EPA STRATEGY TO REDUCE LEAD EXPOSURES AND DISPARITIES IN U.S. COMMUNITIES

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EPA Strategy to Reduce Lead Exposures and Disparities in U.S. Communities

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PREFACE

At EPA, our mission is to protect people's health and the environment. Fulfilling our mission requires that all people – regardless of the color of their skin, money in their pocket, or the community they live in –benefit equally from the protections of our environmental laws and policies.

Although naturally occurring, lead is undoubtedly one of society's most pervasive environmental toxins. Lead exposure can have devastating impacts to human health and can be especially harmful to developing children. We also know that because of existing racial and socioeconomic disparities, communities that have been historically marginalized and overburdened suffer the most. That's why on day one, President Biden committed to advancing environmental justice and equity and directed every member of his Cabinet to embed environmental justice into our decision-making.

At EPA, we have been hard at work embedding these values into the Agency's DNA. As part of our commitment to advancing environmental justice and equity, I'm proud to present the U.S. Environmental Protection Agency's (EPA) *Strategy to Reduce Lead Exposures and Disparities in U.S. Communities*. The Lead Strategy will advance EPA's work to protect all people from lead with an emphasis on high-risk communities. The strategy also reflects EPA's commitment to fulfilling the Biden-Harris Administration's historic deployment of resources to replace lead pipes and support lead paint removal under the *Lead Pipe and Paint Action Plan*.

I've traveled a lot as Administrator, but earlier this year I took a trip I'll never forget. Vice President Harris and I visited Milwaukee to discuss how, with the help of Bipartisan Infrastructure Law funding, we are working to remove lead pipes in communities across the country. We met with a mother whose life had been turned upside down after she discovered lead in her home. Her little boy was lead-poisoned and hospitalized repeatedly. Tragedies like this unfortunately are not unique. Far too many families have a similar story, and the time to do better is now.

EPA developed the Lead Strategy to lay out an ambitious plan to strengthen public health protections and address legacy lead contamination for communities with the greatest exposures. Through transformative funding from both the Bipartisan Infrastructure Law and the Inflation Reduction Act, we will help communities identify and remove lead service lines and eliminate lead from contaminated soil. EPA's Lead Strategy builds on the goals and objectives set forth in the Federal Action Plan to Reduce Childhood Lead Exposures and Associated Health Impacts published in 2018, and emphasizes efforts to protect children's health while also addressing the racial and socioeconomic disparities of lead exposures in U.S. communities.

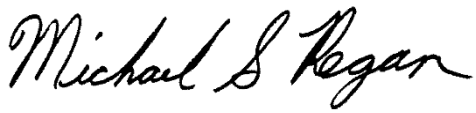
Engaging with communities across the country, as well as with federal, Tribal, state, and local government partners, was an integral part of developing the Lead Strategy. In fact, EPA engaged in an unprecedented effort to host public listening sessions in each of its 10 geographic regions and hosted an engagement session for Tribes. EPA carefully considered the

feedback provided during these sessions and the input brought us to a final version of the Lead Strategy.

The Lead Strategy also includes meaningful performance measures that will track the Agency's progress toward meeting the goals of the strategy. These performance measures demonstrate our commitment to addressing led contamination and will hold EPA accountable to our obligation to protect public health. EPA will provide annual reporting on its progress on our website.

I want to thank the co-chairs of EPA's Lead Strategy Team—Carlton Waterhouse, Deputy Assistant Administrator for EPA's Office of Land and Emergency Management, and Deborah Jordan, Deputy Regional Administrator in EPA Region 9, as well as the co-chairs of the Lead Coordinating Committee — Paul Amato and Ken Davidson in EPA Region 9, as well as Matthew Lambert and Stiven Foster of EPA's Office of Land and Emergency Management — for their leadership in developing and finalizing the Lead Strategy.

Every day, we are a step closer to achieving a lead-free future for all, and together, I know we will make this vision a reality.



Michael S. Regan
Administrator, U.S. Environmental Protection Agency

EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency (EPA) developed this *Strategy to Reduce Lead Exposures and Disparities in U.S. Communities* (Lead Strategy) to lay out an all-of-EPA plan to strengthen public health protections, address legacy lead contamination for communities with the greatest exposures, and promote environmental justice and equity.

Engaging with federal, tribal, state, and local government partners and the Agency's many stakeholders was an integral part of developing this Lead Strategy. On October 28, 2021, EPA released the draft and solicited feedback from the public through March of 2022. During the public comment period, EPA hosted 11 public listening sessions on the draft, one in each of EPA's 10 regions and an engagement session for tribes. The public also submitted hundreds of substantive comments about the draft and thousands of additional comments were submitted through mass comment campaigns. As a result of this concerted outreach, EPA received feedback from a wide array of stakeholders and community members from around the country. Public commenters shared many thoughtful ideas and impassioned perspectives on how to improve the Lead Strategy and how EPA and the whole of government can better address lead contamination in communities. EPA has carefully considered the comments received on the draft, and public input has substantially improved the final version. The final Lead Strategy also includes measures for tracking the Agency's progress in meeting the actions described within the strategy, as well as milestones for regulatory actions and updates to guidance and communication products.

Very low levels of lead in children's blood have been linked to adverse effects on intellect, concentration, and academic achievement.[1] The United States has made substantial progress in reducing lead exposure, but significant disparities remain along racial, ethnic, and socioeconomic lines. For example, Black children and those from low-income households have persistently been found to have higher blood lead levels than non-Hispanic white children and those from higher income households.[2] Under this strategy, EPA will focus on eliminating the disparities in blood lead levels by taking specific actions to prevent childhood exposures and exposure inequities that could lead to lifelong health effects and barriers to social and economic well-being.

The Biden-Harris Administration and EPA Administrator Michael Regan are committed to addressing ongoing exposures to lead, exposure inequities, and associated health impacts in communities across the nation. EPA developed the Lead Strategy to build on 40 years of progress in reducing lead in the environment and to focus attention on overburdened communities with environmental justice and civil rights concerns, consistent with the *Executive Order on Advancing Equity and Support for Underserved Communities Through the Federal*

[1] U.S. Environmental Protection Agency (2013) https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=255721
[2] Egan et al. "Blood Lead Levels in U.S. Children Ages 1 – 11 Years, 1976 - 2016" Env. Health Pers. (2021) 129(3): https://doi.org/10.1289/EHP7932

Government.[3] The Lead Strategy also reflects EPA's commitment to fulfilling the Biden-Harris Administration's historic commitment of resources to replace lead pipes and support lead paint removal under the Lead Pipe and Paint Action Plan.[4]

The *Fiscal Year 2022-2026 EPA Strategic Plan* commits the Agency to taking actions that minimize public health disparities.[5] EPA's Lead Strategy will help achieve that ambitious objective by significantly reducing lead exposure for all people and eliminating inequities in elevated blood lead levels across population groups and life stages. To accomplish this objective, the Lead Strategy sets out four key goals:

1) Reduce community exposures to lead sources.
2) Identify communities with high lead exposures and improve their health outcomes.
3) Communicate more effectively with stakeholders.
4) Support and conduct critical research to inform efforts to reduce lead exposures and related health risks.

These four goals align with the goals in the *2018 Federal Action Plan to Reduce Childhood Lead Exposure,* which focused broadly on protecting children's environmental health.[6] EPA's Lead Strategy also seeks to protect children's health but particularly emphasizes reducing lead exposure in communities with persistent disparities in children's blood lead levels and promoting environmental justice and equity.

The Lead Strategy defines challenges to achieving each of these goals and identifies actions the Agency will take to address them. Despite great progress over the past few decades to reduce lead exposure, EPA still has important work to do, especially in communities already burdened by pollution and other stressors. Exposure sources and pathways for lead are complex and numerous, including lead-based paint, house dust, drinking water, soil, and air. Exposures can be greatest and pose significant health risks to young children, who may also be exposed in utero. Working locally, nationally, and with a whole of government approach, EPA is determined to take ambitious actions that follow the science and advance justice and equity to rid communities of harmful lead exposure and the resulting toxic effects.

[3] https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/
[4] https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/16/fact-sheet-the-biden-harris-lead-pipe-and-paint-action-plan/
[5] https://www.epa.gov/system/files/documents/2022-03/fy-2022-2026-epa-strategic-plan.pdf
[6] https://www.epa.gov/sites/default/files/2018-12/documents/fedactionplan_lead_final.pdf

LIST OF ABBREVIATIONS AND ACRONYMS

ATSDR - Agency for Toxic Substances and Disease Registry
Avgas – Aviation Gasoline
BIL – Bipartisan Infrastructure Law
CDC – Centers for Disease Control and Prevention
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CHPAC – Children's Health Protection Advisory Committee
CPSC – Consumer Product Safety Commission
DLCL – Dust-Lead Clearance Levels
DLHS – Dust-Lead Hazard Standards
DOJ – Department of Justice
DWSRF – Drinking Water State Revolving Fund
EAGLE - Eliminate Aviation Gasoline Lead Emissions
ELSWPEO - Enhancing Lead-Safe Work Practices through Education and Outreach
EPA – Environmental Protection Agency
FAA – Federal Aviation Administration
FDA – Food and Drug Administration
FY – Fiscal Year
HHS – Department of Health and Human Services
HUD – Department of Housing and Urban Development
IEUBK - Integrated Exposure Uptake Biokinetic Model
IQ – Intelligence Quotient
ISA – Integrated Science Assessment
LCR – Lead and Copper Rule
LCRI – Lead and Copper Rule Improvements
LCRR – Lead and Copper Rule Revisions
LSL – Lead Service Line
LSLR – Lead Service Line Replacement
MOU – Memorandum of Understanding
NAAQS – National Ambient Air Quality Standard
NLPPW – National Lead Poisoning Prevention Week
NPDWR - National Primary Drinking Water Regulation
P&CBs – Public and Commercial Buildings
PAFI - Piston Aviation Fuels Initiative
Pb - Lead
PEHSU - Pediatric Environmental Health Specialty Units
PPA - Prospective Purchaser Agreement
RCRA – Resource Conservation and Recovery Act
RRP – Renovation, Repair and Painting
SC DHEC - South Carolina Department of Health and Environmental Control
SDWIS - Safe Drinking Water Information System
SEP – Supplemental Environmental Project
SHEDS - Stochastic Human Exposure and Dose Simulation Model

SRF – State Revolving Fund
TSCA – Toxic Substances Control Act
USDA – United States Department of Agriculture
WIIN – Water Infrastructure Improvements for the Nation Act

GLOSSARY OF TERMS

Blood Lead Level: The amount of lead in blood is referred to as the blood lead level, which is measured in micrograms of lead per deciliter of blood (µg/dL).

Cumulative Impacts: The total burden (i.e., health, ecological, aesthetic, historic, cultural, economic, and/or social effects) that may result from chemical and non-chemical stressors, exposures from multiple routes or sources, and factors that differentially affect exposure or toxicity to communities.

Disadvantaged: Historically marginalized and overburdened.

Disproportionate Effects/Impacts: Situations of concern where there exists significantly higher and more adverse health and environmental effects on people of color, low-income populations or indigenous peoples.

Environmental Justice: 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.

Equity: The consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality.

Exposure: Human contact with contaminants, such as lead, in media including air, water, soil, dust, paint, food, and consumer/cultural products.

Fair Treatment: Fair treatment means no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies.

Hot Spot: A geographic area with a high level of pollution/contamination within a larger geographic area of lower or more “normal” environmental quality.

Life Stage: A distinguishable time frame in an individual's life characterized by unique and relatively stable behavioral and/or physiological characteristics that are associated with development and growth that are characterized by economic resources.

Low-income: A reference to populations characterized by limited economic resources.

Meaningful Involvement: Meaningful involvement means people have an opportunity to participate in decisions about activities that may affect their environment and/or health; the public's contribution can influence the regulatory agency's decision; community concerns will be considered in the decision-making process; and decision makers will seek out and facilitate the involvement of those potentially affected.

Overburdened: People of color, low-income, tribal, or indigenous populations or geographic locations in the United States that potentially experience disproportionate environmental harms and risks. This disproportionality can be as a result of greater vulnerability to environmental hazards, lack of opportunity for public participation, or other factors. Increased vulnerability may be attributable to an accumulation of negative or lack of positive environmental, health, economic, or social conditions within these populations or places. The term describes situations where multiple factors, including both environmental and socio-economic stressors, may act cumulatively to affect health and the environment and contribute to persistent environmental health disparities.

Risk: The probability of an adverse effect in an organism, system, or population caused under specified circumstances by exposure to a contaminant, such as lead, or stressor.

Risk Management: In the context of human health, a decision-making process that accounts for political, social, economic, and engineering implications together with risk-related information in order to develop, analyze, and compare management options and select the appropriate managerial response to a potential chronic health hazard.

Stakeholders: Broadly defined as persons concerned with the decisions made about how a risk may be avoided, mitigated, or eliminated, as well as those who may be affected by regulatory decisions.

Stressor: A stressor is any physical, chemical, or biological entity that can induce an adverse response. Stressors may adversely affect specific natural resources or entire ecosystems, including plants and animals, as well as the environment with which they interact.

Underserved Communities: Populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, as exemplified in the preceding definition of “equity.”

INTRODUCTION

In March of 2022, the U.S. Environmental Protection Agency (EPA) released the *Fiscal Year (FY) 2022-2026 EPA Strategic Plan* (Strategic Plan). The Strategic Plan communicates the Agency's priorities and provides a roadmap for achieving its mission to protect human health and the environment.[7] One of the Strategic Plan's goals is to take action to advance environmental justice and civil rights by achieving tangible progress for historically overburdened and underserved communities. EPA's *Strategy to Reduce Lead Exposures and Disparities in U.S. Communities* (Lead Strategy) will help achieve the Strategic Plan's ambitious objective by addressing elevated blood lead levels in children at the greatest risk of exposure. This Lead Strategy provides a framework to help achieve this goal and emphasizes the importance of addressing racial, ethnic, and socioeconomic disparities in lead exposure from all sources.

EPA also has as one of its priorities ensuring that entities receiving any federal financial assistance from EPA comply with Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, or national origin (including limited English proficiency), and with other federal civil rights laws that prohibit discrimination on the basis of disability, sex, and age, as well as with EPA's nondiscrimination regulation at 40 C.F.R. Parts 5 and 7. Recipients of financial assistance from EPA have an affirmative obligation to ensure their actions do not involve discriminatory treatment and do not have discriminatory effects. EPA will work to ensure that the relevant actions described in the Lead Strategy will adhere to these civil rights requirements.

Regulatory actions by EPA and other federal agencies have significantly reduced the use of lead in automotive gasoline, paint, lead-soldered food containers, and plumbing water system components (e.g., pipes, fittings, solder, and fixtures) in the past 40 years. Despite significant progress in reducing lead exposures, EPA needs to continue its work to equitably protect people of all races, ethnic groups, income levels, disabilities, and life stages, including young children and pregnant women, who are the most vulnerable to the toxic effects of lead. Children living in communities overburdened by pollution and other health and social stressors, often communities of color and lower socioeconomic status, are at greater risk. For example, lead-based paint, lead service lines (LSLs), and plumbing fixtures containing lead are more likely to be found in older houses in lower-income areas. Communities of color can also face greater risk due to the legacy of redlining, historic racial segregation in housing, and reduced access to environmentally safe and affordable housing.[8] Industrial sources of lead are more likely to be closer to lower income neighborhoods and communities of color where soils in residential and public places can be contaminated.

[7] https://www.epa.gov/system/files/documents/2022-03/fy-2022-2026-epa-strategic-plan.pdf. Note that EPA's "fiscal year" begins on October 1st and ends on September 30th of each year.

[8] Williams, David R., et.al. "Racism and Health: Evidence and Needed Research" Annual Review of Public Health (2019) 40:105-125. https://doi.org/10.1146/annurev-publhealth-040218-043750.

