



# Office of Children's Health Protection **Climate Adaptation Implementation Plan** September 2024

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#### Part 1 – Introduction

#### Overview

Climate change has been and continues to pose a global threat to the environment and human health. With each year holding the new record for the hottest summer, it is time for action against climate change and to protect those most vulnerable against its effects. Not only is climate change affecting public health, it is also damaging infrastructure, ecosystems and social systems in communities across the nation. The U.S. Environmental Protection Agency (EPA) "continues to fulfill its mission of protecting human health and the environment even as the climate changes and disruptive impacts increase".<sup>1</sup> The EPA is committed to identifying and responding to the impacts of climate change. President Biden's <u>Executive Order 14008</u>, *Tackling the Climate Crisis at Home & Abroad*, requires all federal agencies to develop Climate Adaptation Action Plans that describe the actions that will be taken to enhance climate adaptation and increase resilience to the impacts of climate change.

The Agency released its <u>first *Climate Change Adaptation Plan*</u> in June 2014, followed by 20 Climate Change Adaptation Implementation Plans prepared by its National Program Offices, National Support Offices, and 10 Regional Offices in 2022. Guided by the <u>2021 EPA Climate</u> <u>Adaptation Action Plan</u>, the Office of Children's Health Protection Implementation Plan identifies ten priority actions it commits to undertake to address the children's health vulnerabilities.

The primary goal of OCHP is to apply and promote the use of science, policy, partnerships, communications and research to protect all children from the health effects resulting from harmful environmental exposures.

#### Senior Career Leader Responsible for Oversight

The OCHP Director, Grace M. Robiou, has been designated as the Senior Career Leader on Climate Adaptation in OCHP. She is responsible for overseeing the climate adaptation activities in OCHP. Amelia Nguyen, the Climate Adaptation Coordinator in OCHP, is working with OCHP programs and partners to develop and implement the activities described in this Implementation Plan and measure the office's performance.

<sup>&</sup>lt;sup>1</sup> Climate Adaptation Action Plan: October 2021. (n.d.).

#### Part 2 – Assessment of Climate Vulnerabilities

#### Introduction

Protecting children from the effects of environmental exposure during early life (from preconception, conception, infancy, early childhood through adolescence until 21 years of age) is imperative because children are at greater risk to environmental contaminants than adults due to differences in activity patterns, behaviors, and biology, and the effects of early life exposures may also arise in adulthood or in later generations. Children have unique behaviors such as breast feeding, crawling and hand-to-mouth activity that may contribute to increased exposure. Children eat more food, drink more water, and breathe more air in proportion to their body size as compared to adults, and the variety of the foods they consume is more limited. Furthermore, the timing of exposure to environmental hazards is critical in protecting human health. The same dose during different periods of development can have very different health consequences. Children's bodies are developing physically, which can make them more vulnerable to climate-related hazards like heat and poor air guality. Children are also developing emotionally and can experience mental health impacts from major storms, fires and other extreme weather events that are expected to increase with a changing climate. People of color, including children living in underserved communities, are more likely to live in areas with the highest levels of climate change impacts from rising temperatures and sea level rise.<sup>2</sup> Those who are already vulnerable due to a range of social, economic, historical and political factors have a lower capacity to prepare for, cope with, and recover from climate change impacts.

Many indicators of children's environmental health show improvement over the past years.<sup>3</sup> Unfortunately, some rates of exposure and/or health effects have not improved or have gotten worse, and many environmental hazards disproportionately impact children living in disadvantaged communities and children living in poverty.

Several policies require federal agencies and the EPA to consider children including:

• <u>EPA Policy on Children's Health</u> requires the EPA to protect children from environmental exposures by consistently and explicitly considering early life exposures and lifelong health in all human health decisions. The policy defines children's environmental health as the effect of environmental exposure during early life: from conception, infancy, early childhood and adolescence through until 21 years of age. The EPA's policy is informed by the scientific understanding that children may be at greater risk to environmental contaminants than adults due to differences in behavior and biology and that the effects of early life exposures may also arise in adulthood or in later generations.

<sup>&</sup>lt;sup>2</sup> U.S. EPA. 2021. *Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts.* EPA 430-R-21-003.

<sup>&</sup>lt;sup>3</sup> U.S. EPA. 2019. <u>America's Children and the Environment</u>.

- Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks directs federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and ensure that its policies, programs, activities and standards address disproportionate risks to children that result from environmental health risks or safety risks.
- Several other laws require the EPA to consider children specifically in rulemaking, including the Food Quality Protection Act (FQPA), Safe Drinking Water Act (SDWA), Toxic Substances Control Act (TSCA), and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), while other statutes include the protection of children more generally such as the Clean Air Act.

OCHP's climate vulnerabilities assessment discusses the unique vulnerabilities children face in a changing climate. This section builds on the potential vulnerabilities caused by the impacts of climate change outlined in the *EPA's Climate Adaptation Action Plan*.<sup>4</sup>

The *EPA's Climate Adaptation Action Plan* has placed special emphasis on working with "the most overburdened and vulnerable communities to improve their capacity to prepare for, cope with, and recover from climate change impacts."<sup>5</sup> Children are particularly vulnerable to the impacts of climate change because they are still developing and have weaker immune systems.

OCHP supports <u>EPA's FY 2022-2026 Strategic Plan</u> Goal 1 on tackling the climate crisis by accelerating resilience and adaptation to climate change impacts; Goal 2 on taking action to advance environmental justice; and Cross-Agency Strategy 2 on considering the health of children at all life stages and other vulnerable populations. Climate change exacerbates inequities with disproportionate environmental, health, and economic impacts on underserved and overburdened communities, and may increase children's exposure to extreme temperatures, polluted air and water, extreme weather events, wildfires, infectious disease, allergens, chemicals and harmful algal blooms (HAB). Climate change impacts children on multiple fronts, including adverse pregnancy outcomes, heat-related illness, allergic diseases, cardiovascular diseases, vector-borne diseases, water shortages and malnutrition/famine.

