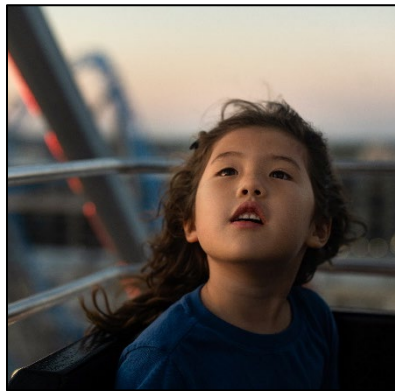


# Children's Environmental Health Post-Disaster Assessment Toolkit 2.0



**A guide to assessing environmental health and safety issues affecting the places children live, play, and learn after a disaster**

**July 9, 2025**

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## Acronym List

AAP	American Academy of Pediatrics
AASA	American Association of School Administrators
ACF	Administration for Children and Families
AHA	American Hospital Association
ASPR	Administration for Strategic Preparedness and Response
ASTHO	Association of State and Territorial Health Officials
ATSDR	Agency for Toxic Substances and Disease Registry
BenMAP-CE	Benefits Mapping and Analysis Program - Community Edition
BIA	Bureau of Indian Affairs
BIE	Bureau of Indian Education
CASA	Court Appointed Special Advocates
CCAoA	Child Care Aware of America
CCDF	Child Care Development Fund
CCR&R	Child Care Resource and Referral
CCSSO	Council of Chief State School Officers
CDC	Centers for Disease Control and Prevention
CEHN	Children's Environmental Health Network
CMS	Centers for Medicaid and Medicare Services
CUSEC	Central United States Earthquake Consortium
CWLA	Child Welfare League of America
DOJ	United States Department of Justice
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FQHC	Federally Qualified Health Center
GIS	Geographic Information System
HEHS	Health, Education, and Human Services
HHS	United States Department of Health and Human Services
IHS	Indian Health Service
HRSA	Health Resources and Services Administration
HUD	United States Department of Housing and Urban Development
HVAC	Heating, ventilation, and air conditioning
IAQ	Indoor Air Quality
MCH	Maternal and Child Health
NAA	National AfterSchool Association
NACCHO	National Association of County and City Health Officials
NACHC	National Association of Community Health Centers
NACSA	National Association of Charter School Authorizers
NAEYC	National Association for the Education of Young Children
NASA	National Aeronautics and Space Administration
NASBE	National Association of State Boards of Education
NASDSE	National Association of State Directors of Special Education
NCEH	National Center for Environmental Health

NGO	Non-governmental organization
NICCA	National Indian Child Care Association
NIEER	National Institute for Early Education Research
NOAA	National Oceanic and Atmospheric Administration
NOx	Nitrous Oxide
NSBA	National School Boards Association
OASH	Office of the Assistant Secretary for Health
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PEHSU	Pediatric Environmental Health Specialty Units
PSA	Public Service Announcement
PSS	Private School Universe Survey
PTA	Parent Teacher Association
RSF	Recovery Support Function
SAMHSA	Substance Abuse and Mental Health Services Administration
SCED	Subcommittee on Children in Emergencies and Disasters
SPRC	Suicide Prevention Resource Center
STTL	State, Tribal, Territorial, and Local
SVI	Social Vulnerability Index
TRACIE	Technical Resources, Assistance Center, and Information Exchange
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VOC	Volatile Organic Compound

## Overview

Under the [President's Task Force on Environmental Health Risks and Safety Risks to Children](#), the [Subcommittee on Children in Emergencies and Disasters](#) (SCED) identified the need for a tool to help communities protect children's health after disasters. The Children's Environmental Health Post-Disaster Assessment Toolkit was developed with input from agency representatives within the SCED and written, tested, and published by the [Administration for Strategic Preparedness and Response](#). This tool guides a systematic process for assessing needs to protect children from hazardous environmental exposures after a disaster.

## Purpose

Wildfires, hurricanes, flooding, and other disaster events can create serious environmental hazards that harm human health. Children face greater risks from these hazards because of how their bodies develop, how they behave, and their dependence on adults for protection. Emergency management and environmental health professionals at all levels of government can benefit from using a consistent approach to identify and address the environmental risks children face after a disaster.