Children are more susceptible than adults to an array of adverse health effects associated with lead.[9,10] This can relate to exposures across all childhood life stages. For example, exposures of pregnant and nursing women can increase prenatal exposures. Fetuses can be exposed through the placenta, and infants can be exposed through breast milk and formula made with lead-contaminated water. Children can be exposed through "take home" exposures such as lead carried home on a work uniform or work shoes, from their care givers, and other people. Even very low levels of lead in children's blood have been linked to adverse effects on intellect, concentration, and academic achievement. These effects may have later-in-life impacts on an exposed individual's quality of life. Additionally, longer-term lead exposure over a lifetime is associated with increased risk of other effects, such as increased blood pressure and hypertension, which can lead to coronary heart disease.

Numerous and disparate sources of lead, coupled with many federal, tribal, state, and local agencies having separate legal authorities to address those sources, create a challenging landscape for tackling the problem. EPA and its federal partners need new approaches to protect communities still experiencing the highest childhood blood lead levels by reducing children's exposures to lead sources. EPA's Lead Strategy focuses the Agency's efforts to reduce lead exposures in communities by addressing multi-media exposure pathways with all our applicable statutory authorities and other tools, across all our relevant programs, and in coordination with our federal partners, tribes, and other stakeholders.[11]

Engaging with federal, tribal, state, and local government partners and the Agency's many stakeholders is an integral part of strategic planning. On October 28, 2021, EPA released the draft Lead Strategy and solicited feedback from the public through March of 2022. During the public comment period, EPA hosted 11 public listening sessions on the draft, one in each of EPA's 10 regions and an engagement session for tribes.[12] Participants were provided an opportunity to provide verbal comments during these sessions, the transcripts of which were submitted to the public docket that was created for the Lead Strategy.[13]

The public also submitted to the docket hundreds of substantive comments about the draft Lead Strategy and thousands of additional comments submitted through mass comment

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[9] Environmental Protection Agency, Integrated Science Assessment for Lead: https://www.epa.gov/isa/integrated-science-assessment-isa-lead

[10] Agency for Toxic Substances and Disease Registry (ATSDR). Toxicological profile for Lead. (2020) Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service. DOI: 10.15620/cdc:95222

[11] EPA also recognizes that the effect of cumulative impacts (i.e., the total burden from chemical and non-chemical stressors) is best understood and addressed in specific situations to appropriately address public health risk. EPA is currently developing a consistent and comprehensive framework for assessing and considering cumulative impacts on populations and communities in its policies, programs, and activities. Such a framework will incorporate the vulnerabilities and susceptibilities related to the accumulation of multiple environmental and social stressors, which include those associated with lead. We anticipate that in the future, the Lead Strategy will reflect this cumulative impacts framework as appropriate.

[12] Recordings of these listening sessions are available at this website: https://www.epa.gov/lead/draft-strategy-reduce-lead-exposures-and-disparities-us-communities.

[13] https://www.regulations.gov/docket/EPA-HQ-OLEM-2021-0762

campaigns. EPA received feedback from a wide array of stakeholders and community members from around the country. Public commenters shared many thoughtful ideas and impassioned perspectives on how to improve the Lead Strategy and how EPA and the whole of government can better address lead contamination in communities. EPA has carefully considered the comments it received and has summarized the key themes from this public engagement in the strategy. The public input the Agency received has substantially improved the final version of the Lead Strategy.

As EPA implements this Lead Strategy, it will rely on scientific research and evidence as the basis for decision making to mitigate lead exposure from all environmental sources of lead.[14] For example, we will continue advancing and applying science for children's blood lead modeling and exposure mapping, for contaminated soils remediation, and location of drinking water LSLs. EPA expects that this strategy will be updated to ensure that we continue to engage with stakeholders, to rely on the best available science, and to use clear relevant measures and milestones to track our progress towards the goals of this strategy. The period for this strategy is aligned with the *Fiscal Year (FY) 2022-2026 EPA Strategic Plan* and the measures and milestones described below are generally expected to be completed annually or by the fall of 2026.

The remainder of the Lead Strategy is organized as follows. The first section outlines the goals of the strategy, as well as the broad approaches the Agency has developed to achieve them. The second section describes each Lead Strategy goal in detail. For each goal there is a description of the problem, a summary of the relevant key themes the Agency received from public comments, a list of the performance measures and milestones the Agency will use to track and report progress associated with each goal, and detailed descriptions of specific actions the Agency is taking, or will take, to achieve each goal. The final section provides conclusions and next steps for EPA's Lead Strategy. An Appendix at the end of this document lists all the performance measures and milestones that are included in the Lead Strategy.

[14] Foundations of Evidence-Based Policymaking Act of 2018: https://www.epa.gov/data/foundations-evidence-based-policymaking-act-2018

LEAD STRATEGY STRUCTURE AND APPROACHES

EPA's Lead Strategy is organized around goals that align with those developed in the 2018 *Federal Action Plan to Reduce Childhood Lead Exposure* (Federal Lead Action Plan). The Federal Lead Action Plan was produced by 17 federal agencies, including EPA, that serve on the President's Task Force on Environmental Health Risks and Safety Risks to Children.[15] Like the 2018 Federal Lead Action Plan, EPA's Lead Strategy seeks to protect children's health but places a particular emphasis on reducing lead exposure in communities as a means to reduce persistent inequities in children's blood lead levels and promoting environmental justice.

The four key goals of the Lead Strategy include:

Goal 1: Reduce Community Exposures to Lead Sources
Goal 2: Identify Communities with High Lead Exposures and Improve Their Health Outcomes
Goal 3: Communicate More Effectively with Stakeholders
Goal 4: Support and Conduct Critical Research to Inform Efforts to Reduce Lead Exposures and Related Health Risks

The Lead Strategy defines challenges to achieving each of these goals and, for each goal, describes specific actions the Agency will take to address them. EPA has organized each of these actions by three "approaches" that will guide how and where the Agency will accelerate efforts to reduce lead exposures and eliminate racial and socioeconomic disparities in blood lead levels across the United States. Those approaches are:

APPROACH 1: Reduce lead exposures locally with a focus on communities with disparities and promote environmental justice

EPA will work with our partners to identify communities where lead exposure and blood lead levels persist and are known or reasonably suspected to be highest, and then will determine the dominant sources and cumulative exposure pathways. EPA will subsequently use this knowledge and evidence-based best practices to focus the Agency's actions, using all its tools to reduce health risk. EPA will also ensure that regulations are developed and implemented so that they protect communities from local exposures to lead.

APPROACH 2: Reduce lead exposures nationally through updated protective standards, analytical tools, and outreach

EPA will work to prevent and reduce lead exposures by developing and implementing national standards, policy, and guidance; updating regulations; enforcing regulations and statutory requirements; using analytical tools, conducting research, and applying

[15] https://www.epa.gov/lead/federal-action-plan-reduce-childhood-lead-exposure

evidence to improve the scientific foundations for methods to reduce and mitigate lead exposure; and soliciting stakeholder input to inform Agency decisions.

APPROACH 3: Reduce lead exposures with a "whole of EPA" and "whole of government" approach

EPA will create and target opportunities to collaborate across EPA programs and with federal partners and other governmental stakeholders, including states, tribes, cities, and counties, as well as non-governmental organizations and industry stakeholders, to focus the full range of resources to reduce lead exposures from all sources in the most vulnerable communities across the country.[16] The Agency will use evidence-based strategies for communication and outreach designed to reduce these exposures.

EPA will use scientific research and evidence-based approaches to prioritize and focus the Agency's actions. EPA's national program offices and ten regions will take a multi-pronged approach by working at the national and community levels; tackling lead contamination across all exposure pathways; and partnering with other federal agencies to combine resources and authorities to take on the challenge of reducing blood lead level disparities in specific communities.

The actions EPA will take to achieve these ambitious goals reflect consideration of the many thoughtful comments the Agency received during the public comment period. EPA has also identified performance measures and milestones the Agency will use to track and measure its progress in meeting these goals and objectives. The development of performance measures and milestones that accompany the Lead Strategy demonstrates EPA's commitment to addressing legacy lead contamination by strengthening public health protections from all routes of lead exposure. But there is still work to do; the Agency has not developed a performance measure or milestone for every action described in this strategy. Many of the actions described in this strategy have not yet been, or have only recently been, initiated and funded. These out-year activities are subject to the availability of appropriations. As these programs mature, so too will EPA's ability to set targets for measuring performance.

Where relevant, the Lead Strategy also presents specific case studies of past or ongoing EPA actions to reduce lead exposure that can serve as models for future work.

[16] Breysse, P, et.al. "Targeting Coordinated Federal Efforts to Address Persistent Hazardous Exposures to Lead" *American Journal of Public Health* (2022) *112, S640_S646, https://doi.org/10.2105/AJPH.2022.306972*

LEAD STRATEGY GOALS AND OBJECTIVES

GOAL 1: REDUCE COMMUNITY EXPOSURES TO LEAD SOURCES

Problem: Lead exposure results from multiple sources. For example, longstanding sources of lead exposure remain in homes, schools, child care facilities, and other buildings with lead-based paint, old water distribution systems, and household plumbing. Soils of residential yards, parks, and schoolgrounds across the United States also can be contaminated with lead. Underserved and under-resourced communities are especially vulnerable to lead contamination due to aging infrastructure and poor maintenance. EPA will leverage all its regulatory, technical advisory, and risk management tools to provide greater protection to communities from the effects of lead.

Because the actions necessary to reduce community exposures to lead are spread across multiple routes of exposure, the Lead Strategy has identified five separate objectives specific to achieving Goal 1:

Objective A: Reduce Exposure to Lead in Homes and Child-Occupied Facilities with Lead-Based Paint and Other Hazards
Objective B: Reduce Exposure to Lead from Drinking Water
Objective C: Reduce Exposure to Lead in Soils
Objective D: Reduce Exposure to Lead Associated with Emissions to Ambient Air
Objective E: Reduce Exposure to Lead Through Enforcement and Compliance Assurance

Objective A: Reduce Exposure to Lead in Homes and Child-Occupied Facilities with Lead-Based Paint and Other Hazards

Problem: Millions of people, especially those living in communities with environmental justice concerns, continue to be exposed to lead at home and in other buildings where lead-based paint is found in deteriorating condition (peeling, chipping, cracking, or damaged). Communities that have a high percentage of housing or buildings built before 1978 —and especially those built before 1940 — are at higher risk from historical use of lead-based paint.

Public Input:

Community and Contractor Training: Commenters on the draft Lead Strategy were widely supportive of the Enhancing Lead-Safe Work Practices through Education and Outreach (ELSWPEO) initiative. The initiative's purpose is to serve local communities and advance environmental justice by increasing both the number of Renovation, Repair and Painting (RRP) certified firms and the consumer demand for lead-safe work practices. This two-pronged approach was designed to raise awareness about potential lead exposure while renovating

older homes and making certified contractors more readily available in overburdened and underserved communities across the country. Commenters requested more training and more resources for communities with environmental justice concerns.

EPA appreciates support for the initiative, begun in 2021. In the future, EPA is committed to supporting communities with environmental justice concerns by ensuring that certified contractors are readily available to these communities. EPA is also committed to increasing awareness of the hazards of lead in communities with environmental justice concerns through training and outreach, thus increasing demand for certified contractors and improving the public health of the community. To emphasize the dual goals of improving the general understanding of lead dangers and increasing the supply of contractors available in communities with environmental justice concerns, EPA will take two separate actions consistent with *Approach 1: Reduce Lead Exposures Locally*: one to ensure that certified contractors are more readily available in underserved communities, and another to improve awareness in underserved communities of the dangers of lead-based paint.

Addressing Demolitions: Commenters requested that EPA address ongoing contamination from demolitions and deconstruction in housing and public and commercial buildings (P&CBs). Commenters stated that large amounts of dust and debris can be created during demolitions which eventually end up in soil. Dust can spread to nearby properties and contaminate soil and the interiors of homes.

EPA regulates partial demolitions of target housing and child-occupied facilities under the existing RRP rule. In addition, the Toxic Substances Control Act (TSCA) Title IV provides EPA the authority to regulate demolitions (and deleading) of P&CBs under Lead-based Paint Activities. While EPA is not currently taking steps to promulgate additional regulations under Lead-based Paint Activities authority, EPA is working on addressing P&CBs under a RRP rule that could cover partial demolitions.

Rulemaking Timelines: Commenters expressed concern about EPA's progress in addressing TSCA Title IV rulemaking obligations, including the Definition of Lead Based Paint, Soil Lead Hazard Standards, and renovations in P&CBs, and urged EPA to commit to specific outcomes of the rulemaking process, considering impacts to housing and exposure within communities with environmental justice concerns.

EPA is committed to setting health protective standards and will use the best available science for these rulemakings. The regulatory impact analyses for these rules will specifically consider the impact on communities with environmental justice concerns. However, EPA cannot prejudge the results of the analyses conducted to support the rulemaking and therefore cannot commit to specific outcomes of the process.

TSCA Section 6 Authority: Commenters requested that EPA designate lead as a "high priority" substance under TSCA for Section 6 risk evaluation and risk management. Stakeholders

suggested this would be the most expeditious way to address total demolition, recreational consumer products, non-residential lead paint, multimedia exposure, and legacy disposal.

EPA must have at least 20 chemical risk evaluations ongoing at any given time on High-Priority Substances with at least half of those risk evaluation on chemicals drawn from the 2014 TSCA Work Plan. Therefore, because lead and lead compounds are on the TSCA Work Plan, they will at some point be brought into the TSCA existing chemicals prioritization process and if designated as high priority, will undergo evaluation under section 6(b) of TSCA.

Cultural and Religious Products: Public comments on the draft Strategy included the importance of raising awareness of lead from non-traditional sources such as cultural and religious products and cookware and their disproportionate impact on certain communities, such as recently settled refugees. Public commenters recommended dissemination of information regarding lead exposure in these products through culturally informed public awareness campaigns.

Performance Measures and Milestones:

- By September 30, 2023, provide free or low-cost training to 500 contractors that are located in and around communities with environmental justice concerns spread throughout the U.S. over fiscal years 2022 and 2023.
- By September 30, 2023, host national and community-based Lead Awareness Curriculum sessions for 515 community leaders and Understanding Lead sessions for 340 community members, which reflects a 10% increase in participation from fiscal year 2022 to fiscal year 2023.
- By March 2023, publish the *Heavy Metals in Cultural Products: Outreach and Educational Resources Toolkit* on the EPA website.
- By February 2023, propose, and by June 2024, finalize the Dust-lead Hazard Standards (DLHS) and Dust-lead Clearance Levels (DLCL) Rule.

EPA ACTIONS:

APPROACH 1: Reduce lead exposures locally with a focus on communities with disparities and promote environmental justice

- **Ensure that certified contractors are more readily available in underserved communities:** EPA's Lead RRP Rule requires that firms performing RRP projects that disturb lead-based paint in homes, child care facilities and preschools built before 1978 be certified by EPA (or an EPA-authorized state, tribe, or territory) and use certified contractors who follow lead-safe work practices. It can be difficult for people to find certified contractors to perform these renovations. Free or low-cost RRP training, in either English or Spanish depending on location, provided by EPA will increase the number of certified contractors located in and around underserved and low-income communities. This encourages lead-safe work practices and reduces lead exposure during renovations of pre-1978 housing. For fiscal

years 2022 and 2023, EPA is providing this training in conjunction with community training in the *ELSWPEO* initiative.