#### **OCHP Climate Vulnerabilities**

#### Extreme heat

Climate change increases the frequency of severe and prolonged heat events. With the increase in air pollution and fossil fuels, the Earth is warming more now than ever.

<sup>&</sup>lt;sup>4</sup> U.S.EPA. 2021. Climate Adaptation Action Plan, (pages 3-6).

<sup>&</sup>lt;sup>5</sup> U.S.EPA. 2021. Climate Adaptation Action Plan, (page 13).

- Climate change is increasing global temperatures and the risk of heat-related illnesses. Increased temperatures are expected to lead to higher rates of heat-related deaths and illnesses among vulnerable populations, including children.<sup>6</sup> Heat-related illnesses can occur when a person is exposed to high temperatures and their body cannot cool down, with symptoms ranging from mild swelling, rashes or cramps to potentially deadly heat exhaustion and heat stroke.<sup>7</sup> Young children and infants are especially vulnerable to heatrelated illness and death because their bodies are less able to adapt to heat.<sup>8</sup> Extreme heat exposure in pregnant women has also been associated with low birth weight, preterm birth and infant mortality.<sup>9,10</sup>
- Extreme heat negatively affects children's ability to learn and their mental health. Children sweat less than adults, which is a key method that the body uses to cool down. Heat is also linked to poor cognitive function and reduced ability to concentrate or learn, affecting the child's ability to do well in school. Along with poorer cognitive function, high heat can increase the risk children have at developing anxiety or depression.<sup>11</sup>

#### Severe weather and floods

Climate change increases the frequency and severity of extreme weather events. Increases in extreme precipitation events and rising sea levels can lead to flooding, contaminated water and damage to essential infrastructure.

Flooding can cause adverse health effects to individuals, including children. Potential hazards to children's health after floods include mold, mildew, contaminated water and exposure to damaged infrastructure containing lead-based paint, asbestos and other contaminants. Children have less mature lungs than adults and are thus more susceptible to breathing in toxins and hazardous materials. They also breathe faster and take in more air than adults relative to their body size, meaning they get exposed more heavily to what is in the air compared to adults. Children are highly susceptible to asthma and other respiratory ailments associated with mold and mildew. In addition to its impacts on the respiratory systems, asthma can also lead to neurological problems.

<sup>&</sup>lt;sup>6</sup> Crimmins, A., et al. 2016. *Executive summary*. In: *The impacts of climate change on human health in the United States: A scientific assessment*. U.S. Global Change Research Program, Washington, DC, p. 6.

<sup>&</sup>lt;sup>7</sup> U.S. EPA.2024. *<u>Climate Change Indicators: Heat-Related Illnesses</u>. Retrieved 8/1/2024.* 

<sup>&</sup>lt;sup>8</sup> Smith, K.R., et al. 2014. *Human health: impacts, adaptation, and co-benefits*. In: *Climate change 2014: Impacts, adaptation, and vulnerability. Part A: Global and sectoral aspects. Contribution of working group II to the fifth assessment report of the intergovernmental panel on climate change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, p. 717.

<sup>&</sup>lt;sup>9</sup> Sarofim, M.C., et al. 2016. <u>Ch. 2: Temperature-related death and illness</u>. The impacts of climate change on human health in the United States: A scientific assessment. U.S. Global Change Research Program, Washington, DC, p. 54.

<sup>&</sup>lt;sup>10</sup> Ebi, K.L., et al. 2018. <u>Human health</u>. In: Impacts, risks, and adaptation in the United States: Fourth national climate assessment, volume *II*. U.S. Global Change Research Program, Washington, DC, p. 545.

<sup>&</sup>lt;sup>11</sup> U.S. EPA. 2023. *Climate Change and Children's Health and Well-Being in the United States*, EPA 430-R-23-001.

Carbon monoxide (CO) exposure has been named as a chemical exposure during natural disaster events, particularly when there is a loss of power. This is due to gasoline and/or diesel-powered generators being used indoors. When these generators are used indoors without proper ventilation, CO builds up and there is a high risk of CO poisoning.<sup>12</sup>

An increase in flood events may displace people from their homes. If no additional adaptation measures are taken, approximately 185,000 children are projected to lose their homes from coastal flooding at 50 cm of global sea level rise.<sup>13</sup> Displacing children from their homes may also cause mental health problems, such as PTSD, from leaving behind their familiar home and moving into a new environment.<sup>14</sup>

#### Air pollution

Climate change makes it more difficult to attain air quality standards, posing higher risks to public health, particularly for overburdened and vulnerable populations.<sup>15</sup> Children are particularly vulnerable to air pollution because their lungs are still developing, and they tend to spend more time outside.<sup>16</sup>

- Climate change can increase ground-level ozone. Ground-level ozone is a major ingredient in smog and negatively impacts children's health, especially for those with asthma.<sup>17</sup> Health impacts include wheezing and coughing, shortness of breath, inflammation of airways and aggravation of lung diseases such as asthma, emphysema and chronic bronchitis.<sup>18</sup>
- Children are at risk for increased health effects from being exposed to particulate matter pollution. The wildfire season has lengthened in many areas and is likely to intensify in a warmer future with drier soils and vegetation, warmer springs and longer summer dry seasons.<sup>19</sup> Wildfire smoke can affect air quality in other areas of the country due to wind patterns. Increases in particulate matter are associated with higher rates of asthma and respiratory conditions in children.<sup>20</sup> Communities with high particulate pollution exposure are also found to have increased rates of preterm birth, low birth weight and infant mortality.<sup>21</sup>

<sup>&</sup>lt;sup>12</sup> US EPA. 2013. <u>Protecting Children's Health During and After Natural Disasters</u>. Retrieved 8/1/2024.