This toolkit is designed around four key outcomes to help reduce environmental health risks for children. These outcomes guide ways to engage with communities and reduce risks of exposure for children after a disaster.

The four outcomes include:

- 1) Environmental hazards caused by disaster(s) that pose risks to children are identified so they can be addressed in homes and residential settings.
- 2) Environmental hazards in places where children learn, attend childcare, pray, play, and receive services are identified so they can be reduced or eliminated across community spaces.
- 3) Public health and clinical services have the information and resources needed to respond to the effects of environmental hazards on children's health.
- 4) Clear, accurate, appropriate, and actionable information is available to parents and community members entrusted with the care of children so they can help keep children safe.

This toolkit can be used at any time after a disaster or emergency, whether it's days, weeks, months, or even years later, based on the needs and judgment of state, local, tribal, and territorial partners.

## Considerations

### *Audience*

Public health or emergency management staff deployed in support of disaster recovery missions

### *Partners*

This toolkit describes a process that depends on strong partnerships at every level. Disaster recovery is locally led, state-managed, and federally supported. Non-governmental organizations and the private sector also provide important knowledge, services, and resources.

These partnerships are essential for understanding children's needs, coordinating recovery actions, and making sure efforts are aligned across agencies, systems, and communities. Key partners may include:

- State agencies
- Tribal and territorial governments
- Local government
- Federal agencies
- School systems
- Health care providers and networks
- Community organizations
- Academic institutions
- Private sector organizations

Consider developing a partner engagement strategy to help guide collaboration and communication from the start of the recovery process.

### ***Assumptions***

Children's Environmental Health is a broad and growing field. Extreme weather events and other disasters have made environmental hazards more dangerous for children. These growing risks highlight the need for stronger coordination between federal and state partners to protect children's health and safety. There is a need for standard tools and processes that enable emergency managers and public health partners to consistently gather and apply information about the environmental risks children face after a disaster.

### ***Strengths***

This toolkit was developed using best practices, lessons from past disasters, and input from multiple agencies working together. Through that experience, we learned what matters most when protecting children from environmental hazards. As a result, the toolkit has several strengths:

- Helps disaster responders and communities work together to identify and reduce environmental risks to children
- Encourages clear, consistent conversations about children's environmental health after disasters
- Brings attention to gaps in knowledge about how to protect children from environmental hazards
- Supports and strengthens other disaster assessments and tools with a focus on children's health

### ***Limitations***

No process is perfect, and this toolkit will continue to be improved over time based on feedback and real-world use. While it is a helpful starting point, we recognize a few limitations:

- This assessment is meant to be used by people who may not have a background in environmental health. Because of this, it focuses on collecting qualitative information about concerns and issues.
- Identifying gaps or needs related to children's environmental health does not mean that resources to solve those problems will always be available.

- This toolkit does not offer formal recommendations or solutions to address the gaps or needs identified during the process.

### ***Responding to Critical or Emergent Issues***

While the Children's Environmental Health Post-Disaster Assessment is not designed to serve as an emergency response tool, team members may occasionally uncover a critical, emergent, or immediate need during their work. These issues may include imminent threats to health and safety, serious environmental contamination, or the discovery of children living in unsafe conditions. Situations like these require prompt attention and escalation to prevent them from becoming more serious.

If an urgent concern is identified, the Assessment Team should pause routine activities and notify the designated incident recovery lead or federal Recovery Support Function (RSF) coordinator. Teams should be ready to clearly explain the nature of the concern, who is at risk (especially children), and any supporting details that may help coordinate a timely response. It may be necessary to engage the appropriate emergency management, environmental health, or child welfare agencies. When uncertain, teams should elevate the concern for further review so that the issue is handled safely and appropriately.