- **Improve awareness in underserved communities of the dangers of lead-based paint:** An important step in improving a community's health is raising awareness of the dangers of lead-based paint and other lead hazards. EPA will continue to increase awareness by offering free virtual webinars and/or in-person sessions in English and, when requested, will provide simultaneous Spanish interpretation of the "Lead Awareness Curriculum Train-the-Trainer" and "Understanding Lead" sessions. EPA is also striving to provide Understanding Lead sessions in additional languages to address the needs of other communities with limited English proficiency as they are identified. EPA will offer Lead Awareness Curriculum Train-the-Trainer sessions for community leaders on how to educate their communities about lead, lead exposures and actions that can be taken to reduce lead exposure, with a focus on how to use and modify the *Lead Awareness in Indian Country: Keeping our Children Healthy!* Curriculum for each community leader's specific audience. EPA will also offer Understanding Lead sessions for anyone interested in learning about lead. For fiscal years 2022 and 2023, EPA is providing these sessions as part of the *ELSWPEO* initiative, which also includes training for contractors.

APPROACH 2: Reduce lead exposures nationally through protective standards, analytical tools, and outreach

- **Revisit the DLHS and DLCL:** EPA has initiated a rule to reconsider the DLHS and DLCL in accordance with the Executive Order 13990 and consistent with a May 2021 court decision by the Ninth Circuit.[17,18] Lead inspectors, risk assessors, and abatement professionals use the DLHS to determine if dust-lead hazards are present and the DLCL to evaluate the effectiveness of cleaning following an abatement in target housing (i.e., built before 1978) and child-occupied facilities. As part of this rule, EPA plans to amend its regulatory definition of target housing to conform with a 2017 statutory change to clear up regulatory ambiguity and extend the regulatory coverage to zero-bedroom dwellings (e.g., studio apartments) where children live.

- **Revisit the definition of lead-based paint:** EPA will, in collaboration with the Department of Housing and Urban Development (HUD), revisit the definition of lead-based paint, assess the relevant scientific evidence, and if appropriate, revise the definition to make it more protective. The definition is incorporated throughout the lead-based paint regulations, and application of this definition is central to how the lead-based paint program functions. EPA is currently evaluating next steps on this issue in light of the May 2021 court decision by the Ninth Circuit.[19]

[17] https://www.federalregister.gov/executive-order/13990
[18] *A Cmty. Voice v. U.S. EPA*, 997 F.3d 983 (9th Cir. 2021), https://cdn.ca9.uscourts.gov/datastore/opinions/2021/05/14/19-71930.pdf
[19] *A Cmty. Voice v. U.S. EPA*, 997 F.3d 983 (9th Cir. 2021), https://cdn.ca9.uscourts.gov/datastore/opinions/2021/05/14/19-71930.pdf

- **Support lead-safe renovations in public and commercial buildings:** EPA will continue its work to evaluate risk from renovations of public and commercial buildings pursuant to TSCA § 402(c)(3) that directs EPA to promulgate regulations for renovations in target housing, public buildings built before 1978, and commercial buildings that create lead-based paint hazards. EPA will determine whether such renovations create lead-based paint hazards, and, if they do, EPA will address any lead-based paint hazards by promulgating work practice, training, and certification requirements for public and commercial buildings.

APPROACH 3: Reduce lead exposures with a "whole of EPA" and "whole of government" approach

- **Collaborate on lead paint rulemakings:** EPA will collaborate with HUD and other federal agencies on rulemakings to address lead-based paint hazards, including dust, soil, and the definition of lead-based paint. Closer coordination will improve the federal government's ability to collectively address lead-based paint hazards.

- **Collaborate to address potential exposures to lead from food, cosmetics and consumer products, and cultural/religious products:** EPA will collaborate with the Food and Drug Administration and the Consumer Product Safety Commission (CPSC) to address other sources of potential lead exposure, such as foods, cosmetics, art supplies, herbal and folk remedies, non-commercial pottery, recalled toys, jewelry, furniture, and other consumer goods.

- **Develop an education and outreach toolkit focused on children's health and pregnant women that identifies existing resources on lead (and other heavy metals) in cultural products and cookware:** This toolkit will serve as a resource for culturally competent educational and outreach materials for members of various communities concerned about lead contamination in culturally specific products.

- **Work internationally to assist other countries to establish laws to protect children and consumers from lead-containing paint:** More than 100 countries still allow the manufacture and sale of paint with high levels of lead; most of them are lower- and middle-income countries. Communities in lower- and middle-income countries, especially underserved and vulnerable populations with children living in poverty, are disproportionately at risk for health impacts from exposures to lead paint and other lead sources. Building on the success of phasing out lead in gasoline globally, EPA is working through a multi-stakeholder, international partnership to provide individual countries with guidance on drafting strong and effective laws to regulate lead-based paint.

REGIONAL COMMUNITY CASE STUDY

St. Joseph, Missouri is a beautiful, vibrant city on the Missouri River that struggles with a high incidence of elevated blood lead levels in children. Blood lead level testing data from 2014-2017 showed between 16 and 20 percent of children tested in St. Joseph zip code 64501 had blood lead levels at or above 5 ug/dl. Although the U.S. government banned consumer lead-based paint in 1978, lead-based paint, including lead-contaminated dust generated from it, remains one of the leading causes of lead exposure in the United States. In St. Joseph, most residential lead hazards come from homes built before 1978.

To combat this critical public health problem, EPA's Region 7 formed a cross-program outreach team to raise awareness about lead-based paint hazards in the home. The team focused on child care providers, renovators (professional and do-it-yourself), and the public. The team held numerous events with state, local, and federal partners that educated child care providers, trained home renovators, facilitated discussions with community leaders, conducted lead screening in children, and provided important information to St. Joseph residents. In addition, the St. Joseph Health Department, Kansas City Missouri Health Department, EPA, and HUD held partnership meetings focused on leveraging resources and acquiring new ones to address lead hazards in the community. This resulted in $90,000 to provide lead abatement work for low-income families living in pre-1978 housing. The team's effort culminated in a lead education summit, where federal, state, and local agencies, local nonprofits, and health providers came together to discuss next steps for preventing lead poisoning in St. Joseph. While the effort to reduce blood lead levels is ongoing, Region 7 is proud of the great strides St. Joseph and other partners have made to prevent exposures to lead in their community.

Objective B: Reduce Exposure to Lead from Drinking Water

Problem: Lead exposure through drinking water continues to be a serious risk in many communities, including those facing other environmental justice concerns. Lead can enter drinking water from plumbing materials that contain lead or from lead pipes that connect the home to the water main, also known as LSLs. In homes with LSLs, these pipes are typically the most significant source of lead in the water. Among homes without LSLs, the most common lead exposure problems are with old brass or chrome-plated brass faucets and plumbing with lead solder. The amount of lead allowed in new pipes, solder, flux fittings or fixtures was limited in 1986 and further reduced in 2014. Galvanized pipes are also a concern because they may accumulate lead from upstream sources.

There are still 6 to 10 million LSLs in cities and towns across the country.[20] Many of these are in communities of color or low-income communities. The Biden-Harris Administration has set a goal of removing 100% of LSLs. The Bipartisan Infrastructure Law (BIL)[21] will provide a historic $15 billion in funding – the first-ever dedicated federal funding – to address lead in drinking water by replacing service lines and carrying out associated activities that are directly connected to identifying, planning, designing, and replacing LSLs. All LSL replacement projects funded by the BIL must replace the entire LSL. To address household affordability concerns, EPA strongly encourages states to fund the private portion of service line replacements at no additional cost to the homeowner This means that a significant potential source of lead exposure from drinking water will be eliminated for millions of families.

Unfortunately, the locations of lead pipes, solder, faucets, and fixtures are not always known, which presents challenges for eliminating lead exposure from drinking water. Although replacing LSLs and in-home water systems is quite costly, reducing drinking water lead exposure generates significant health benefits for communities. EPA's 2021 economic analysis of the costs and benefits of LSL replacement estimates that the labor and material costs of identifying, excavating, and replacing LSLs are accompanied by significant increases in lifetime earnings associated with avoided intelligence quotient (IQ) loss in children, and also noted that other adverse health effects might be reduced as well.[22]

Public Input: Public comments related to lead and drinking water fell into several categories. Many comments focused on the importance of ensuring equitable access and distribution of BIL funding and resources in disadvantaged[23] and tribal communities, improving lead regulations, and enhancing programs for better protection of children in schools and child care facilities.

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[20] Cornwell, D.A, et.al. "National Survey of Lead Service Line Occurrence. Journal American Water Works Association" (2016) 108(4): E182-E191. https://awwa.onlinelibrary.wiley.com/doi/abs/10.5942/jawwa.2016.108.0086

[21] Also referred to as the Infrastructure Investment and Jobs Act, P.L. 117-58 (Nov. 15, 2021).

[22] https://www.regulations.gov/document/EPA-HQ-OW-2017-0300-1769

[23] For the purposes of Goal 1, Objective B, a small or disadvantaged community is one: that the state determines to be a disadvantaged community under SDWA section 1452(d)(3) or may become a disadvantaged community as a result of carrying out a project or activity; or, with a population of less than 10,000 individuals that does not have

Public comments related to lead regulations focused on actions EPA should take to update the Lead and Copper Rule Revisions, ensure equity in lead service line replacement (LSLR), develop protective health-based standards, and improve public education. In addition, many comments proposed creating incentives to encourage states, utilities, communities, and others to embark upon full LSLR. The comments noted utilizing loans (e.g., Drinking Water State Revolving Funds (DWSRF)), grants (e.g., Water Infrastructure Improvements for the Nation Act (WIIN)), and voluntary programs.

Public comments related to how disadvantaged communities, and other communities such as tribes, can access the resources they need to adequately address lead in drinking water focused on use of BIL funds through the DWSRF to ensure equitable distribution of funds and resources.

Public comments related to protecting children in schools and child care facilities focused on actions EPA should take to ensure disadvantaged communities have access to funds (e.g., WIIN grants, BIL funds) for lead testing and remediation and asking EPA to ensure a coordinated federal response providing resources, requiring lead testing and remediation, and addressing all sources of lead exposure to children. In addition, public comments indicated EPA should continue to provide training, outreach, and technical assistance to schools and child care facilities.

EPA responds to this input through the actions described below. EPA is working to improve its regulations to control lead in drinking water and has prioritized resources and technical assistance to tribal communities as well as disadvantaged communities focused on replacing lead services lines and reducing lead in drinking water. EPA continues to actively engage with other agencies to leverage resources and better coordinate across the federal government, tribes, water utilities, non-federal organizations, and the public health community. Together with our federal partners, EPA intends to work with stakeholder communities in developing and strengthening initiatives to reduce drinking water lead exposure in disadvantaged communities and elsewhere.

Performance Measures and Milestones:

- Track and report total funds to disadvantaged communities for projects that support reduction of lead in drinking water.
- By the end of 2022, partner with four states to establish LSLR Accelerators, which will provide targeted technical assistance and develop best practices to help address the barriers disadvantaged communities face in replacing LSLs.
- By the end of 2022, conduct outreach on the new "*Guidance for Developing and Maintaining a Service Line Inventory*" to help water systems develop LSL inventories as soon

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the capacity to incur debt sufficient to finance a project to comply with the SDWA. Source: https://www.epa.gov/sites/default/files/2019-03/documents/assistance_for_small_and_disadvantaged_communities_factsheet_508.pdf

as possible to begin replacement programs and no later than the Lead and Copper Rule Revisions compliance deadline of October 2024.[24]

- By the end of 2023, propose, and by October 2024, take final action on the Lead and Copper Rule Improvements to strengthen the regulatory framework and address lead in drinking water.

EPA ACTIONS:

APPROACH 1: Reduce lead exposures locally with a focus on communities with environmental justice concerns

- **Target communities with lead in drinking water concerns:** EPA will identify community water systems with lead in drinking water concerns. EPA will then work with the states to target technical assistance and provide funding to reduce lead exposure within these communities, particularly in disadvantaged communities. The Agency understands the effects of LSLs on communities, including those with environmental justice concerns, and will focus on identifying and implementing solutions to identify and replace LSLs. EPA's strategies, which continue to be tailored through community engagement, include improving public outreach and education, encouraging the proactive and full replacement of LSLs, providing technical assistance on proper sampling techniques, improving corrosion control treatment, and supporting the 3Ts (*Training, Testing, and Taking Action*) programs to reduce lead in drinking water at schools and child care facilities.

  Consistent with the public comments, EPA continues to engage federal and non-federal partners to coordinate data sharing to better target disadvantaged and other communities with high levels of lead in drinking water. For example, EPA plans to collaborate with state partners to launch a new EPA technical assistance initiative called LSLR Accelerators. Starting in fall 2022, EPA will pilot the Accelerators in partnership with four states. The Accelerators will address existing barriers and accelerate progress towards the Biden-Harris Administration's goal of 100 percent LSLR. Disadvantaged communities struggling with LSL identification and replacement may have limited technical, operational, and financial resources. This technical assistance initiative will help those communities address barriers by providing the tools needed to accelerate LSLR. EPA and the participating states will also work to actively share lessons learned with other states, tribes, territories, local municipalities, and public water systems.

- **Provide DWSRF assistance to reduce lead in drinking water:** The BIL provides $15 billion through the DWSRF to replace LSLs and carry out associated activities that are directly connected to the identification, planning, design, and replacement of LSLs. There is no state match requirement for these funds, and 49% of the money will be provided as grants or principal forgiveness loans to communities. States can also use funds from the additional

[24] https://www.epa.gov/ground-water-and-drinking-water/revised-lead-and-copper-rule

$11.7 billion in general-purpose DWSRF funds appropriated through the BIL for the identification, planning, design, and replacement of LSLs.

EPA will increase awareness, particularly in small, underserved communities and communities of color, about programs and funding opportunities to replace LSLs, regardless of ownership, and reduce lead in drinking water. Funding from these programs can replace LSLs, including lines on private property; develop LSL inventories; install or improve corrosion control treatment (using BIL general supplemental funds); and remove lead from drinking water in schools and child care facilities.

EPA will encourage states to ensure that BIL LSLR funding reaches disadvantaged communities and will encourage states to leverage other funds, such as base and BIL supplemental DWSRF funds to meet their LSLR needs. EPA released an implementation memorandum in March 2022 that provides information and guidelines on how EPA will implement the State Revolving Fund (SRF) program, including the capitalization grants appropriated to states under the law.[25] The implementation memorandum is expected to be applicable to all five years of BIL appropriations. In addition, to address household affordability concerns and encourage full and rapid LSLR, EPA encourages state DWSRF programs to fund the private portion of LSLR projects at no additional cost to private property owners. In particular, EPA encourages states and water systems to include low-income homeowners, and landlords or property owners providing housing to low-income renters in LSLR prioritization and private-side funding programs.

EPA will collaborate with state SRF programs to share models and guidance, and to build state capacity to assist local communities and ensure LSL funding is effectively and equitably deployed. In particular, EPA will work with state partners to ensure that small, underserved communities, communities of color, and other communities with high infrastructure resource needs benefit from this funding. Finally, EPA will evaluate additional reporting requirements for DWSRF projects to capture the impact of funding, including funds reaching disadvantaged communities, LSL inventory information, and additional lead-reduction steps that water systems are taking. These actions are consistent with public comments. EPA is working on several efforts to ensure equitable distribution of BIL funds to support LSLR in disadvantaged communities.

- **Award funding for and support implementation of the Lead Testing in School and Child Care Program Drinking Water Grant Program:** EPA awards funding to participating states, territories, and tribal consortia to support training and technical assistance for schools and child care programs to train staff and test drinking water for lead. The funding also supports technical assistance to schools and child care facilities on follow-up options.[26] The BIL

[25] https://www.epa.gov/dwsrf/bipartisan-infrastructure-law-srf-memorandum

[26] Follow-up options include activities such as turning off or removing the specific outlet that has tested high for lead, posting signs to not use certain outlets for drinking or cooking, conducting follow-up sampling to identify specific components that might be the source(s) of lead, instituting flushing programs, installing filters, and/or replacing plumbing, fittings, and fixtures.

expanded existing grant authority to include lead remediation and compliance monitoring as eligible projects and activities. EPA relies on Congressional appropriations to fund these drinking water grants.