<sup>&</sup>lt;sup>13</sup> U.S. EPA. 2023. <u>Climate Change and Children's Health and Well-Being in the United States</u>, EPA 430-R-23-001.

<sup>&</sup>lt;sup>14</sup> Li, M., Li, W.-Q., & Li, L. M. W. 2019. Sensitive Periods of Moving on Mental Health and Academic Performance Among University Students. Frontiers in Psychology, 10, 1289. <u>https://doi.org/10.3389/fpsyg.2019.01289</u>

<sup>&</sup>lt;sup>15</sup> U.S.EPA. 2021. Climate Adaptation Action Plan, (page 3).

<sup>&</sup>lt;sup>16</sup> U.S. EPA. 2019. <u>America's Children and the Environment</u>.

<sup>&</sup>lt;sup>17</sup> U.S. EPA. 2024. *Ground-level Ozone Basics*. Retrieved 8/1/2024.

<sup>&</sup>lt;sup>18</sup> U.S. EPA. 2024. Health Effects of Ozone Pollution. Retrieved 8/1/2024.

<sup>&</sup>lt;sup>19</sup> Nolte, C.G., et al. 2018. <u>Air Quality</u>. In: Impacts, risks, and adaptation in the United States: Fourth national climate assessment, volume *II*. U.S. Global Change Research Program, Washington, DC, USA, pp. 512–538.

<sup>&</sup>lt;sup>20</sup> Gamble, J.L., et al. 2016. <u>Ch. 9: Populations of concern</u>. In: The impacts of climate change on human health in the United States: A scientific assessment. U.S. Global Change Research Program, Washington, DC, p. 256

#### Water quality

Climate change makes it more difficult to meet the challenge of protecting the nation's water quality. Climate change degrades water quality and harms water infrastructure. Sea level rise, higher temperatures, increasingly frequent and intense storm events and acidification degrade coastal ecosystems and reduce clean water supplies.

- *Climate change affects the water's temperature and chemical composition.* With the increase in water temperatures and fertilizer runoff, algal blooms are created in lakes and oceans. Not only is ingesting contaminated water harmful, but swimming in contaminated water is dangerous for human health. Children are at more risk because they tend to accidentally swallow more water when swimming and run the risk of getting ear infections as well.<sup>22</sup>
- Contaminated water is dangerous for children's health. Climate change may increase the frequency of HAB, pathogens and water-related illnesses (e.g., norovirus, cholera, vibriosis). Children have a higher risk of water insecurity and of developing gastrointestinal illness if they come in contact with contaminated water than adults.<sup>23</sup>

#### Chemical Exposure

Rising temperatures, changes in precipitation, runoff, and soil moisture, and shifts in ecosystems can affect the presence and concentration of chemicals in the environment.

• An increase in the use of harmful pesticides has adverse health effects. The movement of vectors into new areas because of climate change may lead to an increase in pesticide use and chemicals present in soil and water. Children eat, drink, and breathe more in proportion to their body size than adults, are still developing, and have unique behaviors, making them vulnerable to chemical exposures.<sup>24</sup> As children spend more time closer to the ground than adults, they are at a higher risk of exposure to the harmful pesticides and fertilizers that are being spread through floods and rainfall.

#### Vector-borne diseases

 <sup>&</sup>lt;sup>21</sup> Kim, J. J. 2004. Ambient air pollution: health hazards to children. Pediatrics, 114(6), 1699-1707. <u>https://doi.org/10.1542/peds.2004-2166</u>
 <sup>22</sup> US EPA. 2024. <u>*Climate Change and Children's Health*</u>. Retrieved 8/1/2024.

<sup>&</sup>lt;sup>23</sup> Trtanj, J., et al. 2016. <u>Ch. 6: Climate impacts on water-related illness</u>. The impacts of climate change on human health in the United States: A scientific assessment. U.S. Global Change Research Program, Washington, DC, p. 170.

<sup>&</sup>lt;sup>24</sup> U.S. EPA. 2024. <u>What You Can Do to Protect Children from Environmental Risks</u>. Retrieved 8/1/2024.

Climate change is expanding the habitat ranges and length of time when mosquitoes, ticks, and other arthropod vectors are common. These insects can carry parasites that cause diseases such as West Nile Virus, malaria, dengue, Zika, Lyme disease, and chagas disease.<sup>25,26</sup>

- The increase in temperatures caused by climate change increases the number of insectrelated diseases. Increasing temperatures and changes in precipitation can increase the host ranges of mosquitoes, ticks, and kissing bugs (triatomine bug) that carry these diseases thereby increasing the risk of vector-borne diseases among people. With natural disasters forcing people out of their homes, an increase in international travel also brings disease-bearing insects into the United States, exposing citizens to foreign/invasive species.
- Zika virus is particularly detrimental to children born from women infected by Zika virus prior to and during pregnancy. Zika infection during pregnancy causes severe brain damage (microcephaly) in the developing fetus and long-term behavioral and health effects in children who survive.<sup>27</sup> Children are more vulnerable to insect and tick bites because they tend to spend a lot of time outdoors.

#### Mental Health

Climate change can negatively impact children's mental health and well-being.<sup>28</sup> Exposure to air pollution has been associated with anxiety and depression in children. Climate-related disasters can contribute to post-traumatic stress disorder, anxiety, depression and phobias in children.<sup>29</sup> Some research has demonstrated a potential link to attention-deficit/hyperactivity disorder and other neurodevelopmental diseases.<sup>30</sup> An increase in natural disaster occurrences results in food insecurity due to climate change. A study has shown that children who experienced moderate to severe food insecurity reported poorer mental health than those with no to mild food insecurity.<sup>31</sup>

<sup>&</sup>lt;sup>25</sup> Beard, C.B., et al. 2016. <u>Ch. 5: Vector-borne diseases</u>. The impacts of climate change on human health in the United States: A scientific assessment. U.S. Global Change Research Program, Washington, DC, p. 142.