## Children’s Environmental Health Post-Disaster Assessment Process

Disasters and emergencies can be very stressful for children and their families. They may damage the places where children live, learn, play, and pray. Disaster impacts on these places can increase stress for children and harm their health, safety, and support networks. Identifying issues that may affect children during and after a disaster requires organizations to anticipate environmental health and safety risks before they arise. It also requires thinking ahead about protective steps that can be taken through emergency planning to support children’s health and safety.

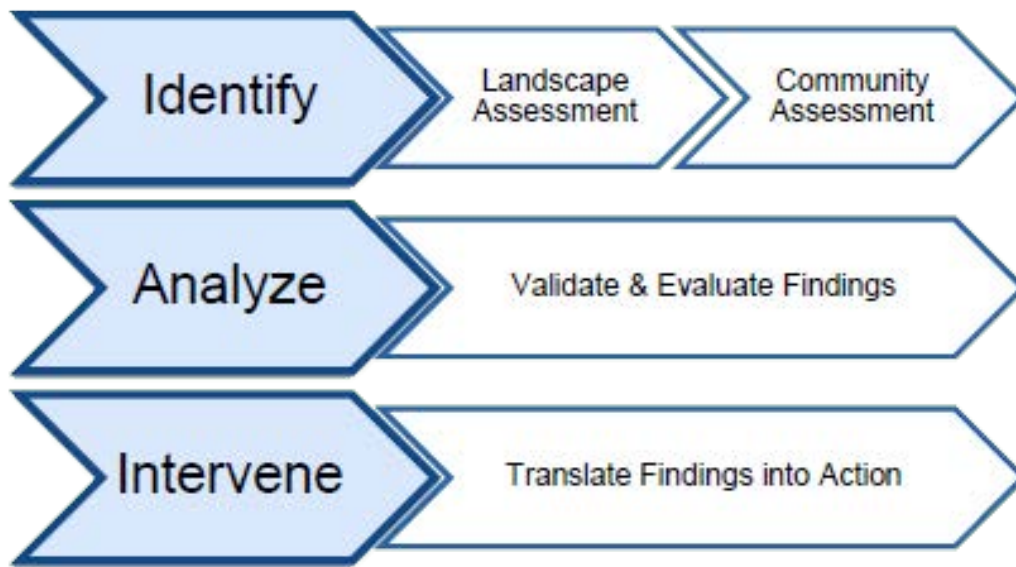


Figure 1: Children's Environmental Health Post-Disaster Assessment Process

### Identify

The Identify phase consists of two main activities. The Landscape Assessment uses data that can be gathered via open source or government databases and should be completed as the first step in the process because it informs planning for future steps. The Community Assessment is designed to engage community child-serving organizations to identify actual gaps, concerns, needs, and challenges related to children’s environmental health. These engagements typically happen in person, at the places where children receive services, when possible.

### Analyze

During the Analyze phase, the team reviews what was learned during the Identify phase and carefully validates and evaluates the data. The findings are incorporated into an Issue Report that highlights the concerns that matter most to the community and those that could have the biggest impact on long-term recovery.

### Intervene

The Intervene phase begins when the Issue Report is delivered to the state, tribal, or territorial recovery lead, or to the federal Health, Education, and Human Services (HEHS) Recovery Coordinator. While this guidance primarily focuses on the assessment process covered in the Identify and Analyze phases, it also includes some information about the Intervene phase to provide helpful context.

# Identify

## Description

The Identify phase includes two key activities: the Landscape Assessment and the Community Assessment. The Landscape Assessment uses existing data sources to build an initial understanding of children’s environmental health conditions. The Community Assessment involves meeting in-person with child-serving organizations to identify actual needs, concerns, and gaps in services.

## Guidance

The Identify phase is the first step in understanding how a disaster has affected children’s environmental health. It helps teams gather important information before launching or expanding recovery efforts. During this phase, it’s important to collect accurate information, understand the local community’s needs, and consider factors like geography, culture, and income that can affect children’s health after a disaster. Teams should also think about who might not be represented in the data, especially communities that are often overlooked or harder to reach.

This phase matters because it lays the groundwork for a strong, fair recovery. The Landscape Assessment gives a broad overview using existing data sources. The Community Assessment adds current insights by talking directly with local organizations that support children. Together, these activities help identify what children and families need most, so resources can be focused where they’re needed the most. This helps ensure recovery plans are based on both facts and lived experiences.