EPA has awarded funds through the *Voluntary School and Child Care Lead Testing and Reduction Grant Program* to seven tribal consortia,[27] all 50 states, the District of Columbia, Puerto Rico, U.S. Virgin Islands, and American Samoa to provide lead testing in drinking water in schools and/or child care facilities. New eligibilities under this grant program that allow for lead remediation activities as authorized by the BIL are available to all grantees.[28] Further, EPA is working with the Centers for Disease Control and Prevention (CDC) to inform nationwide surveillance of blood lead levels, provide education and outreach to communities, and provide technical assistance. In addition, through its *Reducing Lead in Drinking Water* Grant competition, EPA awarded millions in funding to two areas:

Reducing Children's Exposure to Lead in Drinking Water in Schools and Child Care Facilities. This funding prioritizes projects aimed at the removal of potential sources of lead in hundreds of schools and child care facilities across the United States. EPA distributed approximately $25M in fiscal year 2020. In October 2022, EPA announced $10.5M in grants for new projects; and

Reduction of Lead Exposure in the Nation's Drinking Water Systems through Infrastructure and Treatment Improvements. EPA awarded more than $15M in fiscal year 2020 for thousands of LSL replacements and implementing treatment improvement projects. In October 2022, EPA announced $20.5M in grants for new projects in disadvantaged communities.

This more than $30M total in grant funding, and additional funding through the BIL, will help make rapid progress on the goal of addressing lead and removing lead pipes across the country in disadvantaged communities and schools.[29]

APPROACH 2: Reduce lead exposures nationally through protective standards, analytical tools, and outreach

- **Lead and Copper Rule Improvements (LCRI)**: In January 2021, EPA issued the Lead and Copper Rule Revisions (LCRR) (86 FR 4198) and subsequently reviewed those revisions to further evaluate if the LCRR protected families and communities (86 FR 71574), particularly those who have been disproportionately impacted by lead in drinking water.[30] Through this review, the Agency concluded that there are significant opportunities to improve the LCRR

[27] https://www.epa.gov/dwcapacity/wiin-grant-voluntary-school-and-child-care-lead-testing-and-reduction-grant-program#tribal
[28] Guide planned for publication by the end of 2022.
[29] https://www.epa.gov/newsreleases/epa-announces-30-million-grants-projects-reduce-lead-drinking-water-disadvantaged
[30] https://www.epa.gov/ground-water-and-drinking-water/revised-lead-and-copper-rule

(86 FR 71574).[31] EPA is developing a new proposed National Primary Drinking Water Regulation (NPDWR), the LCRI, to strengthen the regulatory framework and address lead in drinking water. EPA identified the following priority areas for improvement: Proactive and equitable LSLR; strengthening compliance tap sampling to better identify communities most at risk of lead in drinking water and to compel lead reduction actions; and reducing the complexity of the regulation through improvement of the action and trigger level construct.

- **Implement the LSL inventory requirements in the LCRR:**[32] In December 2021, EPA published the findings of its review of the LCRR and announced that it does not expect to propose changes to the requirements related to the information to be submitted in the initial LSL inventory. EPA also urged continued progress to identify LSLs as integral to lead reduction efforts regardless of potential revisions to the rule. EPA continues to provide oversight of Lead and Copper Rule implementation.

  EPA developed the following guidance to support public water systems and primacy agencies, "Guidance for Developing and Maintaining Service Line Inventories," and plans to develop the LCRR Small Entity Compliance Guidance to assist small water systems with creation of their inventories. This work includes supporting LSL inventory development, encouraging full LSLR programs, and discouraging partial replacement.

  EPA is updating the Safe Drinking Water Information System (SDWIS) to support data on the counts of lead, unknown, and non-LSLs at each water system. This data is required to be reported to EPA by States under the LCRR and water systems must make their inventories publicly accessible by the October 16, 2024, compliance deadline.[33] EPA will consider how to report on progress to identify and replace LSLs over time as the information is provided to the Agency by its state and tribal partners.

  Consistent with public comments to improve education, other planned work includes improving guidance and templates to help states and public water systems communicate lead risk to households and communities with LSLs; revising the Consumer Confidence Report Rule to include more information about actions public water systems are taking to control lead; and developing materials that describe the risks posed by partial LSLR and measures to reduce lead concentrations following replacement (e.g., flushing plumbing, use of filters, and follow-up testing).[34]

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[31] The Federal Register Notice. Review of the National Primary Drinking Water Regulation: Lead and Copper Rule Revisions (LCRR), December 17, 2021: https://www.federalregister.gov/documents/2021/12/17/2021-27457/review-of-the-national-primary-drinking-water-regulation-lead-and-copper-rule-revisions-lcrr.

[32] EPA authorizes states and tribes to have primary enforcement responsibility (also called primacy) for public water systems if they meet certain requirements.

[33] https://www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-information-system-sdwis-federal-reporting

[34] https://www.epa.gov/ccr/consumer-confidence-report-rule-and-rule-history-water-systems

APPROACH 3: Reduce lead exposures with a "whole of EPA" and "whole of government" approach

- **Provide resources to schools, child care facilities, and states:** EPA will continue to chair a federal interagency and stakeholder group under the Memorandum of Understanding (MOU) on Reducing Lead Levels in Drinking Water in Schools and Child Care Facilities. This interagency group includes EPA; several offices within the Department of Health and Human Services (HHS), including the CDC, Indian Health Service, and the Administration for Children and Families' Office of Head Start and Office of Early Childhood Development; and the Departments of Agriculture (USDA), Education, and Interior, as well as nine non-federal associations.[35]

  This interagency group works together to provide schools, child care facilities, and states with education on health concerns associated with lead in drinking water; helps develop lead testing programs using EPA's *3Ts (Training, Testing, and Taking Action) for Reducing Lead in Drinking Water in School and Child Care Facilities*; works with schools and child care facilities to establish a sustainable and effective lead in drinking water testing program; and connects schools and child care facilities that find lead in their drinking water with funding resources for remediation, such as USDA's Community Facilities grant programs and HHS's Head Start funds through its program improvement requests. EPA will continue to develop tools and trainings through the 3Ts program and work with MOU partners to provide input on and review of products and to help promote final products.

  Consistent with the public comments requesting a holistic federal approach, EPA continues to leverage federal and non-federal programs to protect children's health in schools and child care facilities. EPA activities with partners of the MOU on Reducing Lead in Drinking Water in Schools and Child Care facilities include:

  Collaborating with HHS and USDA to identify opportunities to align funds, address data gaps on lead contamination, and develop coordinated policies and guidance to leverage respective agency authorities in schools and early childhood facilities; and

  Providing technical assistance and training as USDA pursues actions through its Rural Development mission area, including the Community Facilities program efforts to prevent lead poisoning through renovation and repair work on child occupied facilities and installation of water filter stations in schools and child care facilities.

- **Collaborate on lead testing for drinking water:** EPA is working with HHS to promote lead testing best practices in drinking water at facilities funded by its Office of Head Start and the Office of Child Care.

[35] https://www.epa.gov/sites/production/files/2019-10/documents/mou_reducing_lead_in_drinking_water_in_schools_final.pdf

Consistent with public comments to provide education and technical assistance to schools and child care facilities, EPA is collaborating with HHS to provide training at the local level and to leverage authorities and policies to increase lead testing and remediation in early childhood and child care communities.

REGIONAL COMMUNITY CASE STUDY

Elevated levels of lead were identified while evaluating nitrate contamination in the drinking water at an affordable housing complex in Massachusetts (MA), EPA Region 1. The complex is a 36-unit, elderly and disabled residential home. The community is in rural central MA. The complex is a public water system and is subject to the Lead and Copper Rule along with other NPDWRs as a Community Water System.

The Massachusetts Department of Environmental Protection (Mass Dep) issued a "Do Not Drink Order" for the complex due to a nitrate contamination issue. During the evaluation period, the complex's corrosion control water treatment system failed, causing highly acidic water to corrode the building's pipes. As a result, the lead levels in the drinking water increased to above the action limit set by Mass DEP. Also, the water had a blue/green tinge, which caused the sinks, toilets and tubs to stain, and residents were advised not to wash light colored clothes as they could also become stained. As a result, residents were provided bottled water dispensers and free bottled water supplies in each apartment unit.

Using funding from EPA's Training and Technical Assistance Grant and HHS grants, a team of technical specialists from Rural Community Assistance Partnership (RCAP) Solutions, with extensive background in water and environmental issues, worked with the property management of the complex. The technical assistance team identified the nitrate contamination source by fully evaluating the property's onsite wastewater treatment system. They discovered the system was not installed as designed and was leaking into the source water. The technical assistance team oversaw the re-construction of the on-site wastewater system; since that repair, the nitrate levels have abated to levels acceptable under state drinking water standards. Further, the RCAP team replaced many faucets and plumbing that were potential sources of lead and assisted the complex to install a new pH control system which abated the corrosion caused by the acidic water. Reducing the corrosion removed the identified issues with the water's blue coloration and high lead levels. In addition, the technical assistance team assisted the complex with a variety of compliance issues including previous sanitary survey consent orders and developed a long-term plan for the complex's drinking water system to ensure continued compliance and long-term sustainability. The community's drinking water continues to meet compliance standards, including for lead.

Objective C: Reduce Exposure to Lead in Soils

Problem: Lead is a naturally occurring element generally found in soil at low levels. In many locations across the United States, however, the concentrations of lead in soils can be much higher because of human activities – especially in and around urban areas, in areas with lead mining and smelting activities, and near older homes with lead-based paint. Today, this legacy of lead overburdens communities impacted by the activities of lead producing and using industries; often these are communities of color and low-income neighborhoods. Soil-lead contamination can occur from past industrial operations that involved lead, from lead-based paint cracking, flaking, and peeling off homes and buildings, and from past use of leaded gasoline, especially in housing near highways or heavily travelled city streets. Lead contamination from the past, often from multiple sources, can accumulate and remain an ongoing threat.

Children and adults can be exposed to lead in soil and dust through incidental ingestion of contaminated soils by touching their mouth with their hands (typically in young children), but also by adults working in soils or gardening. Children may also ingest soil and dust by placing non-food items in their mouths.[36] Soil contaminated with lead can be tracked into homes or other buildings, which can result in ingestion of contaminated house dust.[37] In some cases, eating fruits and vegetables grown in lead-contaminated soil is another route of exposure.

Public Input: A key message from the public comments on the draft strategy was that EPA should address lead-contaminated soils regardless of the source of the pollution. Commenters noted that higher blood lead levels are typically due to multiple sources of lead. Others urged EPA to coordinate the use of its authorities to address all lead exposures in communities and to collaborate with other federal, tribal, state, and municipal agencies so that sources of lead are not left unaddressed. Another key message from the public comments was that EPA's standards for lead in soil are out of date. Commenters mentioned the cleanup standards for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal and remedial sites and Resource Conservation and Recovery Act (RCRA) corrective action facilities, as well as the Soil Lead Hazard Standard, and recommended that EPA align its standards with the CDC's blood lead reference value, which is currently 3.5 µg/dL.[38] Public comments also emphasized the need to focus efforts to address lead contamination in communities with environmental justice concerns as these communities are typically exposed to lead from multiple sources. Other commenters noted that there should be a mechanism to clean up lead contaminated soils that do not qualify for a CERCLA response, that communities need technical assistance from EPA to address lead, and that EPA should consider alternative

[36] EPA Exposure Factors Handbook, chapter 5. https://www.epa.gov/sites/default/files/2018-01/documents/efh-chapter05_2017.pdf.

[37] Clark S, et. al. "The Influence of Exterior Dust and Soil Lead on Interior Dust Lead Levels in Housing that had Undergone Lead-Based Paint Hazard Control" Journal of Occupational and Environmental Hygiene (2004) 1:5, 273-282, https://doi.org/10.1080/15459620490439036

[38] CDC Blood Lead Reference Value: https://www.cdc.gov/nceh/lead/data/blood-lead-reference-value.htm.

remedial technologies, such as capping, landscaping, and soil amendments. The actions below reflect EPA's consideration of these comments.

Performance Measures and Milestones:

- By September 30, 2026, complete 225 Superfund cleanup projects that address lead as a contaminant (averaging 45 each year).
- By June 30, 2023, evaluate and revise the Residential Soil Lead Guidance for Contaminated Sites to protect communities by further reducing the potential for exposure to lead in soil.
- By September 30, 2023, review results of the Superfund Lead Collaboration Pilot projects and where appropriate, update Superfund guidance to reflect best practices.
- Report annually the number of Brownfields cleanups that addressed lead contamination, as reported by grant recipients.

EPA ACTIONS:

APPROACH 1: Reduce lead exposures locally with a focus on communities with disparities and promote environmental justice

- **Clean up lead contaminated sites:** EPA will prioritize cleaning up lead in communities contaminated by lead from CERCLA (Superfund) or RCRA releases. Risk of potential adverse health effects, level of exposure, promotion of environmental justice, and other factors will guide EPA's efforts. EPA will work with states, tribes, communities, and other stakeholders at Superfund removal and remedial sites and at RCRA corrective action facilities to address lead contamination under applicable statutory authorities. Cleanup at lead-contaminated sites impacting tribal nations will evaluate exposure pathways unique to tribal members, as well as any Traditional Ecological Knowledge or Indigenous Knowledge provided by the tribe.[39] Furthermore, EPA will continue to update tools to characterize, assess, and address sites with lead-contaminated soil.[40]

APPROACH 2: Reduce lead exposures nationally through protective standards, analytical tools, and outreach

- **Revise the Residential Soil Lead Guidance for Contaminated Sites to further reduce the potential for exposure to lead in soil:** The soil lead guidance for assessing and remediating contaminated sites, last updated in 1998, provides recommendations to help identify and define areas that may require further investigation and to help prioritize sites with the most

[39] Considering Traditional Ecological Knowledge (TEK) During the Cleanup Process. EPA, OLEM, 2017, https://www.epa.gov/sites/default/files/2018-02/documents/considering_traditional_ecological_knowledge_tek_during_the_cleanup_process.pdf. In addition, EPA may provide additional knowledge when government-wide guidance on TEK/IK in federal decision-making is final.

[40] Guidance, exposure models, tools, and technical support can be found on EPA's Technical Review Workgroup, Lead Committee website: https://www.epa.gov/superfund/lead-superfund-sites.

immediate threats associated with lead contaminated soils at Superfund sites and RCRA facilities.[41] EPA is in the process of reviewing the 1998 guidance to determine if new recommendations for screening sites and facilities with residential exposures are appropriate. EPA will account for the multiple and complex lead exposures to children when setting screening levels and cleanup goals to reduce lead exposure in communities and protect human health and the environment.

- **Revisit the soil-lead hazard standards:** In light of a May 2021 court decision by the Ninth Circuit,[42] EPA will reconsider the 2001 soil-lead hazard standards.[43] The soil-lead hazard standards, issued under Title IV of TSCA, identify lead-contaminated soils at target housing (i.e., built before 1978) and pre-1978 child-occupied facilities that would result in adverse human health effects. Soils that contain lead at levels determined to be hazardous to human health are considered contaminated. Lead inspectors, risk assessors, and abatement professionals use the soil-lead hazard standards in target housing and pre-1978 child-occupied facilities to determine if soil-lead hazards are present and to inform options for reducing risk of exposure.

