Resource Conservation and Recovery Act.	• The EPA concludes fewer number of enforcement cases under specific environmental statutes. • May see a temporary lag in when enforcement cases are concluded. • Changes may result in inspectors' self-censorship of case referrals or information requests because of the perception these tools and mechanisms are not favored by regional or OECA senior leadership.
Changes in national enforcement priorities	• National enforcement priorities, such as reducing noncompliance in drinking water facilities, focus-limited Agency resources, and expertise on serious environmental problems in program areas with high noncompliance. • The Agency assesses its list of national enforcement priorities every three to four years.	• EPA concludes more enforcement cases within environmental statutes or regions involved in the priority area. • No changes in overall national trends in number of enforcement cases concluded. • Cases concluded under a national priority would influence trends in injunctive relief, penalties, and supplemental environmental projects.
Specific changes to the enforcement process	• Policy changes that required inspectors to complete inspection reports within 60 days of the inspection. • Implementation of a novel Department of Justice interpretation about the use of supplemental environmental projects in most civil enforcement actions being inappropriate.	• Changes to individual measures, such as the number of compliance monitoring activities or number and value of supplemental environmental projects.

Source: Summary of EPA OIG information. from OIG Report Nos. 21-P-0131 and 21-P-0132. (EPA OIG table)

In December 2020, the GAO reported that the EPA had shifted the focus of its national priorities from enforcing environmental laws to promoting compliance with environmental laws.[68] The report noted that, as of September 2020, the EPA had not finalized its guidance to the regions and states for implementing the new national priorities, which went into effect in October 2019. Furthermore, the GAO found that the EPA does not document the outcomes of its assessments of regional performance. Based on that finding, the GAO concluded that the EPA could not demonstrate that its regional activities support its strategic objectives. The GAO recommended that the EPA (1) communicate final guidance to all states for future national priorities before the effective date; (2) incorporate lessons learned from its initial efforts to engage with states when outlining future procedures for drafting national priorities; and (3) document the outcomes of EPA's performance assessments at the regional level, including progress toward performance goals that support the EPA's strategic objectives.

In May 2021, we reported that while OECA's National Enforcement Investigations Center had addressed internal and external findings and implemented corrective actions related to safety and health, concerns persisted regarding unconducted internal safety and health audits and management reviews, hazardous waste mismanagement, noncompliance with safety procedures, and staff concerns about safety and health.[69] The EPA needs to develop a process for the Office of Criminal Enforcement, Forensics, and Training to follow up on inspection findings and confirm whether corrective actions effectively address findings, as well as develop metrics on safety, health, and work environment to incorporate into National Enforcement Investigations Center management performance evaluations.

Also in May 2021, we expanded our reporting on national enforcement trends from March 2020 to include findings about regional and statute-by-statue enforcement trends from FYs 2007 through 2018 and the key factors that contributed to those trends.[70] We found that the decline in enforcement resources was a primary driver behind the observed declining enforcement trends and that EPA leadership made strategic decisions that affected enforcement trends. The EPA should complete a workforce analysis to assess the Agency's capacity to maintain a strong enforcement field presence that protects human health and the environment and to integrate the results of this analysis into OECA's strategic and annual planning processes.

Incorporating Environmental Justice into EPA's Enforcement Program

Across the country, many low-income and minority communities are overburdened with high levels of environmental pollution and other adverse societal and economic conditions. Administrator Regan has emphasized that with regards to protecting human health and the environment, the Agency must:

[68] GAO, *Environmental Protection: Action Needed to Ensure EPA's Enforcement and Compliance Activities Support Its Strategic Goals*, GAO-21-82, December 9, 2020.
[69] EPA OIG, *Staffing Constraints, Safety and Health Concerns at EPA's National Enforcement Investigations Center May Compromise Ability to Achieve Mission*, Report No. 21-P-0131, May 12, 2021.
[70] EPA OIG, *Resource Constraints, Leadership Decisions, and Workforce Culture Led to a Decline in Federal Enforcement*, Report No. 21-P-0132, May 13, 2021.

> [C]onsciously and affirmatively pursue justice as [the Agency] jointly confront environmental and climate challenges with our federal, state, Tribal, and local partners. This is our collective task and every office, and every EPA region, shares this responsibility.

In EPA's *FY 2022 Congressional Budget Justification*, the Agency committed to developing and implementing a comprehensive plan of action for including environmental justice and climate change considerations in its civil and criminal enforcement programs, as well as in its compliance assurance work. [71] Additionally, the acting assistant administrator for Enforcement and Compliance Assurance committed to increasing the number of facility inspections in overburdened communities and increasing engagement with communities regarding locally relevant enforcement cases to advance the Agency's environmental justice goals.[72]

[71] EPA, *FY 2022 Justification of Appropriation Estimates for Committee on Appropriations*, EPA-190-R-21-002, May 2021.
[72] Acting Assistant Administrator Larry Starfield, *Memorandum Regarding Strengthening Environmental Justice Through Criminal Enforcement,* April 30, 2021.