## Landscape Assessment

The Landscape Assessment is meant to be completed either before deployment or as soon as the team is assigned to the mission, so responders can quickly understand the conditions and risks facing children in the affected area.

## Instructions

The Landscape Assessment gives recovery teams a solid understanding of the affected community’s demographics, children’s programs, and environmental health context. This pre-deployment report has two main goals: (1) to help recovery personnel prepare for effective, focused engagement with local stakeholders, and (2) to assist the recovery leadership team in identifying priority children’s programs and prioritizing interviews about the most relevant environmental health concerns.

The Landscape Assessment includes three sections:

- **Community Demographics:** Provides an overview of the community’s population and key characteristics.
- **Children’s Programs:** Lists programs that provide care and services to children in the community.
- **Post-Disaster Environmental Health Scan:** Reviews common health and safety issues affecting children, based on open media and open-source data.

For more detailed instructions, refer to **Appendix A: Landscape Assessment Instructions**.

For an illustrative example, see **Appendix B: Landscape Assessment Example**.

## Community Assessment

The Community Assessment builds on the information collected during the Landscape Assessment. It involves meeting with local partners who provide services to children and having structured conversations to better understand their real concerns. These discussions help recovery teams plan actions and services that can reduce long-term harm to children after a disaster.

### *Instructions*

- **Review the Disaster Reference Guide**

The **Disaster Reference Guide (Appendix C)** provides educational information on how the disaster may lead to environmental hazards that affect children. Reviewing this guide helps teams identify which hazards are most relevant to the affected area.

- **Select Children’s Programs to Engage**

Use the Landscape Assessment to identify which children’s programs may be most important to engage. The **Children’s Programs At-a-Glance (Appendix D)** offers definitions, potential partners, suggested methods of engagement, and planning considerations. Decisions about which programs to engage and how to proceed should be made in coordination with the recovery lead.

- **Identify Relevant Environmental Hazards**

The Landscape Assessment and Disaster Reference Guide provide information to help determine which environmental hazards are most likely to impact children in the area. The corresponding **Environmental Hazards Summary Sheets (Appendix E)** include educational resources, keywords, discussion prompts, and sample interventions that may help support planning.

- **Engage Program Partners and Document Key Issues**

Engage community-based children’s program partners in structured discussions about environmental health concerns. Collect notes from these conversations to identify themes, validate findings, and inform the development of the **Issue Report (Appendix F)**, which is described in the Analyze section.

### *Documentation*

When gathering notes during conversations with children’s program partners, it’s important to capture key details that will help inform the recovery process. These notes should provide a clear picture of the challenges faced by each program, the actions they have taken, and the support they may need. Collecting specific information helps ensure that all concerns are understood and accurately represented as the recovery team moves forward. Below are suggested details to include in the notes to help make them as useful and actionable as possible.

- **Date of Conversation:** When the discussion took place
- **Children's Program Name and Type:** Who was engaged (e.g., Head Start, school, afterschool program)
- **Participants:** Names and roles of people involved in the conversation
- **Identified Issues or Concerns:** Specific environmental health or safety challenges raised
- **Context and Supporting Details:** How the issue affects children, when it started, and what's making it worse
- **Actions Taken:** What the program has already tried to do in response
- **Barriers or Gaps:** What's preventing them from fully addressing the issue
- **Desired Support:** What help or resources they say would make a difference
- **Quotes or Stories:** Direct quotes or short anecdotes that highlight how the issue impacts children or families
- **Additional Observations:** Any other insights, patterns, or emotional tone worth noting

# Analyze

## Description

The Analyze phase focuses on reviewing and making sense of the information gathered during the Identify phase. The team validates reported concerns using available data and evaluates their potential impact on children's health and recovery. Key findings are summarized in an Issue Report, highlighting concerns that matter most to the community and pose the greatest risk for long-term recovery.