APPROACH 3: Reduce lead exposures with a "whole of EPA" and "whole of government" approach

- **Work with HUD to reduce lead exposure to protect families, particularly children, in overburdened and underserved communities:** EPA will work with HUD to reduce exposure to lead to protect families, particularly children, in overburdened and underserved communities. Where HUD authorities are used to address indoor or outdoor environmental hazards in housing at or near sites and EPA is addressing Superfund lead cleanup projects, EPA will coordinate Superfund efforts with HUD. In a separate effort, under a current Memorandum of Understanding, EPA and HUD are identifying HUD-assisted housing properties on and around Superfund sites to inform HUD and EPA staff of the sites to facilitate faster and more effective sampling and clean up.

- **Use a collaborative approach to reduce lead at Superfund sites:** EPA is working to promote more effective collaboration at the local, state, territorial, tribal, and federal levels to address multiple sources of lead in communities near Superfund sites where lead is a contaminant of concern. EPA's Superfund program is conducting the Superfund Lead Collaboration Pilot to gather best practices for enhancing collaboration to address multiple sources of lead in communities near Superfund lead sites with the ultimate goal of improved health outcomes for children who are being exposed to lead. EPA is working with a broad range of stakeholders to leverage multiple authorities and tools to address lead exposures at Superfund sites such as lead-based paint, lead from air sources, and lead in drinking water. These collaborative stakeholders may include other EPA programs, other

[41] https://www.epa.gov/superfund/lead-superfund-sites-guidance
[42] *A Cmty. Voice v. U.S. EPA*, 997 F.3d 983 (9th Cir. 2021), https://cdn.ca9.uscourts.gov/datastore/opinions/2021/05/14/19-71930.pdf
[43] https://www.govinfo.gov/content/pkg/FR-2001-01-05/pdf/01-84.pdf

federal agencies such as HUD and HHS, state and local environmental and health departments, community groups/organizations, and other entities as appropriate.

- **Support community-driven Brownfields assessment, cleanup, and revitalization:** When site risks and contamination levels are not addressed under a Superfund-based cleanup action, EPA will continue to respond to requests for technical assistance to help community-driven cleanups to revitalize sites with lead and other contaminants. EPA will also organize annual Brownfields grant competitions that allow tribes, states, and communities to seek funds to assess, clean, and plan for the safe reuse of Brownfields, including the creation of community lead-safe spaces. States and tribes determine actionable lead contaminant levels at these Brownfields sites, and remediation of these sites are subject to those levels, as established under risk-based cleanup programs. The Technical Assistance to Brownfield Communities program can provide technical assistance to communities and stakeholders to help address their Brownfield sites, and to increase their understanding and involvement in Brownfields cleanup, revitalization and reuse.[44] Organizations can contact EPA Regional programs directly to seek free Targeted Brownfield Assessments, which can help with a specific site to collect site-specific information or investigate environmental conditions that may be beyond the scope of many community-based organizations.[45]

[44] https://www.epa.gov/brownfields/brownfields-technical-assistance-training-and-research
[45] https://www.epa.gov/brownfields/targeted-brownfields-assessments-tba

REGIONAL COMMUNITY CASE STUDY

EPA began cleanup of the U.S. Smelting and Lead Refinery Inc. site (USS Lead Superfund) in East Chicago, Indiana in 2008 and listed the site on the National Priorities List in April 2009. At that time, nearby residents were concerned about the risks they faced from past and ongoing lead exposures and had limited information about the EPA cleanup process. In response to the affected community's desire for better communication and outreach, EPA employed numerous community engagement strategies including establishment of a local phone hotline, a local staffed office with drop-in visit time, an online data viewer, and a regular newsletter. EPA also engaged in frequent public availability sessions and meetings to engage with the community throughout the cleanup.

This large-scale residential yard cleanup began with an emergency response to lead contamination in soil at several hundred homes, drawing media, community, and political interest. Because of the intensive and comprehensive team effort, all 807 properties in Zones 2 and 3 (including non-residential) that required cleanup were safely cleaned up by the fall of 2021, nearly a year ahead of schedule. This extraordinary effort was the result of dedicated coordination between all EPA Region 5 programs involved, the U.S. Department of Justice (DOJ), the Agency for Toxic Substances and Disease Registry (ATSDR), HUD, and state and local health departments.

EPA prioritized the USS Lead site after Region 5 recognized that more than 1,000 residential properties could be contaminated with high levels of lead and arsenic in the soil. Initial plans and actions involved requiring those responsible for the contamination to complete or pay for all sampling and cleanup at these residential properties by late 2020 or early 2021, with intensive EPA oversight. To engage with the impacted residents under this aggressive cleanup schedule, Region 5 implemented innovative efforts, including the Superfund Jobs Training Initiative program and a creative community event. The Jobs Training Initiative program for East Chicago residents resulted in the hiring of 10 trainees by site cleanup contractors to help with the lead cleanup in their own community. EPA also partnered with the ATSDR and local health agencies to host a superhero-themed community event with free entertainment and food trucks and a mobile blood testing unit to encourage families to have their children's blood lead tested.

With these actions and more, the affected community at the USS Lead Site remained engaged in their cleanup work and helped move the cleanup along expeditiously. EPA's efforts fostered a positive relationship with the community and at the same time accelerated removal of contaminated soils from the impacted residential properties in East Chicago. Going forward, EPA, with the assistance of the DOJ, has finalized a Prospective Purchaser Agreement (PPA) with a company that specializes in redevelopment of properties that contain or once contained hazardous substances. Under the PPA, part of the USS Lead Site would be further cleaned up and redeveloped as a commercial warehouse.

Objective D: Reduce Exposure to Lead Associated with Emissions to Ambient Air

Problem: Lead emitted into the air can contribute to multiple pathways of exposure that can pose risks to human health and the environment. For example, lead from ambient air can contribute to lead in soil and related pathways, as well as indoor air and dust. The extent of air-related pathway contributions to exposures and risk depends largely on source and community characteristics. On a national scale, the largest aggregated source of lead air emissions is piston-engine aircraft operating on leaded aviation fuel, which can contribute to increased air lead concentrations at some general aviation airports. Locally, however, areas of the U.S. with the highest concentrations are generally near metals industries, such as battery recycling facilities and other metal processing facilities.

The U.S. has made enormous progress in reducing lead emissions and associated ambient air concentrations. Between 1980 and 2018, concentrations of lead in ambient air at a set of continuously monitored sites have decreased by 99 percent.[46] Substantial progress has also been made in addressing areas of the U.S. with lead concentrations exceeding the National Ambient Air Quality Standards (NAAQS) for lead. All but two of the 22 areas that were initially identified as not meeting the NAAQS are currently meeting the NAAQS.[47] EPA will continue to assess and reach conclusions on hazards, potential exposures, and risks; set and implement standards to limit emissions and air concentrations; and work with state and local agencies to monitor air quality near sources and ensure compliance with the standards. Further, EPA will continue to track airborne lead concentrations through state-led ambient air monitoring and emissions inventory reporting and will share the national status in future air trends reports.

Public Input: Public comments on the draft strategy included concerns regarding sources of lead emissions to ambient air. Many commenters raised concerns regarding emissions from piston-engine aircraft using leaded aviation gasoline (avgas), and comments were also received regarding emissions from other types of sources, such as metals industries. The comments urged the Agency to act promptly to restrict emissions from all of these sources. Additionally, some comments emphasized the need to bring all areas of the country into attainment with the existing NAAQS, and to ensure monitors are sited near sources. Further, comments emphasized the importance of the ongoing review of the NAAQS to ensure the national standards reflect the current scientific information. The actions identified below reflect consideration of these comments.

Performance Measures and Milestones:

- **Lead NAAQS**: Projected completion of the current lead NAAQS review in 2026.

[46] The annual air quality trends report includes information on trends in lead emissions and ambient air concentrations (https://www.epa.gov/air-trends/lead-trends).

[47] This reflects designations made in the years after the NAAQS was most recently revised in 2008. The "Green Book" describes areas designated attainment and nonattainment for the 2008 lead NAAQS (https://www3.epa.gov/airquality/greenbook/mbtc.html).

- **Emissions Standards for Lead Sources**: Anticipated completion of rulemakings for important lead emissions sources over the next two years:
  - In 2023, secondary lead smelters, lead acid battery manufacturing, and integrated iron and steel manufacturing.
  - In 2024, primary copper smelters and large municipal waste combustors.
- **Aircraft Lead Emissions Endangerment Finding Evaluation:** In October 2022, EPA issued a proposed finding that lead emissions from aircraft engines that operate on leaded fuel cause or contribute to air pollution that may reasonably be anticipated to endanger public health and welfare. After evaluating comments on the proposal, EPA plans to issue any final endangerment determination in 2023.

EPA ACTIONS:

APPROACH 1: Reduce lead exposures locally with a focus on communities with disparities and promote environmental justice

- **Continue to implement the National Ambient Air Quality Standards for lead to reduce emissions to ambient air in communities:** Air emissions of lead have the greatest impact near the pollution source. As a result, violations of the lead NAAQS can impact communities that are close to lead-emitting sources. EPA will continue to work with state, local and tribal air agencies in these communities to help reduce lead emissions and address such violations to protect public health.

- **Continue to coordinate state, local, and tribal surveillance networks to ensure ambient air monitoring near pollution sources.** EPA will continue to review monitoring networks, identify opportunities to improve monitoring near sources with the potential to violate the NAAQS, and work with air monitoring agencies to ensure the ambient air monitoring networks comply with requirements for lead NAAQS surveillance.

APPROACH 2: Reduce lead exposures nationally through protective standards, analytical tools, and outreach

- **Review the National Ambient Air Quality Standards for lead:** To inform the review of the lead NAAQS that is currently underway and projected for completion in 2026, EPA will develop a new Integrated Science Assessment (ISA) for lead. The new ISA will contain a concise policy-relevant evaluation and synthesis of the current scientific information on lead, including sources, environmental distribution, and exposures to ambient air lead (both airborne and deposited), and EPA's conclusions on the health and welfare effects of lead. Based on the new ISA and current information on air quality, exposure, and risk, the Office of Air and Radiation will develop an assessment of the policy implications regarding the adequacy of protection provided by the existing NAAQS and any potential alternative policy options. EPA will rely on the findings in these documents, advice from the Clean Air Scientific Advisory Committee, and public comments to inform the Agency's decision whether to retain or revise the current NAAQS for lead.

- **Update emissions standards for lead-emitting sources:** EPA is reviewing emissions standards, including National Emissions Standards for Hazardous Air Pollutants and New Source Performance Standards, for lead-emitting sources to incorporate developments in technologies and/or address risk concerns. The Office of Air and Radiation intends to make regulatory decisions over the next two years for important lead-emitting source categories, including primary copper smelters, lead acid battery manufacturing, secondary lead smelters, integrated iron and steel manufacturing, and large municipal waste combustors. Updating these standards will strengthen regulatory tools for minimizing impacts of these lead sources in nearby communities.

- **Examine lead pollution from aircraft:** EPA is evaluating, under the Clean Air Act, whether to make a determination that emissions of lead from aircraft engines that operate on leaded fuel cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare. For convenience, EPA sometimes refers to this determination collectively as the "endangerment finding." Aircraft that use leaded aviation gas are primarily piston-engine aircraft. In October 2022, EPA issued a proposed endangerment finding for lead emissions from aircraft operating on leaded fuel, providing an opportunity for public notice and comment.[48] After evaluating comments on the proposal, EPA plans to issue any final endangerment finding in 2023. If a final determination is issued, that determination would not itself apply new requirements to entities other than EPA and the Federal Aviation Administration (FAA). EPA is not at this time proposing aircraft engine lead emission standards. However, if EPA makes a final determination that lead emissions from aircraft engines cause or contribute to lead air pollution that may reasonably be anticipated to endanger public health or welfare, EPA will subsequently propose regulatory standards for lead emissions from aircraft engines. Such a finding also would trigger the FAA's statutory mandate to prescribe standards for the composition or chemical or physical properties of an aircraft fuel or fuel additive to control or eliminate aircraft emissions of lead.

APPROACH 3: Reduce lead exposures with a "whole of EPA" and "whole of government" approach

- **Nonregulatory approaches to address lead emissions from use of leaded fuel in aircraft engines:** The FAA has two integrated initiatives focused on transitioning safely away from the use of leaded fuel: The Piston Aviation Fuels Initiative (PAFI), and the FAA-industry partnership to Eliminate Aviation Gasoline Lead Emissions (EAGLE).[49] PAFI provides the testing and evaluation of unleaded avgas candidates and determines if they are qualified as a replacement for leaded avgas. The EAGLE initiative focuses on transitioning the entire

[48] More information on EPA's proposed endangerment finding for lead emissions from aircraft operating on leaded fuel is available at https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-lead-emissions-aircraft.

[49] Recent activities at FAA (https://www.faa.gov/about/initiatives/avgas/env_airports) focus on the PAFI (https://www.faa.gov/about/initiatives/avgas/) and EAGLE (https://www.faa.gov/unleaded).

industry sector to a lead-free fuel, including fuel production, distribution, and infrastructure. In addition, the FAA has approved the safe use of an unleaded fuel that can be used in a large number of piston-engine aircraft, along with other unleaded fuels for specific aircraft. EPA collaborates and coordinates with the FAA and other agencies on lead reduction opportunities from the use of leaded avgas while these fuel replacement programs are in development. This collaborative work will include responding to National Academy of Sciences recommendations regarding options for reducing lead emissions from these aircraft.[50]

REGIONAL COMMUNITY CASE STUDY

In 2018, the State of Indiana issued a 10-year minor source air permit renewal to Whiting Metals, Limited Liability Company (LLC), a lead metal reclamation facility located in Hammond, Indiana. During the permit review, EPA identified an incorrect emissions factor resulting in a large underestimate of potential lead emissions to the air. EPA conducted air dispersion modeling, using the corrected emissions levels, and discovered that there was potential for violations of the lead NAAQS. In addition to the concerns about air emissions from the facility, EPA's Superfund and Emergency Management Division was conducting remediation activity in the surrounding community to remove lead-contaminated soil deposited by a former secondary smelter that operated on the Whiting Metals, LLC property from 1937 to 1983. The soil surrounding multiple households and other publicly accessible areas exceeded the removal management level for lead.
EPA worked with the state to deploy ambient lead monitors adjacent to the facility's property in August 2018 and sampled daily. Within the first month of monitoring, recorded concentrations exceeded the NAAQS. In November 2018, EPA and the state issued a joint notice of violation to the facility.

Due to the remediation activities and an earlier incomplete RCRA cleanup on the Whiting Metals, LLC property (2001-2005), re-entrainment - where past contamination deposited onto the ground is resuspended into the air - was another potential source of ambient lead. To further investigate the source of the lead, EPA deployed a continuous air monitoring instrument, capable of assessing hourly ambient air concentrations of many metal elements and corresponding meteorological information. This additional information provided hourly rather than daily measurements, which can be used to better assess and identify the sources of pollution. Over the next year, EPA collected hourly monitoring data and was able to accurately attribute the primary source of ambient lead to Whiting Metals, LLC's operations, rather than to any remediation activities or other deposited contamination from historical emissions. The facility ceased operations in June 2020, and the state revoked its permit at the end of calendar year 2020, eliminating an ongoing source of lead emissions to the community.

[50] https://www.nap.edu/catalog/26050/options-for-reducing-lead-emissions-from-piston-engine-aircraft

Objective E: Reduce Exposure to Lead Through Enforcement and Compliance Assurance

Problem: Americans continue to be exposed to lead in lead-based paint, soil, dust, sediment, air, and drinking water. Some of these exposures result from noncompliance with laws designed to reduce or eliminate exposure. In addition to working to prevent new lead exposures and clean up legacy contamination, EPA will address exposures associated with noncompliance and environmental liability. EPA will continue to implement its wide range of authorities to address noncompliance, obtain cleanups, deter future violations, and mitigate harm using available resources.