<sup>&</sup>lt;sup>26</sup> Eberhard F,. et al. (2020) Modelling the climatic suitability of Chagas disease vectors on a global scale. eLife: 9:e52072. <u>https://doi.org/10.7554/eLife.52072</u>.

<sup>&</sup>lt;sup>27</sup> CDC. 2022. *Preventing infections*. Retrieved 1/2/2023.

<sup>&</sup>lt;sup>28</sup> Reuben, A., et al. (2022). The Interplay of Environmental Exposures and Mental Health: Setting an Agenda. Environmental Health Perspectives. <u>https://doi.org/10.1289/EHP9889</u>.

<sup>&</sup>lt;sup>29</sup> Gamble, J.L., et al. (2016). <u>Ch. 9: Populations of concern</u>. In: *The impacts of climate change on human health in the United States: A scientific assessment*. U.S. Global Change Research Program, Washington, DC, p. 255.

<sup>&</sup>lt;sup>30</sup> Nomura, Y., et al. (2023). Prenatal exposure to a natural disaster and early development of psychiatric disorders during the preschool years: stress in pregnancy study. J Child Psychol Psychiatry. <u>https://doi.org/10.1111/jcpp.13698</u>.

<sup>&</sup>lt;sup>31</sup> Sharpe, I., & Davison, C. M. (2022a). Investigating the role of climate-related disasters in the relationship between food insecurity and mental health for youth aged 15–24 in 142 countries. *PLOS Global Public Health*, 2(9), e0000560. <u>https://doi.org/10.1371/journal.pgph.0000560</u>.

#### Part 3 – Priority Actions

This section highlights priority actions OCHP is committed to implementing from FY 2023 to FY 2026. OCHP will implement the following ten priority actions to help integrate climate adaptation into all programs and activities:

- In partnership with the Agency for Toxic Substances and Disease Registry (ATSDR), provide funding and programmatic support to the <u>Pediatric Environmental Health</u> <u>Specialty Units</u> to increase their capacity to provide health advice to parents, schools and communities regarding climate-related environmental conditions that may harm children.
- 2. Increase interagency coordination and collaboration to protect children's environmental health in a changing climate through the <u>President's Task Force (PTF) on Environmental</u> <u>Health Risks and Safety Risks to Children</u>.
- 3. Add climate-related materials in the <u>America's Children and the Environment (ACE)</u> tool to identify trends in climate and environmental justice impacts on the health of children.
- 4. Build on the <u>climate resilient schools program</u> to increase knowledge of the impact of climate change on schools and strategies to make schools more resilient.
- 5. Partner with program offices to conduct, consider and, where appropriate, adopt recommendations from the <u>Children's Health Protection Advisory Committee (CHPAC)</u> <u>Climate Change Letter.</u>
- Address climate/children's health research recommendations from the 2022 <u>NASEM</u> <u>Children's Environmental Health: A Workshop on Future Priorities for Environmental</u> <u>Health Sciences</u>, the EPA's 2023 Children's Health Research Summit, the EPA's 2023 <u>Climate Change and Children's Health and Well-Being in the U.S.</u> report and other sources into OCHP-ORD's research prioritization effort.
- Develop and publish communication products on climate change and children's health (e.g., derivative products of the USGCRP <u>5<sup>th</sup> National Climate Assessment</u>).
- 8. Host interns and mentor youth on the intersection of climate change and children's health and support other organizations with children's environmental health expertise as they develop climate change curricula for children and youth.
- Participate in the American Indian Environmental Office (AIEO)'s quarterly Indigenous Knowledge (IK) and Climate Change discussions and implement at least one action that incorporates IK in climate adaptation actions. OCHP will report actions to AIEO and AIEO will report to OP quarterly on our behalf.

10. Work with the Regions to incorporate, where possible, climate change adaptation and mitigation considerations into the programs that received funding from BIL/IRA. These efforts will support EPA's commitment to modernize its financial assistance programs to encourage climate-resilient investments, with an initial focus on the opportunities afforded by BIL/IRA. They will also help potential applicants/recipients address multiple community priorities within a single federally funded project.

OCHP's proposed actions support the priorities listed in the <u>EPA's FY 2022-2026 Strategic Plan</u>, including the following:

#### **Agency-wide Priority Actions**

- 1. Integrate climate adaptation into EPA programs, policies, rulemaking processes and enforcement activities
- 2. Consult and partner with Tribes, states, territories, local governments, environmental justice organizations, community groups, businesses and other federal agencies to strengthen adaptive capacity and increase the resilience of the nation, with a particular focus on advancing environmental justice
- 3. Implement measures to protect the Agency's workforce, facilities, critical infrastructure, supply chains and procurement processes from the risks posed by climate change
- 4. Measure and evaluate performance
- 5. Identify and address climate adaptation science needs

#### Goals/Strategy:

- Goal 1: Tackle the climate crisis
- Goal 2: Advance environmental justice
- Cross Agency Strategy 2: Consider the health of children and other vulnerable populations

**1.** In partnership with ATSDR, provide funding and programmatic support to the Pediatric Environmental Health Specialty Units to increase their capacity to provide health advice to parents, schools and communities regarding climate-related environmental conditions that may harm children.