## Guidance

The Analyze phase is crucial because it helps ensure that the data gathered during the Identify phase is accurately understood and used to inform the next steps in recovery planning. A key consideration is the validation of the findings. This may involve cross-referencing community concerns with existing scientific data to verify whether a reported issue is supported by evidence. However, even if the scientific data doesn't fully support a concern, it's important to recognize when multiple community members raise similar issues, as these repeated themes can point to significant needs. The team must also evaluate the potential consequences of each concern, weighing both the likelihood and severity of the impact on children's health and long-term recovery.

The purpose of this phase is to prioritize issues that could have the most significant consequences for public health and recovery efforts. By validating data and evaluating potential risks, the team ensures that recovery resources and interventions are focused on the most pressing issues. This thoughtful analysis builds a more informed, transparent foundation for recovery planning and helps guide decision-making that will best support affected communities over the long term.

## Validation & Evaluation

Look for patterns in the Landscape and Community Assessment data, such as common concerns raised by different people, and compare them with scientific reports or trusted sources to help validate the findings. Evaluation involves weighing both the likelihood of each concern and the potential severity of its impact on children's health and long-term recovery.

## Instructions

The following instructions are intended as general guidance for validating and evaluating the findings. These tips are designed to provide flexibility in how the process is approached, recognizing that each situation may require different considerations and adjustments based on local context, available resources, and emerging information.

- **Involve the Recovery Lead**

Collaborate with the designated recovery lead throughout the validation and evaluation process. Their insights will help ensure that the findings align with broader recovery goals and priorities.

- **Consider the Local Government Structure**

Be mindful of the local government structures, decision-making authority, and history when validating and evaluating concerns. Local dynamics may influence both the perception of certain issues and the available resources for addressing them.

- **Focus on Disaster-Related Effects**

Ensure that the concerns identified are directly tied to the disaster's impact on children. Avoid conflating pre-existing issues with those caused or exacerbated by the disaster, as the latter will be the priority for recovery efforts.

- **Identify Patterns and Prioritize**

Look for recurring themes across interviews and data points. Validate concerns by cross-checking with available scientific data but be open to the importance of community-reported issues, even if they aren't fully supported by existing research.

- **Evaluate Severity and Likelihood**

Assess each concern by considering how likely it is to affect children's health and the potential long-term consequences. Prioritize issues that pose the highest risk to public health and recovery, focusing on both immediate and future impacts.

- **Get More Information**

Consider reaching out to new or different partners who may have more information about a concern that isn't well defined, such as technical experts or frontline staff. Use existing networks or ask recovery leadership to help make connections if needed.

- **Stay Flexible and Adaptable**

Given the dynamic nature of recovery efforts, be ready to adjust priorities as new information becomes available or as the situation evolves. The focus should remain on the immediate health and safety of children while considering long-term recovery.

### ***Discussion Questions***

If desired, use the following questions to guide the validation and evaluation process. Consider hosting a team meeting to review key findings, compare perspectives, and discuss priorities before developing the Issue Report.

- What concerns came up most often across different programs or partners? Are these concerns shared across sectors or communities?
- Do the reported concerns align with known environmental hazards from this type of disaster? What scientific or technical resources can help confirm or clarify these issues?
- Which concerns appear to be caused or worsened by the disaster, rather than pre-existing? How can we separate long-standing issues from new or disaster-related ones?
- What do we know about how each concern could affect children's health and safety? Are there particular age groups or populations who may be more at risk?
- What is the potential severity of this issue if left unaddressed? Could it lead to long-term health or developmental impacts?

- How likely is it that this concern will continue or worsen over time? Could seasonal changes or delayed recovery make the problem worse?
- Are there concerns that may not be strongly supported by data, but are repeatedly raised by trusted community partners? What weight should be given to concerns based on community perception or fear?
- What is feasible to address in the short term, and what may require long-term planning? How can we document concerns that aren't actionable now but need to stay on the radar?
- How might community leadership, cultural, or organizational dynamics influence how we interpret or prioritize these findings? Are there sensitive issues we need to navigate with care?
- What information do we still need to better understand or address a concern? Who else should we talk to, or what sources should we consult?