Public Input: EPA received comments from the public concerning enforcement and compliance related to lead in soil, air, drinking water, and paint. The comments cited the range of legal authorities that the Agency is authorized to use to address noncompliance and reduce lead exposures, while acknowledging the need for sufficient resources to utilize those authorities fully. Commenters also noted that the elimination of certain gaps in EPA's legal authorities would help optimize the Agency's efforts to address lead.

Numerous public comments urged EPA to take more enforcement actions to address lead-based paint and lead in drinking water, and multiple comments focused on enforcement related to lead in soil and air emissions. In addition, many commenters suggested approaches for enhanced targeting, and collaborations with state, local, and tribal authorities.

EPA has modified this final strategy to highlight planned collaborations with co-regulators, and the Agency's interest in using new tools that our partners may have to help support or enhance our enforcement and compliance activities.

Performance Measures and Milestones:

- Each year, direct enforcement resources to at least one community with environmental justice concerns in each Region, to help address the exposures to lead in that community and take appropriate enforcement action.
- Each year, publicly report on national statistics related to lead cleanups and inspections, including whether the inspections occurred in communities with environmental justice concerns.

EPA ACTIONS:

APPROACH 1: Reduce lead exposures locally with a focus on communities with disparities and promote environmental justice

- **Enhance enforcement and compliance assurance in overburdened communities:** EPA will prioritize high-impact cases that address the needs of communities experiencing adverse disproportionate environmental and health risks and harms from lead.

- **Increase impact of lead exposure reduction projects:** EPA will identify and support opportunities to implement lead exposure reduction projects that are obtained through enforcement actions, including through voluntary Supplemental Environmental Projects (SEPs) agreed to as part of a settlement agreement.

- **Promote geographic initiatives and activities to address lead in multiple media:** The Agency will promote geographic initiatives in its ten Regions, focusing efforts on a specific area or community with more than one source of lead exposure. EPA will use mapping, predictive screening, and other tools to identify areas of concern and prioritize enforcement and compliance assurance activities. EPA will continue implementing lead-based paint geographic initiatives, particularly in areas with significant lead exposures, and will collaborate across EPA programs and with interested external stakeholders to identify opportunities to use enforcement and compliance assurance to reduce lead exposures from other media, such as in drinking water, air emissions, or soils.

APPROACH 2: Reduce lead exposures nationally through protective standards, analytical tools, and outreach

- **Improve compliance monitoring and enforcement to reduce lead exposure:** EPA will develop tools to improve compliance monitoring and enforcement and address lead exposures from all media sources, including exploring tools and approaches suggested by the public and co-regulators.

    - To ensure proper evaluation of sampling and treatment to support Lead and Copper Rule (LCR) enforcement, EPA will issue a national LCR Inspection Protocol for federal, tribal, and state drinking water inspectors.
    - EPA will collaborate with Customs and Border Protection on compliance activities to support the "lead free" plumbing requirements of the Safe Drinking Water Act section 1417.
    - EPA will develop guidance, protocols and/or compliance information to improve enforcement including in communities with significant lead exposures and will support approaches to address lead contamination in these communities.
    - EPA will optimize use of existing and newly acquired tools and authorities to provide more effective enforcement and to ensure compliance with lead-safe work practice standards and other requirements by property management companies that perform renovations using outside contractors.

  Actions will focus on high-impact cases using EPA's various compliance assurance authorities and tools to address violations related to lead in all environmental media and paint, particularly violations affecting overburdened communities.

- **Increase enforcement for lead site and facility cleanups:** EPA will use all appropriate enforcement authorities to clean up lead contaminated sites and facilities and continue to

pursue responsible entities for cleanup of lead released into the environment, including in residential yards, play areas, and other locations where children are commonly exposed to lead. EPA will increase internal collaboration to identify situations, consistent with current law and policy, where the Agency will seek to have responsible entities or others as appropriate perform or pay for cleanup to address lead contamination inside residential housing or other structures where children and other sensitive subpopulations may face exposure to lead.

APPROACH 3: Reduce lead exposures with a "whole of EPA" and "whole of government" approach

- **Identify sources of potential lead exposure to improve targeting:** EPA will work across the Agency, with other federal agencies, and with state, tribal and local co-regulators to enable national enforcement programs to identify locations where people may be exposed to lead in drinking water, paint, soils and/or air emissions, and what authorities EPA may apply to address those exposures. This includes continuing to work within EPA and with external partners to incorporate and share data and to map locations of significant potential lead exposure at national, state, tribal, and local scales. As resources allow and in partnership with others, EPA will further refine the Agency's analytical lead mapping capabilities (currently the Lead Occurrence and Source Tool) to assist in identifying these locations.

- **Enhance collaborative relationships with key federal agencies, states, tribes, and local partners:** EPA will identify opportunities to share information and pursue partnerships with federal, state, tribal and local authorities that leverage our respective authorities and resources to address lead exposures. These include:

    - EPA will engage with the Department of Defense to address lead exposures at privatized military housing.
    - EPA will partner with health agencies to obtain blood lead level data for purposes of enforcement and compliance assurance.
    - EPA will partner with states and tribes to support local drinking water systems in developing LSL information and to enforce the prohibition on use of non-lead-free plumbing materials.
    - EPA will partner with HUD to explore collaboration opportunities and to acquire and analyze data on pre-1978 housing.

  EPA will use such engagement and data to further refine EPA's mapping capabilities and ability to identify disproportionately impacted communities. These partnerships will also support EPA's goal of exploring suggested tools and approaches that help co-regulators build their capacity to address lead exposures in local communities under their respective authorities.

MULTI-REGIONAL COMMUNITY CASE STUDY

When large renovation firms such as Home Depot U.S.A. Inc.,[51] do not comply with the law, the noncompliance may disproportionately affect communities with environmental justice concerns. EPA targeted compliance monitoring in communities overburdened by exposure to lead-based paint and found that Home Depot was in violation of the Agency's lead-based paint RRP Rule, and of EPA-approved federally equivalent state renovation rules. As a result, Home Depot is implementing the provisions of a settlement reached in 2020, including payment of a penalty of $20.75 million, to resolve an enforcement action brought by EPA and the Department of Justice, joined by the States of Utah, Massachusetts, and Rhode Island. The civil penalty is the highest to date for any settlement under the Toxic Substances Control Act.

Under the settlement, Home Depot is implementing a company-wide program to ensure that its contractors comply with the RRP Rule that applies to renovations of homes built before 1978. The settlement also requires Home Depot to conduct thousands of on-site inspections of work performed by its contractors to ensure they comply with lead-safe work practices. The Home Depot must also investigate and respond to customer complaints, and EPA is monitoring Home Depot's response. Where the contractor has not complied with lead-safe work practices, Home Depot must perform an inspection for dust-lead hazards and, if found, provide a specialized cleaning. Also, Home Depot is providing important information concerning following lead-safe work practices to its professional and do-it-yourself customers in its stores, on its website, on YouTube, and in workshops.

GOAL 2: IDENTIFY COMMUNITIES WITH HIGH LEAD EXPOSURES AND IMPROVE THEIR HEALTH OUTCOMES

Problem: Exposure to lead across the country is inequitable, with communities of color and lower socioeconomic status neighborhoods often facing the greatest exposure and risks of health impacts that can exacerbate existing health inequities.

In many instances, locations with high lead exposures are identified only after the exposures have taken place and higher levels of lead are detected in children's blood. This often impacts children from underserved communities due to living conditions in unsafe housing, occupations of family members, and living within proximity to industrial facilities that release lead. Blood lead testing programs and practices vary widely state to state, ranging from several states with mandatory testing requirements to others without any requirements. States also differ in how and to what extent they report available blood lead level data to the CDC. With variations in testing and reporting, whatever data are available nationwide very likely represent an

[51] Mention of this company name does not imply endorsement.

underreporting of children who have higher blood lead levels and are exposed to lead hazards. Recent research has shown that spatial, analytical, and statistical methods can identify lead exposure hotspots that have not been identified by other means and that may benefit from increased blood lead level surveillance.[52,53]

Public Input: A key theme repeated in the comments concerned the challenge of adequate data availability, the quality of available data, and whether data are provided at a scale that allows for community-scale analysis. To address these challenges, commenters suggested that EPA work with states to create and enhance blood lead testing and surveillance programs, and work with all its partners to develop consistent and transparent community identification methods. Commenters suggested that a national organization of state and local lead health agencies could also help to address these challenges.

Commenters suggested that EPA account for a broad range of data when identifying hot spots, including (but not limited to) environmental indicators, socioeconomic and demographic indicators, housing data, and health data. It was recommended that EPA make community identification data easily available to the public and that the Agency should work with community-based organizations and institutions to exchange information about hot spot identification.

Finally, commenters recommended that EPA support the pediatric clinical care community through increased funding and support to increase blood testing and surveillance as well to provide health services and information to children and their families.

The actions identified below reflect the Agency's ongoing consideration of these comments.

Performance Measures and Milestones:

- By December 31, 2023, develop an interim blueprint for identifying high lead exposure risk locations based on research identifying lead exposure hotspots in Michigan, to be shared with internal and external public health partners for broader applicability and capacity building in the U.S.

EPA ACTIONS:

APPROACH 1: Reduce lead exposures locally with a focus on communities with disparities and promote environmental justice

[52] Xue, Jianping, et al. "A generalizable evaluated approach, applying advanced geospatial statistical methods, to identify high lead exposure locations at census tract scale: Michigan case study" Environmental Health Perspectives (2022) 130.7: 077004. https://pubmed.ncbi.nlm.nih.gov/35894594/

[53] Zartarian, Valerie, et al. "Lead Data Mapping to Prioritize US Locations for Whole-of-Government Exposure Prevention Efforts: State of the Science, Federal Collaborations, and Remaining Challenges." American Journal of Public Health 112.S7 (2022): S658-S669. https://pubmed.ncbi.nlm.nih.gov/36179290/

- **Identify lead 'hot spots':** EPA, in collaboration with HHS and HUD, will implement science-based approaches for identifying communities and subsections of communities at the census tract or other local geographies with high lead exposure potential and probable sources of exposure in those communities.[54] This information can inform where to provide enhanced community outreach and EPA actions. These approaches will use available data, statistical models, and geospatial analysis including blood lead level surveillance data collected by states, tribes, territories, federal agencies, and local governments; and environmental, socioeconomic, and demographic data, including indices from the EJSCREEN environmental justice screening and mapping tool,[55] as surrogates for potential exposures.

- **Ascertain local dominant lead exposure pathways**: Subject to the availability of data and resources, EPA will identify and evaluate local-scale information (e.g., presence of lead-based paint and lead-based paint hazards, lead in drinking water, and other exposure pathways) to supplement known mapping and scientific information with local knowledge; and use 'on the ground' efforts, typically facilitated by government entities and, as appropriate, incorporate community science approaches.

- **Focus EPA lead reduction actions on overburdened communities where lead exposures and blood lead levels are among the highest**: Targeting technical and financial resources to address documented priorities will generally provide the largest public health protection and the most efficient use of resources. In partnership with communities, EPA will develop and implement action plans for interventions in these areas. Interventions may include collaboration on funding (e.g., grants, technical assistance); partnerships with community organizations, faith-based institutions, foundations; and coordinated actions to achieve compliance. EPA's Regional Children's Health Coordinators will support regional actions to reduce and address children's exposure to lead in all media and enhance caretaker knowledge to better protect children from exposures to lead.

- **Provide more job training for reducing or removing lead hazards:** Identifying and addressing lead hazards requires training, skills building, work experience, and certification. For lead-based paint, EPA supports job training for contractors/renovators who disturb lead-based paint in homes. Individual contractors and their firms are both required to be trained and certified in RRP activities (See Goal 1, Objective A for more details). EPA will also educate communities about the Brownfields Job Training Grants and the Superfund Job Training Initiative workforce-development partnerships with local training organizations and employers, and local markets that seek certified staff in remediation of contaminated sites and for lead-based paint abatement.[56]

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[54] Zartarian, Valerie, et. al." Lead Data Mapping to Prioritize US Locations for Whole-of-Government Exposure Prevention Efforts: State of the Science, Federal Collaborations, and Remaining Challenges" American Journal of Public Health 112, (2022) S658_S669, https://doi.org/10.2105/AJPH.2022.307051

[55] https://www.epa.gov/ejscreen

[56] Brownfields Job Training Grants: https://www.epa.gov/brownfields/brownfields-job-training-jt-grants. Superfund Job Training Initiative: https://www.epa.gov/superfund/superfund-job-training-initiative. Lead-based paint abatement: https://www.epa.gov/lead/lead-abatement-inspection-and-risk-assessment.

APPROACH 2: Reduce lead exposures nationally through protective standards, analytical tools, and outreach

- **Increase cross-agency coordination on lead policies and regulations, and invest in community science and monitoring:** EPA staff will engage in a range of intra- and inter-agency activities to help focus risk management actions to address lead exposures in overburdened communities. Efforts will include working with the Lead Subcommittee of the *President's Task Force on Environmental Health Risks and Safety Risks to Children,* and its seventeen White House office and federal agency members, which serves as a forum to foster interagency collaborations.

- **Enhance participatory science on lead:** EPA will support the use of community-based participatory science through the development of easy-to-use, reliable, and accurate data monitoring tools, systems for facilitating data sharing with communities, and systems and platforms to make data analysis and interpretation readily accessible to community stakeholders and decision makers at all levels of government.

- **Increase cross-agency coordination of analytical tools**: EPA offices will continue to coordinate on the application of "fit-for-purpose" lead exposure and blood lead models to inform policy decisions to address lead contamination in multiple environmental media, and provide support to interagency partners (e.g., HUD) exploring options to further reduce exposure to environmental lead.

APPROACH 3: Reduce lead exposures with a "whole of EPA" and "whole of government" approach

- **Collaborate across agencies and departments to identify and address lead hotspots in the U.S.:** The CDC, EPA, and HUD will coordinate their efforts to identify lead hot spots by sharing information and collaborating on mapping and other tools.[57] These agencies will also collaborate to identify measures that can be taken to address lead exposure for other at-risk groups including seniors and individuals with disabilities.

- **Support the pediatric clinical care community to protect children from exposures to lead:** EPA will continue to work with the ATSDR to support the Pediatric Environmental Health Specialty Units (PEHSUs). The PEHSUs, located in each of EPA's ten Regions, are a group of experts in the prevention, diagnosis, management, and treatment of health issues that arise from environmental exposures from preconception through adolescence.[58] Their focus on clinical care and public health from an environmental health perspective is vital to supporting communities and addressing historical and ongoing environmental justice

[57] Zartarian, Valerie, et. al. "Lead Data Mapping to Prioritize US Locations for Whole-of-Government Exposure Prevention Efforts: State of the Science, Federal Collaborations, and Remaining Challenges" American Journal of Public Health 112, (2022) S658_S669, https://doi.org/10.2105/AJPH.2022.307051

[58] Pediatric Environmental Health Specialty Units. https://www.pehsu.net.

concerns. Support of PEHSUs not only allows capacity for community outreach, medical consultations, and guidance for care of children exposed to high levels of lead, but also important programs such as the Pediatric and Reproductive Environmental Health Scholars (PREHS) program, which helps foster a pipeline of healthcare professionals who possess the skills and knowledge to address the complexities of pediatric and reproductive environmental health.[59]

REGIONAL COMMUNITY CASE STUDY

Starting in 2001, EPA worked with many local partners to identify remaining areas and sources of lead risk in Boston, Massachusetts communities and invested resources with a goal to "Virtually End Childhood Lead Poisoning in Boston by 2010." At the time of this effort, children with blood lead levels ≥ 10 micrograms per deciliter were top priority and this case study includes data at that level. EPA used Geographic Information System mapping with data from census layers including housing built before 1950 and areas with children under the age of six to identify focus areas. Additional information from the local health department illustrated that about 70 percent of the childhood elevated blood lead cases were in only a handful of Boston neighborhoods. Dorchester and Roxbury had the highest number of children with elevated blood lead levels. Recognizing that lead risk was not spread equally across neighborhoods, Region 1 and its partners focused on neighborhoods that needed the most help. Region 1 worked with local nonprofit organizations including the Lead Action Collaborative to create a visual exterior assessment checklist deployed by EPA staff and volunteers to over 15,000 houses in high-risk areas to assess housing conditions for items that may indicate presence of lead risk including peeling paint, presence of bare soil and/or paint chips, and other factors.