Description	The PEHSUs consist of professional health experts who give advice to
	the general public and regional communities with environmental justice

	concerns. The PEHSUs create and distribute webinars, fact sheets, textbook chapters, etc. for educational outreach. OCHP and ATSDR provide core funding and partners with the PEHSUs for main services and projects regarding children's health and climate change impacts. There are many regional offices across the country that provide resources and training to local communities on environmental health. The PEHSUs' regional offices work with community-based groups to reach individual communities in need. OCHP continues to partner with the PEHSUs to increase awareness and knowledge of children's climate- related environmental health among caregivers and health care professions through training modules. Engagements will increase knowledge of climate-related environmental conditions that may harm children, and to increase knowledge of climate-related environmental health services and resources to the general public.
Co-benefits	Environmental justice, public health and providing resources
Agency-wide priority	Priorities 1 and 2; Goals 1 and 2; Cross Agency Strategy 2
Lead organization	OCHP
Timeframe	FY 23 - FY 26
Performance metrics	<ul> <li>Number of engagements (e.g., seminars) on climate-related environmental health topics held for health care professionals</li> <li>Number of publications that raise climate-related environmental health literacy</li> <li>Number of materials that provide information on the impact of climate change on children's environmental health</li> <li>Number of languages outreach materials on the impact of climate change on children's environmental health are translated in</li> </ul>
Resource requirements	Existing resources for programmatic support
Expected outcomes	Increased health prevention and appropriate treatment of child-related conditions associated with environmental exposures.

2. Increase interagency coordination and collaboration to protect children's environmental health in a changing climate through the President's Task Force (PTF) on Environmental Health Risks and Safety Risks to Children.

Description	OCHP will increase interagency strategies to protect children's health through leading the PTF with the Department of Health and Human Services. Actions will be taken to increase resilience and adaptation in schools, day cares and communities. Interdepartmental efforts to protect children's environmental health in a changing climate will be increased through outreach, education and training.
Co-benefits	Public health, interagency collaboration, climate resilience and environmental justice
Agency-wide priority	Priorities 1 and 2; Goals 1 and 2; Cross Agency Strategy 2
Lead organization	ОСНР
Timeframe	FY 23 - FY 26
Performance metrics	<ul> <li>Number of collaborations and partnerships created to increase awareness of climate, emergencies and disasters materials that help protect children in a changing climate</li> <li>Number of users visiting websites</li> </ul>
Resource requirements	Existing resources
Expected outcomes	The <u>President's Task Force on Environmental Health Risks and Safety</u> <u>Risks to Children Subcommittee on Climate, Emergencies and Disasters</u> is developing a post- disaster assessment toolkit to 1) identify Federal programs that can be used to assess the impacts of disasters on children's environmental health and safety, 2) establish a process to coordinate a Federal assessment of children's environmental health and safety impacts, when requested by a state agency, and 3) compile a list of programs that have been deployed in previous disasters to support children's environmental health and safety needs.

to identify trend	Is in climate and environmental justice impacts on the health of children.
Description	<u>America's Children and the Environment (ACE)</u> tool organizes and presents information on indicators of children's environmental health in the United States.
	In 2022, OCHP updated data for 28 of the 37 ACE indicators and added dynamic Qlik graphics to improve visualization and permit enhanced data download for analysis. There has been interest in developing and publishing children's environmental health indicators for new topics, such as climate change.
	Since <u>CHPAC's February 2023 letter</u> outlining recommendations to improve ACE, OCHP has:
	<ul> <li>Responded formally to the letter outlining a plan of action</li> <li>Developed a detailed implementation plan</li> </ul>
	<ul> <li>Focused resources and secured contractors for support</li> <li>Hosted a virtual workshop to inform incorporation of Environmental Justice</li> </ul>
	<ul> <li>considerations</li> <li>Performed initial vetting of proposed new indicators and plans to expand demographics</li> <li>on existing indicators</li> </ul>
	<ul> <li>on existing indicators</li> <li>Created an internal EPA workgroup</li> </ul>
	<ul> <li>Coordinating with other EPA indicators and federal agencies to distinguish ACE from</li> </ul>
	<ul><li>existing resources</li><li>Developed a new communication plan</li></ul>
	OCHP plans to incorporate more environmental and climate justice variables into ACE through the inclusion/expansion of EJ-relevant stratification variables. Although EJ is a large focus of ACE, it is unclear to say, as of now, whether any climate indicators will include an

	EJ/demographic variable. This depends on the data that is currently available.
Co-benefits	Environmental justice, public health, environmental health, improved measurement and tracking
Agency-wide priority	Priorities 2, 4 and 5; Goals 1 and 2; Cross Agency Strategy 2
Lead organization	ОСНР
Timeframe	FY 23 - FY 26
Performance metrics	<ul> <li>Publish new ACE presentations and indicators on climate-related issues for children</li> <li>Track ACE website traffic</li> <li>Select and implement new demographic stratifications to selected biomonitoring indicators</li> <li>Publish new presentation format (story maps) for 3 high priority areas within ACE</li> </ul>
Resource requirements	Existing resources
Expected outcomes	<ul> <li>Climate related materials</li> <li>Demographic stratifications for existing indicators</li> <li>Selection of new indicators for development and new communication resources</li> <li>New presentations that that are more targeted to policy makers and non-technical audiences via use of plain language, elimination of redundancies, implementation of storytelling methods and move of statistical explanations to the latter part of the files</li> <li>Revised analysis text and addition of key findings for all active indicators</li> </ul>

4. Build on the climate resilient schools program to increase knowledge of the impact of climate change on schools and strategies to make schools more resilient.