Region 1 brought the full power of available Agency resources, including inspections, technical assistance, soil sampling, and grants, and its partners' resources including abatement funds, LSLR, and outreach, directly to the neighborhoods to help across programs. Region 1 conducted over 60 lead inspections for TSCA Lead Disclosure Rule and Pre-Renovation Education Rule compliance and followed with appropriate enforcement actions. Cases were settled for over $1 million in penalties and more than $5.7 million in SEPs, including one of the largest enforcement actions of its kind, which removed lead hazards from 10,400 apartments in the state. Region 1's soil sampling identified hot spots for action. LSLR was prioritized in target areas along with education, outreach, and assistance to regulated entities, schools, and families on how to minimize lead exposure from paint, dust, drinking water, and soil.

Since launching joint targeting efforts with state, local government, and many community partners in 2001, the number of elevated blood lead levels in Boston children dropped from 1,123 cases in 2001 to 163 cases in 2010. Although Region 1's initiative ended in 2010, progress continued. Reported data available from 2019 indicated 46 confirmed cases at the 10

[59] Pediatric and Reproductive Environmental Health Scholars program. https://grants.nih.gov/grants/guide/rfa-files/RFA-ES-20-007.html

micrograms per deciliter or higher benchmark. This case study demonstrates that sustained EPA and partner investment in a geographic area across media can achieve impressive and sustainable results. Because a safe level of lead in children's blood has not been identified, Region 1 is working on new strategies with communities in New England to focus on reducing or preventing childhood lead exposure from these sources in the future.

GOAL 3: COMMUNICATE MORE EFFECTIVELY WITH STAKEHOLDERS

Problem: In many communities, parents, families, and child care providers are often not aware of lead until it is measured in the blood of children or adults. Under federal, state, and tribal authorities, the education of primary caregivers on potential lead risks and exposure pathways is often insufficient. Community stakeholders need additional support to give parents, families, and other caregivers, including those with limited English proficiency and those with disabilities, the right information at the right time in multiple languages. Often, information to prevent lead exposure is not provided in plain language, nor does it use accessible electronic and information technology. Improved education and outreach efforts can help better inform communities about minimizing lead exposure from all key sources including lead-based paint, lead dust, drinking water, soil, air, and other sources of lead, such as religious or cultural products, that may be particularly relevant for certain communities.

Public Input: Many of the public comments the Agency received were supportive of efforts to reach out to communities with training, brochures, websites, and other outreach tools. Commenters asked for more direct outreach to communities, including local health officials, community organizations, and others to further inform the community of lead risks. Commenters also asked that the Agency support development of interagency work groups and advisory committees to identify communities with increased risks of lead exposure and develop plans to reduce disparities in exposure.

Other public comments suggested EPA work with its federal partners to create clear, consistent communications materials that clarify how the agencies regulate lead, describe how the agencies work together to prevent exposures, and clarify where lead-related policies overlap and where gaps exist.

Commenters recognized that digital literacy and availability are not equal across communities and recommended that EPA take this into account when developing communications materials to inform communities about lead exposures, health risks, and steps the Agency is taking to reduce those risks. Similarly, commenters also requested that EPA adopt, and make standard, best practices for engagement with communities, including the use of plain language, appropriate context for statistics and measures, the use of visual aids, and the use of inclusive language.

EPA appreciates the public comments and will continue to provide outreach to communities, both from headquarters outreach programs and associated regional coordinators. Examples of outreach include multimedia outreach for the National Lead Poisoning and Prevention Week,[60] guidance on Do-It-Yourself renovations, and lead-awareness training for the community such as EPA's *Lead Awareness in Indian Country: Keeping our Children Healthy!* The amount, types of training, and communities to which the Agency can provide outreach is contingent on the resources available. The actions identified below reflect the Agency's ongoing consideration of these comments.

Performance Measures and Milestones:

- EPA's Lead-Based Paint Program is a co-author of the Protect Your Family pamphlet, with HUD and CPSC. The pamphlet explains the dangers of lead in the home and how to protect families from lead-based paint hazards. To ensure this critical information is meaningfully accessible to persons with limited English proficiency, the brochure is available in 12 languages: English, Arabic, Chinese Simplified and Traditional, French, Korean, Polish, Russian, Somali, Spanish, Tagalog, and Vietnamese. This key document is required by law to be provided in pre-1978 house purchase and rentals to consumers. EPA commits to reviewing the information annually for possible updating as new requirements are developed.
- By September 30, 2023, publish online a Spanish-language version of the *Lead Awareness in Indian Country: Keeping our Children Healthy!* Curriculum. Additionally, work with partners to determine if there is a need for the development of additional examples and materials.
- By September 30, 2023, solicit advice from the Children's Health Protection Advisory Committee (CHPAC) on how to better protect children from exposure to lead and enhance the "whole of EPA" and "whole of government" approach.

EPA ACTIONS:

APPROACH 1: Reduce lead exposures locally with a focus on communities with disparities and promote environmental justice

- **Create targeted plain language multi-media education, training, and outreach materials**: EPA will raise public awareness in communities with the highest number of children with blood lead levels above the CDC blood lead reference value to give parents, families, and other stakeholders information on how to prevent lead exposure from lead-based paint dust, drinking water, soil, and air (if applicable). Efforts will also include outreach to the lead-based paint renovation and repair stakeholders (discussed in greater detail in Goal 1, Objective A). Materials will be translated for and made available to persons with limited English proficiency and made accessible for persons with disabilities to reach all populations at risk in targeted geographic areas as well as local businesses, including contractors, plumbers, and realtors.

[60] https://www.epa.gov/lead/national-lead-poisoning-prevention-week

- **Support development of community-based tools**: EPA will work with other federal agencies, state, tribal, and local governments to support community-based tools. For example, the Flint Registry[61] is a tool built by the community to connect people to services to promote health and wellness. This tool was developed with a grant from HHS and has been recognized for its value in addressing the communities' needs for data and collaboration.[62]

APPROACH 2: Reduce lead exposures nationally through protective standards, analytical tools, and outreach

- **Develop and deploy coordinated educational and prevention messages at a national scale**: EPA will work with the other federal agencies to develop a national repository of materials on lead and make it available to the public. EPA will use evidence-based strategies to develop community-scale interventions to assess which approaches are most effective in achieving the goals of reducing lead exposures and adverse health effects.

- **Develop and improve guidance, templates, and risk communication materials to support training, outreach, and community engagement:** EPA will improve guidance and templates to help states and communities communicate lead risk to households with higher risks for lead exposure (e.g., from lead-based paint, LSLs) and measures to reduce lead exposures. Efforts will also include revisions of drinking water regulations and guidance (discussed in greater detail in Goal 1 Objective B). Materials will be translated for and made available to persons with limited English proficiency and made accessible for persons with disabilities as needed to reach all populations at risk in targeted geographic areas. EPA will use a wide range of approaches to distribute new guidance and communication material, including in-person and virtual events, social media messaging, videos, press releases, and web publications, as well as outreach through partner agencies and stakeholders.

APPROACH 3: Reduce lead exposures with a "whole of EPA" and "whole of government" approach

- **Promote National Lead Poisoning Prevention Week (NLPPW):** Each October, EPA partners with CDC, HUD, and other interested federal agencies and stakeholders, to heighten awareness of lead exposure and lead poisoning by providing resources for the public to use to encourage preventive actions to reduce childhood lead exposure during NLPPW and throughout the year. These efforts will aim to bring together individuals, organizations, industry, and tribal, state, and local governments to reduce childhood exposure to lead by increasing lead poisoning prevention awareness with a focus on children's health and communities with greatest exposures to lead. Objectives include highlighting the many ways parents, caregivers, and communities can prevent the serious health effects of lead by

[61] https://www.flintregistry.org
[62] Indiana Advisory Committee to the U.S. Commission on Civil Rights (2020)

reducing children's exposure to lead, with a focus on the hazards of lead-based paint in pre-1978 housing, schools, and child care facilities; and increasing awareness of the Lead RRP rule.

- **Support use of the Tribal Lead Curriculum/Lead Awareness Curriculum:** Using the *Lead Awareness in Indian Country: Keeping our Children Healthy!* Curriculum, EPA is preparing tribes and community leaders to teach the robust set of educational tools that provide practical, on-the-ground, community-based resources to reduce childhood lead exposure within their own communities. The Curriculum, also referred to as the Tribal Lead Curriculum or Lead Awareness Curriculum, was developed with tribes and designed with the idea that it would be used and modified by all communities across the U.S. and its territories. The Curriculum creates a starting point to hold informed conversations within communities to teach parents and caregivers about lead. This Curriculum empowers individuals to act within their own homes to protect their children and communities from potential lead exposure. By the Fall of 2023, EPA plans to publish on its website a Spanish-language version of the over 200 pages of materials included in this training.

- **Consult with children's environmental health experts through the CHPAC federal advisory committee:** EPA will seek advice from the CHPAC to better focus and improve the Agency's efforts to protect and provide protective remedies for children from exposure to lead and to enhance our "whole of EPA" and "whole of government" approach. CHPAC is a body of external researchers, academicians, health care providers, environmentalists, state and tribal government employees, and members of the public who advise EPA on regulations, research, and communications related to children's health. CHPAC provides advice on topics such as air and water pollution regulations, chemical safety programs, risk assessment policies, risk communication materials/strategies, and research, which reflect the wide-ranging environmental issues which affect the health of children.[63] Charge questions submitted to CHPAC could include a request for review of the Lead Strategy, review of the strategy's performance measures and milestones, and advice on the Agency's actions to protect children from exposures to lead.

[63] U.S. Environmental Protection Agency. Children's Health Protection Advisory Committee. https://www.epa.gov/children/chpac.

REGIONAL COMMUNITY CASE STUDY

Clemson University Extension worked with EPA to provide outreach and education to schools and child care centers in two low-income school districts. EPA's Children's Environmental Health Program provided Clemson's College of Agriculture, Forestry and Life Sciences a $25,000 grant to educate the public in hazards of lead exposure in drinking water. This work was completed in partnership with South Carolina Department of Health and Environmental Control (SC DHEC) to support the EPA's WIIN Act Grant 2107: Lead Testing in Schools and Child Care Facilities. This grant is managed by SC DHEC and allows for public schools and licensed child care centers to voluntarily participate in testing their facilities for lead in drinking water at no cost. Clemson's goal was to provide targeted outreach and education in support of WIIN Grant 2107 to 25 schools/child care centers that were serving younger children in underserved and low-income communities.

Clemson University staff and students exceeded their goal and provided outreach and education to 32 schools located in Pickens and Lexington counties. They also developed a stand-alone webpage that showcased videos, written content, and resources. The students created a series of 8 short videos that included: identifying sources of lead, flushing drinking water lines and lead management in school facilities. They also developed five written documents that consisted of rack cards, factsheets, and infographics. Both staff and students made valuable connections with SC DHEC and Charleston County Schools District throughout the project.

GOAL 4: SUPPORT AND CONDUCT CRITICAL RESEARCH TO INFORM EFFORTS TO REDUCE LEAD EXPOSURES AND RELATED HEALTH RISKS

Problem: Scientific approaches to support EPA and community actions are needed to inform Goals 1, 2, and 3 – including in the areas of lead integrated exposure and health science assessment, blood lead level modeling, lead hotspot mapping, analysis of environmental information, development of methods to measure and reduce bioavailability and bioaccessibility, and use of drinking water science to inform corrosion control and identification of LSL and treatment strategies. EPA has prioritized research on source identification and mitigation, understanding exposure routes, and identifying high lead exposure locations for targeting actions. EPA also acknowledges the need to better understand what predicts health and developmental outcomes (and the variability/disparities in those outcomes) among children who have already been exposed to lead. EPA will work in collaboration with Federal partners in the President's Task Force on Environmental Health Risks and Safety Risks to Children (for example, National Institutes of Health and CDC/ATSDR) who have prioritized this

issue. This collaboration will inform efforts by other agencies to mitigate the health and developmental effects following exposure to lead.

Public Input: Public comments related to EPA's research to inform efforts to reduce lead exposures fell into several categories. Multiple commenters asked that expanded categories of lead-related human health benefits be considered. EPA is currently developing methods to quantify cardiovascular mortality benefits in regulatory analysis and will continue to develop methodologies for additional endpoints affected by current lead exposures.

Commenters noted the need for coordinated approaches and better definition of a blood lead level or modeling strategy. Commenters also provided very specific recommendations for modeling and modeling parameters. EPA will consider these comments in several ways. EPA will continue development of the All-Ages Lead Model for estimation of blood lead levels for children, adolescents, and adults of all ages under both chronic and episodic lead exposure scenarios. EPA will also continue its support of the Integrated Exposure Uptake Biokinetic (IEUBK) 2.0 model[64] to estimate risks of children's blood lead levels for site specific assessments and the Stochastic Human Exposure and Dose Simulation Model for multimedia chemicals[65] coupled with IEUBK 2.0 for national scale probabilistic modeling. Finally, EPA will continue to coordinate on the application of "fit-for-purpose" lead exposure and blood lead models to make informed policy decisions to address lead contamination.

Public commenters recognized the importance of identifying and replacing LSLs while maintaining optimized corrosion control to mitigate the release of lead from sources within plumbing systems. In response to these comments, EPA has both added and revised actions associated with LSL research, including LSL identification, quantifying lead in drinking water, and evaluating filter effectiveness. EPA also updated text that clarifies multiple areas of research to understand and reduce lead in drinking water including LSL identification strategies, corrosion control strategies, point-of-use filter effectiveness, and particulate lead. EPA intends to continue providing state-of-the-science small water system training to tribes and state, municipal, and utility water operators.

In response to comments related to lead in soil and dust, EPA added a description of intramural and extramural research designed to better understand soil and dust ingestion. This is a critical parameter in estimating lead exposure from sources of lead such as deteriorating house paint and contaminated soil.

EPA appreciates the wide-ranging public comments it received in response to EPA's Draft Lead Strategy, Goal 4. The actions identified below reflect the Agency's ongoing consideration of public comments. Comments the Agency did not respond to generally applied to policy issues outside the purview of research or detailed research issues that were not appropriate for inclusion in a broad strategy document.

[64] https://www.epa.gov/superfund/lead-superfund-sites-software-and-users-manuals
[65] https://www.epa.gov/chemical-research/stochastic-human-exposure-and-dose-simulation-sheds-estimate-human-exposure

Performance Measures and Milestones:

- Over a 5-year period, develop tools and informational resources for LSL identification technologies to assist small and underserved water systems to efficiently complete LSL inventories.
- Each year, updates to these LSL identification technology resources will be shared at the EPA Drinking Water Workshop: *Small Systems Challenges and Solutions*.

EPA ACTIONS:

APPROACH 1: Reduce lead exposures locally with a focus on communities with disparities and promote environmental justice

- **Extend mapping methods to identify lead hotspots in the U.S. for informing targeted actions in disproportionately impacted communities:** EPA will apply a science-based approach, based on available data and local knowledge, for characterizing areas of the U.S. regarding lead exposure potential. EPA will extend and apply mapping efforts focusing on identifying high potential exposure areas with co-occurrence of risk factors (e.g., higher blood lead levels, older housing stock, socio-demographic factors, and environmental lead sources).

- **Identify LSLs and collect drinking water samples***:* EPA will work with municipalities and utilities on solutions-based research designed to implement and evaluate water sampling strategies and approaches for LSL identification.

- **Quantify and monitor lead and copper in drinking water and assess filter effectiveness:** EPA will continue to develop sampling strategies and methods to quantify lead in drinking water and enhance the ability of community participatory scientists to contribute useful data to regulators' decision-making. EPA will also assess the efficacy of point-of-use filters for removing lead nanoparticles from drinking water.

APPROACH 2: Reduce lead exposures nationally through protective standards, analytical tools, and outreach

- **Quantify additional benefits from reducing exposures to lead for regulatory impact assessments:** EPA is developing new analyses to estimate the social benefits of reducing lead exposures. Current practice is to include only effects on children's cognitive function in economic analyses of EPA policies and programs. However, lead can have a variety of other adverse health effects on children and adults, such as attention disorders and cardiovascular morbidity and mortality. EPA has developed an approach to quantify potential reductions in cardiovascular mortality related to lead exposure reductions. EPA

will continue to develop methodologies to estimate the benefits of reducing lead exposures.

- **Conduct multimedia lead modeling and related research to inform regulatory decisions and site assessments:** EPA will update the software, user guide, and technical support documentation for the *All-Ages Lead Model* to incorporate recommendations of the EPA Science Advisory Board. Support will continue for the *IEUBK Model 2.0* to use environmental lead exposures to estimate risks of children's elevated blood lead for site specific assessments. National-scale probabilistic modeling will be applied with the SHEDS-IEUBK model (Stochastic Human Exposure and Dose Simulation Model for multimedia chemicals coupled with IEUBK) to inform regulatory decisions and guidance by EPA and HUD.

  EPA has awarded grants for "Estimating Children's Soil and Dust Ingestion Rates for Exposure Science" that will support research to address critical life stage-specific exposure factors for exposure modeling.[66] A series of peer-reviewed publications on soil and dust ingestion will be completed to inform model input parameters for estimating blood lead levels from environmental exposures. With new data available in the literature, EPA will work to update soil and dust ingestion estimates presented in the EPA's Exposure Factors Handbook.[67]

- **Conduct lead bioavailability and isotope research to inform Agency actions:** EPA will work with HUD to continue the analysis of lead content and bioavailability in water, soil, and dust samples from the American Healthy Homes Survey II.[68] EPA is working on lead isotope analysis that will help inform identification of environmental lead sources to support risk management and other potential Agency activities. EPA is developing an *in vitro* cell line assay for bioavailability for determining site specific cleanup levels. The Agency will advance research methods to immobilize or reduce the bioavailability of lead in soil.

- **Evaluate soil-lead and dust-lead relationship for target housing:** EPA will review the relationship between soil-lead and dust-lead in pre-1978 homes, considering data from HUD's American Healthy Homes Survey II and the Lead ISA.[69] EPA will use this information to support regulatory actions to reduce and prevent lead exposures.

- **Address lead-based paint definition data needs:** EPA may address some of the data gaps related to the definition of lead-based paint under TSCA by sponsoring a technical conference. The objectives of the workshop may include characterizing the capabilities of field portable XRF and other technologies at lower levels of lead in paint and identifying opportunities, limitations, and constraints for measurement and detection of low levels of lead in paint.

[66] https://www.epa.gov/research-grants/estimating-childrens-soil-and-dust-ingestion-rates-exposure-science
[67] https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252
[68] https://www.epa.gov/americaschildrenenvironment/american-healthy-homes-survey-ahhs
[69] https://www.epa.gov/isa/integrated-science-assessment-isa-lead

- **Conduct research to better understand and reduce lead in drinking water***:* EPA will conduct research related to strategies to identify LSLs including research on innovative detection methods. EPA will also conduct laboratory and field research, with a focus on mitigation methods to reduce exposure to lead from drinking water.

  EPA will conduct research on corrosion control treatment and control strategies to reduce soluble lead in drinking water. EPA will evaluate point-of-use treatment device effectiveness under a variety of field and lab conditions considering soluble and particulate lead under a range of concentrations. Research will also focus on understanding how changes in water treatment practices affect the release of particulate lead into water.

  Other lead reduction research will include the refinement of plumbing modeling to predict concentrations of lead in single-family and multifamily homes with different plumbing materials, pipe layouts, and usage patterns. EPA will also conduct research on lead source characterization and assessment to better understand lead release mechanisms and corrosion control effectiveness.

- **Small water system workshops and training:** To support the efforts of state and local officials to assist small systems, EPA's Office of Research and Development (ORD) and Office of Water (OW), in cooperation with Association of State Drinking Water Administrators (ASDWA), has held an annual workshop for the past 19 years to provide timely information on a variety of drinking water topics relevant to small systems. These provide a forum for EPA scientists and water experts from across the U.S. to present state of the science training and progress updates to state, tribal, and municipal officials, and utility water operators. Corrosion control technology, LSL identification and replacement, and regulatory updates affecting lead in drinking water are perennial topics. EPA will continue to hold these workshops.

APPROACH 3: Reduce lead exposures with a "whole of EPA" and "whole of government" approach

- **Collaborate on science-based mapping efforts to identify lead hotspot locations for informing targeted risk reduction actions:** EPA will engage with HUD and CDC to improve data mapping for identifying and addressing multimedia lead exposures in underserved communities.[70]

- **Increase cross-agency coordination on data collection and analytical tools**: EPA offices will continue to coordinate on the application of "fit-for-purpose" lead exposure and blood lead models to inform policy decisions to address lead contamination in multiple environmental

[70] Valerie Zartarian, Antonios Poulakos, Veronica Helms Garrison, Nicholas Spalt, Rogelio Tornero-Velez, Jianping Xue, Kathryn Egan, and Joseph Courtney, 2022: Lead Data Mapping to Prioritize US Locations for Whole-of-Government Exposure Prevention Efforts: State of the Science, Federal Collaborations, and Remaining Challenges American Journal of Public Health 112, S658_S669, https://doi.org/10.2105/AJPH.2022.307051

media, and provide support to interagency partners (e.g., HUD) exploring options to further reduce exposure to environmental lead. Improved data collection will enhance the ability of EPA and its federal partners to design and evaluate lead reduction programs.

- **Collaborate with HUD and other federal agencies on lead-based paint issues:** EPA will collaborate with HUD and potentially the CPSC, National Institute of Standards and Technology, and the CDC on a virtual public meeting and technical conference regarding lead-based paint definition data needs.

REGIONAL COMMUNITY CASE STUDY

EPA's research on particulate and soluble lead in drinking water was used to help address elevated lead levels found in the drinking water of University Park, Illinois. The village had changed the source of its drinking water from groundwater to surface water, and the treated surface water had a different water quality (i.e., lower alkalinity and hardness) than did the previously used groundwater. Not long after this change in source water, during compliance sampling for the EPA's Lead and Copper Rule, the system was found to have exceeded the lead action level. Although there are no known LSLs in the village, there were other sources of lead in the household plumbing, such as leaded solder and brass fixtures.

The community and the state of Illinois reacted rapidly and issued a "Do Not Drink" order for the community; they also reached out to EPA to ask for assistance in understanding why this exceedance occurred when no LSLs were present. The Agency conducted a field sampling study in University Park to help identify the cause and mechanisms of elevated lead release. The objective of the sampling was to characterize the form, size, and composition of lead particles in University Park's drinking water. Samples were sent to the EPA's analytical laboratory to conduct multiple analyses including lead in water concentrations, particle size fractionation, electron microscopy, and x-ray diffraction techniques. These analyses showed the types of particles that were being formed in their water and provided insight into the mechanism of lead release which was an important piece of the decisions on how to improve corrosion control treatment for their specific water quality parameters. EPA's experts also participated in meetings with the community to help explain the scientific data they had collected. This research and technical support helped to inform guidance to the state and village on lead solder corrosion, which has not received the same amount of research as LSL corrosion. The complicated situation at University Park has seen improvements in drinking water lead levels with additional monitoring needed.

CONCLUSION AND IMPLEMENTATION OF EPA's LEAD STRATEGY

Implementation of EPA's Lead Strategy will result in the Agency taking more effective and efficient actions to minimize lead exposures with an emphasis on overburdened communities and promoting environmental justice and equity. EPA's enhanced actions described in this strategy will further reduce exposures from lead-based paint, dust, drinking water, soils, and air to all Americans with focused attention on significant near-term reductions in exposures for life stages and population groups currently burdened with disproportionately higher lead exposures. EPA is committed to applying a whole of government approach to its efforts to reduce exposures to lead, using best available science and technology and all available resources and regulatory authorities to achieve that goal.

EPA's Lead Strategy is closely aligned with the priorities set forth in the EPA's *Fiscal Year 2022 – 2026 Strategic Plan*. Specifically, Goal 2 of the Strategic Plan is to *Take Decisive Action to Advance Environmental Justice and Civil Rights*. This goal is designed to achieve tangible progress for historically overburdened and underserved communities and to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, income, disability, age or sex in developing and implementing environmental laws, regulations, and policies.

EPA is currently developing several indicators of disparity that will assess the Agency's performance under Goal 2 of the Strategic Plan. The indicators are meant to characterize health disparities and disparities in environmental conditions, and, where applicable, highlight progress in eliminating the disparities. EPA will measure progress against these indicators each year. We expect that at least one of the Goal 2 Strategic Plan indicators will be associated with lead exposures and health outcomes. The actions to minimize lead exposures described in the Lead Strategy will be integral to the demonstration of progress against lead-related indicators of disparity. EPA is targeting the Fall of 2023 for the finalization and public release of these indicators.

This strategy is an important step forward for EPA as we work to strengthen public health protections and address legacy lead contamination in communities, especially those with the greatest exposures. Many of the actions described in this strategy have only recently been initiated and funded. As these programs mature, EPA expects to continue to review the effectiveness of its actions to reduce lead exposures and to revise or set new targets for measuring performance. We anticipate that in the future, the Lead Strategy will be updated to reflect new initiatives, address newly identified gaps, and add new performance measures and milestones to meaningfully track EPA's progress to reduce the health burdens associated with exposures to lead pollution. We also plan to incorporate the relevant lead-related Goal 2 Strategic Plan indicators of disparity described above. Future updates, plans, and progress will be made available at EPA's lead website, www.epa.gov/lead.

APPENDIX: PERFORMANCE MEASURES AND MILESTONES

Performance Measures and Milestones

GOAL 1: REDUCE COMMUNITY EXPOSURES TO LEAD SOURCES		
Objective A: Reduce Exposure to Lead in Homes and Child-Occupied Facilities with Lead-Based Paint and Other Hazards	***Measures*** • By September 30, 2023, provide free or low-cost training to 500 contractors that are located in and around communities with environmental justice concerns spread throughout the U.S. over fiscal years 2022 and 2023. • By September 30, 2023, host national and community-based Lead Awareness Curriculum sessions for 515 community leaders and Understanding Lead sessions for 340 community members, which reflects a 10% increase in participation from fiscal year 2022 to fiscal year 2023.	***Milestones*** • By March 2023, publish the *Heavy Metals in Cultural Products: Outreach and Educational Resources Toolkit* on the EPA website. • By February 2023, propose, and by June 2024, finalize the Dust-lead Hazard Standards (DLHS) and Dust-lead Clearance Levels (DLCL) Rule.
Objective B: Reduce Exposure to Lead from Drinking Water	***Measures*** • Track and report total funds to disadvantaged communities for projects that support reduction of lead in drinking water. • By the end of 2022, partner with four states to establish LSLR Accelerators, which will provide targeted technical assistance and develop best practices to help address the barriers disadvantaged communities face in replacing LSLs. • By the end of 2022, conduct outreach on the new "*Guidance for Developing and Maintaining a Service Line Inventory*" to help water systems develop LSL inventories as soon as possible to begin replacement programs and no later than the Lead and Copper Rule Revisions compliance deadline of October 2024.	***Milestone*** • By the end of 2023, propose, and by October 2024, take final action on the Lead and Copper Rule Improvements to strengthen the regulatory framework and address lead in drinking water.

<table>
<tr><th colspan="3">GOAL 1: REDUCE COMMUNITY EXPOSURES TO LEAD SOURCES</th></tr>
<tr><td>Objective C:
Reduce Exposure to Lead in Soils</td><td>Measures
By September 30, 2026, complete 225 Superfund cleanup projects that address lead as a contaminant (averaging 45 each year).
By September 30, 2023, review results of the Superfund Lead Collaboration Pilot projects and where appropriate, update Superfund guidance to reflect best practices.
Report annually the number of Brownfields cleanups that addressed lead contamination, as reported by grant recipients.</td><td>Milestone
By June 30, 2023, evaluate and revise the Residential Soil Lead Guidance for Contaminated Sites to protect communities by further reducing the potential for exposure to lead in soil.</td></tr>
<tr><td>Objective D:
Reduce Exposure to Lead Associated with Emissions to Ambient Air</td><td colspan="2">Milestones
Projected completion of the current lead NAAQS review in 2026.
Anticipated completion of rulemakings for important lead emissions sources over the next two years:
In 2023, secondary lead smelters, lead acid battery manufacturing, and integrated iron and steel manufacturing.
In 2024, primary copper smelters and large municipal waste combustors.
In October 2022, EPA issued a proposed finding that lead emissions from aircraft engines that operate on leaded fuel cause or contribute to air pollution that may reasonably be anticipated to endanger public health and welfare. After evaluating comments on the proposal, EPA plans to issue any final endangerment determination in 2023.</td></tr>
<tr><td>Objective E:
Reduce Exposure to Lead Through Enforcement and Compliance Assurance</td><td colspan="2">Measures
Each year, direct enforcement resources to at least one community with environmental justice concerns in each Region, to help address the exposures to lead in that community and take appropriate enforcement action.
Each year, publicly report on national statistics related to lead cleanups and inspections, including whether the inspections occurred in communities with environmental justice concerns.</td></tr>
</table>

GOAL 2: IDENTIFY COMMUNITIES WITH HIGH LEAD EXPOSURES AND IMPROVE THEIR HEALTH OUTCOMES
Milestone • By December 31, 2023, develop an interim blueprint for identifying high lead exposure risk locations based on research identifying lead exposure hotspots in Michigan, to be shared with internal and external public health partners for broader applicability and capacity building in the U.S.

GOAL 3: COMMUNICATE MORE EFFECTIVELY WITH STAKEHOLDERS	
Measure	***Milestones***
• EPA's Lead-Based Paint Program is a co-author of the Protect Your Family pamphlet, with HUD and CPSC. The pamphlet explains the dangers of lead in the home and how to protect families from lead-based paint hazards. To ensure this critical information is meaningfully accessible to persons with limited English proficiency, the brochure is available in 12 languages: English, Arabic, Chinese Simplified and Traditional, French, Korean, Polish, Russian, Somali, Spanish, Tagalog, and Vietnamese. This key document is required by law to be provided in pre-1978 house purchase and rentals to consumers. EPA commits to reviewing the information annually for possible updating as new requirements are developed.	• By September 30, 2023, publish online a Spanish-language version of the *Lead Awareness in Indian Country: Keeping our Children Healthy!* Curriculum. Additionally, work with partners to determine if there is a need for the development of additional examples and materials. • By September 30, 2023, solicit advice from the Children's Health Protection Advisory Committee (CHPAC) on how to better protect children from exposure to lead and enhance the "whole of EPA" and "whole of government" approach.

GOAL 4: SUPPORT AND CONDUCT CRITICAL RESEARCH TO INFORM EFFORTS TO REDUCE LEAD EXPOSURES AND RELATED HEALTH RISKS
Measures
• Over a 5-year period, develop tools and informational resources for LSL identification technologies to assist small and underserved water systems to efficiently complete LSL inventories. • Each year, updates to these LSL identification technology resources will be shared at the EPA Drinking Water Workshop: *Small Systems Challenges and Solutions*.

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