Description	Develop a <u>Climate Resilient Schools Program</u> to help public school districts in historically underserved communities become more climate resilient. OCHP is providing technical assistance to three communities to bring together public health experts, school personnels, local governments and community-based organizations to identify and analyze climate risks and create a plan to implement retrofits in school buildings so that they are able to remain open safely despite a changing climate. The results of the analysis and technical assistance workshops will enable targeting of infrastructure upgrades, with a focus on advancing health equity, that also support more climate-resilient school buildings.
	During the first phase of the program, the EPA will develop and publish a toolkit that consolidates and updates existing guidance from across the EPA and external partners on best practices for schools to prepare for a changing climate. During the second phase of the program, the EPA will use this toolkit to provide contractor- supported technical assistance for school districts interested in planning and implementing school facility retrofits.
Co-benefits	Environmental justice, public health, providing resources, climate resilience and environmental education
Agency-wide priority	Priorities 2 and 5; Goals 1 and 2; Cross Agency Strategy 2
Lead organization	OCHP
Timeframe	FY 23 - FY 26
Performance metrics	<ul> <li>Number of school districts to which program provides technical assistance</li> <li>Number of implementation actions taken by school districts following the technical assistance</li> <li>Number of infographics, fact sheets and deliverables generated</li> <li>Number of times resources on www.epa.gov/schools are downloaded</li> </ul>

Resource requirements	Existing resources
Expected outcomes	Workbooks for each of the selected school districts.

5. Partner with program offices to conduct, consider and, where appropriate, adopt recommendations from the Children's Health Protection Advisory Committee (CHPAC) Climate Change Letter.

Description	"The <u>Children's Health Protection Advisory Committee</u> (CHPAC) is a body of external researchers, academicians, health care providers, environmentalists, state and tribal government employees, and members of the public who advise the EPA on regulations, research, and communications related to children's health. Members serve voluntarily and the CHPAC meets about two or three times per year to provide specific recommendations to the EPA Administrator."
	The <u>CHPAC's Climate Letter on August 28, 2023</u> provides thoughtful and thorough advice on (1) climate adaptation actions the EPA can pursue that would result in meaningful protection of children from the effects of climate change; (2) actions the EPA can pursue to address climate change vulnerabilities to infrastructure from a children's environmental health risk standpoint; (3) actions or activities the Office of Children's Health Protection should include in its own Climate Adaptation Implementation Plan; and (4) climate justice actions OCHP should consider in that plan and how to address social determinants of health in the selection and implementation of climate adaptation actions.
	Administrator Regan signed the <u>EPA's response</u> to the <u>CHPAC climate</u> <u>letter</u> on August 30, 2024.
Co-benefits	Environmental justice, public health, external collaboration, implementation strategies and planning

Agency-wide priority	Priorities 1, 2, 4 and 5; Goals 1 and 2; Cross Agency Strategy 2
Lead organization	ОСНР
Timeframe	FY 24 – FY 26
Performance metrics	<ul> <li>Written and oral responses to CHPAC Finalization of the OCHP CAIP</li> </ul>
Resource requirements	Existing resources
Expected outcomes	Response letter to CHPAC and implementation of recommendations depending on statutory authority, staff and funding availabilities.

6. Address climate/children's health research recommendations from the 2022 NASEM Children's Environmental Health: A Workshop on Future Priorities for Environmental Health Sciences, the EPA's 2023 Children's Health Research Summit, the EPA's 2023 Climate and Children's Health and Well-Being in the U.S. report and other sources into OCHP-ORD's research prioritization effort.

Description	OCHP will collaborate with ORD's intramural and extramural programs to identify and help close the research gaps relating to children's health and environmental exposures in a changing climate. This could be achieved by collaborating with ORD on intramural research priorities and administering research grants to support vulnerable and disadvantaged communities in a changing climate. There are gaps in the current knowledge of environmental health in children, especially when considering different life stages and the exposure times of each stressor.
Co-benefits	Environmental justice/equity, public health, environmental education, intra-agency collaboration and data communication
Agency-wide priority	Priorities 1, 2 and 5; Goals 1 and 2; Cross Agency Strategy 2

Lead organization	OCHP and ORD
Timeframe	FY 23 – FY 26
Performance metrics	<ul> <li>Number of children's health and climate research grants awarded</li> <li>Number of research products with a children's environmental health and climate focus</li> <li>Number of research translation products that are offered in multiple languages</li> </ul>
Resource requirements	Grant funding through ORD <u>Strategic Research Action Plans</u> (StRAPs) or regional Regional-ORD Applied Research Program (ROAR) products to close the gap in knowledge and additional funding for employees as well as translation of each research paper
Expected outcomes	Increased integration on research activities regarding children's environmental health considerations in a changing climate.

7. Develop and publish communication products on climate change and children's health (e.g., derivative products of the USGCRP 5 <sup>th</sup> National Climate Assessment).			
Description	Develop communication products (e.g., website) on challenges and solutions surrounding climate change and children across a region or different regions in the United States. Special attention will be given to understanding the unique vulnerability of infants, children and adolescents to the impacts of environmental and climate stressors that are covered in the <u>5<sup>th</sup> National Climate Assessment</u> .		
Co-benefits	Environmental justice, climate services, public health and remediation		
Agency-wide Priority	Priorities 1, 2, 4 and 5; Goals 1 and 2; Cross Agency Strategy 2		
Lead organization	ОСНР		
Timeframe	FY 23 – FY 26		
Performance Metrics	Number of times resources are viewed or downloaded		

Resource Requirements	Funding for product production and contractors for development of the product
Expected outcomes	Social media posts and the Kids and Climate Health Zone. The Zone is a collection of stories and information about the hazards of climate stressors across different childhood lifestages and regions in the U.S. and provides information on what people can do to protect their children and families using best available scientific information from the U.S. Global Change Research Program's <u>Fifth National Climate</u> <u>Assessment</u> and other published resources.

8. Host interns and mentor youth on the intersection of climate change and children's health and support other organizations with children's environmental health expertise as they develop climate change curricula for children and youth.

Description	OCHP will mentor interns to provide guidance, support, and feedback on climate projects. Mentors will lead a meaningful experience for the interns to learn more about the adverse health effects that climate change poses on children's environmental health. Projects will be developed with interns to provide a hands-on experience of what it's like to tackle climate change issues as well as learn more about how children are directly impacted by climate change effects.		
Co-benefits	Environmental and climate education, youth engagement/mentorship and public health		
Agency-wide priority	Priorities 2, 3, 5; Goals 1 and 2; Cross Agency Strategy 2		
Lead organization	ОСНР		
Timeframe	FY 23 - 26		
Performance metrics	<ul> <li>Number and quality of project outcomes would be evaluated by the mentor and the number of projects created</li> <li>Number of interns successfully completing their internship program</li> </ul>		

Resource requirements	Dedicated workspace, materials, and funding for interns			
Expected outcomes	Increasing capacity, knowledge and awareness of how a changing climate is impacting children in students.			

9. Participate in AIEO's quarterly Indigenous Knowledge (IK) and Climate Change discussions and implement at least one action that incorporates IK in climate adaptation actions. OCHP will report actions to AIEO and AIEO will report to OP quarterly on our behalf.

Description	Indigenous Knowledge (IK) is a "body of observations, oral and written knowledge, innovations, practices, and beliefs developed by Tribes and indigenous peoples through interaction and experience with the environment" (White House Releases First-of-a-Kind Indigenous Knowledge Guidance for Federal Agencies   CEQ   The White House). OCHP would continue to actively participate in AIEO's quarterly IK and climate change discussions as well as stay committed to integrating insights from indigenous communities into climate adaptation strategies.			
Co-benefits	Community engagement, environmental justice, public health and inclusion of Tribes and Indigenous people			
Agency-wide priority	Priorities 1, 2 and 5; Goals 1 and 2; Cross Agency Strategy 2			
Lead organization	ОСНР			
Timeframe	FY 23 - 26			
Performance metrics	<ul> <li>Number of attendees at the AIEO's quarterly IK and climate change discussions as well as engagement within these discussions</li> <li>Number of IK actions incorporated in climate adaptation action</li> </ul>			

Resource requirements	TBD based on individual events/actions and activities.		
Expected outcomes	Increased considerations of IK in OCHP's programmatic activities and participation in agency IK meetings.		

10. Work with the Regions to incorporate, where possible, climate change adaptation and mitigation considerations into the programs that received funding from BIL/IRA. These efforts will support EPA's commitment to modernize its financial assistance programs to encourage climate-resilient investments, with an initial focus on the opportunities afforded by BIL/IRA. They will also help potential applicants/recipients address multiple community priorities within a single federally funded project.

Description	OCHP staff will work with regional colleagues to increase awareness and disseminate funding opportunities from the Bipartisan infrastructure Law/Inflation Reduction Act (BIL/IRA) to address children's environmental health vulnerabilities.		
Co-benefits	Environmental justice, public health, federal engagement and funds tracking		
Agency-wide priority	Priorities 1, 2, 3 and 5; Goals 1 and 2; Cross Agency Strategy 2		
Lead organization	ОСНР		
Timeframe	FY 23 - 26		
Performance metrics	<ul> <li>Number of training materials (e.g., 1-pager, slide deck) to communicate how projects funded by BIL/IRA could protect children during a changing climate</li> <li>Number of requests for applications children's health experts work on to educate grant project officers on the importance of children's health needs in project planning</li> </ul>		
Resource requirements	Funding for travel and implementation		
Expected outcomes	Increased considerations of children's environmental health in funding efforts		

#### Part 4 – Training Plan

OCHP will develop a training plan by leveraging available resources (e.g., Fifth National Climate Assessment, Office of Policy's Climate Adaptation 101) to enhance EPA staff knowledge and awareness of climate impacts and adaptation on children. Trainings will focus on challenges presented by climate change to the agency's mission, emphasizing children's unique vulnerabilities during different life stages to the impacts of climate change on their health. OCHP will implement various methods, including webpages, webinars, self-guided virtual training and discussions, to support new hires and ensure children's health champion in each EPA office could serve as a liaison for children's health and climate issues.

## Climate Adaptation Training Plan

Office of Children's Health and Protection Climate Adaptation Training Plan			
Training Name	Developed	Delivered	Audience for training and
			training medium
Climate	Ongoing	ТВА	EPA staff through online
Adaptation 101			training, when training is
produced by the			available
Office of Policy			
Kids and Climate	Winter 2023 to	Fall 2024	The public, such as practitioners,
Health Zone	Summer 2024		teachers and families. The
			training will be available by form
			of interactive websites with
			climate health resources and
			information derived from the
			NCA5.
Meetings and	Ongoing	Ongoing	EPA offices through scheduled
Discussions:			meetings with an OCHP staff
Childhood			member
Vulnerabilities in			
a Changing			
Climate			

		0 0
Target	FY 25 Target	FY 26 Target
shed to EPA	Public	Mentions on other site
ite;	engagement,	pages, references to site, continued
	Target shed to EPA ite;	TargetFY 25 Targetshed to EPAPublicite;engagement,

	communication plan	citations of site,	page traffic and external
	developed for further	consistent	engagement regarding site
	public engagement	growth in web	content
		traffic over time	
Meetings and	Some OCHP partner	Many major	Most major offices receive
Discussions:	offices receive	OCHP partner	personalized training session in
Childhood	personalized training	offices receive	the form of a meeting
Vulnerabilities in	session in the form of a	personalized	
a Changing	meeting	training session	
Climate		in the form of a	
		meeting	

### Other important training metrics:

Through OCHP trainings OCHP hopes to see these shifts:

- 1. Shift in how employees talk about children's climate vulnerabilities and incorporate topic knowledge into their work
- 2. Children's climate vulnerability information incorporated in EPA products that may not otherwise have a children's climate health focus
- 3. Increased knowledge of children's climate vulnerability by employees
  - a. Offices reaching out to OCHP for information
  - b. Offices talking about OCHP climate products
  - c. OCHP products in the news/media leading to further public engagement
  - d. Marketing of products through office EPA channels and having positive engagement
  - e. Administrator or deputy administrator promotes product

#### Part 5 – Science Needs

The EPA conducts research on children's environmental health to inform public health decisions, advance scientific understanding of potential early life susceptibility to environmental stressors and inform community efforts that create sustainable and healthy environments protective of children's health. OCHP, working with ORD and other program and regional offices, is promoting research and collaboration to increase understanding of the relationship between climate change, the environment and children's environmental health.

ORD is integrating climate and children's health into its National Research Programs, looking across multiple climate hazards and their interactions, with several efforts focused on children's and maternal and paternal health. ORD continues to advance solutions driven research approaches, working with communities both to address climate-driven stressors – from wildfire smoke to coastal resiliency – and to identify solutions. OCHP coordinates with ORD on the <u>Air</u>, <u>Climate</u>, and <u>Energy (ACE) research program</u> and other ORD research programs as appropriate,

to explore the impacts of climate change on children's health. OCHP participates in ACE Climate Monthly Meetings and have regular conversations with ORD research programs on their priorities and how they can incorporate children's health. Additionally, OCHP participates in ACE Research Area (RA) 4: Human Health Impacts of Air Pollution and Climate Change. Research needs identified in RA 4 include the public health impacts of air pollution, excess heat and humidity, increased aeroallergens, infectious disease vectors, water-borne and enteric diseases, and stress associated with extreme weather events.<sup>32</sup> OCHP also works with OAR and ORD to address children's exposure and vulnerabilities to air pollution, particularly increasing groundlevel ozone and particulate matter. Addressing these pollutants may results in co-benefits for climate change.

In August 2022, OCHP sponsored a <u>NASEM Children's Environmental Health: A Workshop on</u> <u>Future Priorities for Environmental Health Sciences</u> to discuss the state of science and knowledge about children's environmental health. Workshop proceedings were published in March 2023. In April 2023, OCHP and ORD convened an internal research summit to strategize priorities and next steps in follow-up to the NASEM Workshop. The EPA intends to publish a manuscript capturing the topics and outcomes of the Summit in FY 25. OCHP will use all of these inputs to inform engagement in research planning for ORD's next research funding cycle.

OCHP sought CHPAC's recommendations on how the Agency can proactively consider children's environmental health in climate adaptation work throughout all programs, policies, rules, and operations. The CHPAC letter to this climate change charge was received in August 2023 and a response was transmitted in August 2024.

As noted in the response letter, EPA's <u>Science to Achieve Results</u> (STAR) program is ORD's primary competitive, peer-reviewed extramural grant program that has awarded over 4,100 grants nationwide since 1995. STAR leverages the scientific and engineering expertise of academic and non-profit institutions to conduct high priority environmental and public health research. The program funds research on environmental and public health effects of air pollution, climate change, water quality and quantity, hazardous waste, toxic substances, pesticides, cumulative impacts, environmental justice and more.

The EPA recently awarded \$21.4 million in STAR grants for <u>Cumulative Health Impacts at the</u> <u>Intersection of Climate Change, Environmental Justice, and Vulnerable Populations/Lifestages:</u> <u>Community-Based Research for Solutions</u>. Three of these <u>STAR grants</u> specifically address cumulative health impacts of climate change to children's health. This community-based EPA-

<sup>&</sup>lt;sup>32</sup> U.S. EPA. 2022. <u>Air, Climate, and Energy Strategic Research Action Plan Fiscal Years 2023-2026</u>. EPA/600/R-22/234.

funded research will investigate how climate change may compound potentially adverse environmental conditions and stressors in underserved communities, recognizing that children may be more susceptible to the environmental and health impacts of climate change. The work will look at <u>pediatric susceptibility in New York (Drexel University</u>); leverage <u>a public school</u> <u>district and schoolyard spaces to confront climate health inequities in a low-income, urban</u> <u>community of color (Medical College of Wisconsin)</u>; and study <u>early-life vulnerability to climatedriven wildfire events in underserved populations (University of California, Davis). ORD convened all grantees to review and discuss the research advancements on climate justice, children's health and cumulative health impacts.</u>

Furthermore, the Wildfire Study to Advance Science Partnerships for Indoor Reductions of Smoke Exposures (<u>ASPIRE</u>) is a multipart study including field and laboratory work and using low-cost air sensors to measure indoor and outdoor air quality during smoke events, including in commercial buildings such as daycare facilities. This body of work has resulted in a range of tools for communities from <u>air-sensor loans</u>, to evaluation and instructions for <u>Do-It-Yourself</u> (<u>DIY</u>) air cleaners.

ORD also served on an ASHRAE committee to develop planning guidance for <u>commercial and</u> <u>school buildings</u> to intervene and reduce exposure, including for children, during wildfire smoke events. EPA researchers are coordinating with partners and the local community of Crisfield, Maryland, to <u>co-produce research</u> on strategies to address tidal and storm flooding issues and other community resilience concerns. Research and educational programming will support community capacity to implement strategies. Additionally, in response to a request from community partners to have youth participate in the Crisfield Resilience Academy training activities, recruitment will be open to anyone over the age of 15 from Crisfield and the surrounding area.

#### Conclusion

The OCHP Climate Change Adaptation Implementation Plan demonstrates OCHP's commitment to promote the scientific foundation for the EPA to address the challenges of protecting children in a changing climate. The Priority Actions described in this Plan build upon ongoing efforts in OCHP and the Program and Regional Offices to enhance and expand the partnerships that are fundamental components of EPA's science-based climate adaptation actions. OCHP is engaging with its partners in the Program and Regional Offices on a continual basis to ensure that the Agency's research investments address the priority climate adaptation science needs to protect children's environmental health.