## Issue Report

### *Instructions*

The Issue Report captures the major environmental health and safety concerns affecting children and children's programs following a disaster. This post-engagement report has two main goals: (1) to summarize key issues identified during the Assessment mission, and (2) to support strategic planning, coordination, and recovery decision-making by local, state, tribal, territorial, and federal partners.

The Issue Report includes the following required sections:

- **Overview:** Summarizes the disaster and outlines the scope of the assessment mission.
- **Partners:** Lists agencies and organizations that participated in or contributed to the assessment.
- **Key Environmental Health & Safety Concerns:** Highlights priority concerns identified during the Assessment, with subheadings and supporting bullet points.
- **Engagement Methods:** Describes how information was gathered, including community outreach and partner coordination.
- **Completed or Ongoing Mitigation Activities:** Notes any efforts already underway to address the concerns identified.

The report may also include optional sections such as schedule, community voices, photographs, data validation sources, or limitations and gaps. These can help provide additional context and clarity but are not required.

For more detailed guidance, refer to **Appendix F: Issue Report Instructions**.

For an illustrative example, see **Appendix G: Issue Report Example**.

## Intervene

### Description

The Intervene phase begins with the delivery of the Issue Report to the state, tribal, or territorial recovery team or the federal Health, Education, and Human Services (HEHS) Recovery Coordinator. In many cases, the assessment team will conclude its role at this stage. This phase focuses on action: translating findings into recovery planning and implementation. Consistent with the National Disaster Recovery Framework, disaster recovery is locally executed, state-managed, and federally supported.

### Guidance

This is where findings are translated into planning, coordination, and action. Based on the results of the assessments, recovery partners work together to address the most pressing environmental health concerns affecting children. This phase supports the integration of children's environmental health into broader recovery strategies, ensuring that community-identified priorities are considered as decisions are made. It also provides an opportunity to reinforce collaboration between local, state, tribal, territorial, and federal recovery partners.

Several considerations are important during this phase. Resources may be limited, and funding is not always available to directly support local priorities. Recovery teams must be prepared to work within these constraints, seeking alignment with existing programs, leveraging available tools, and identifying creative, community-driven approaches to address concerns. Maintaining flexibility and a focus on what is feasible in the short and long term can help ensure progress, even when ideal solutions are out of reach. Open communication and realistic planning will help recovery efforts remain grounded and focused on supporting children and families through lasting, locally led solutions.

### Flexible Approaches

There is no one-size-fits-all approach to recovery, and each community will have unique needs, strengths, and priorities. The following types of interventions may be considered to support children's programs and address environmental health concerns identified through the assessment process. These activities can be tailored to fit local context, capacity, and available resources:

- **Build up local strength**

Help communities grow their ability to meet needs now and in the future. This could mean hiring staff, improving buildings, or supporting local planning efforts.

- **Bring partners together**

Strengthen relationships between groups and agencies. Recovery goes further when schools, health departments, emergency managers, and others work as a team.

- **Connect peers with peers**

Link up people facing similar recovery challenges. Sharing lessons learned can save time, spark new ideas, and build confidence.

- **Tap into expert advice**

Invite people with special knowledge to help solve tough problems, especially when health or safety risks require specific expertise.

- **Offer hands-on support**

Provide focused help to solve a particular problem. This could mean working through a plan, figuring out next steps, or offering tools and templates.

- **Share skills and teach what works**

Create learning opportunities that help people take action. Training sessions, resource guides, or live demonstrations can help build proficiency across the community.

Additional support may also come from philanthropic organizations, which occasionally offer flexible funding or technical support aligned with recovery priorities. Wherever possible, involve families, caregivers, and community members in the design and implementation of recovery efforts. Many communities express a strong desire to play an active role in shaping their future; centering their voices helps ensure that interventions are culturally grounded, outcome-driven, and sustainable.

## **Close-Out & Record Keeping**

### **Description**

It is crucial to keep thorough documentation of the entire assessment and recovery process to ensure transparency, accountability, and consistency. Proper record-keeping not only supports informed decision-making throughout the recovery efforts, but it also helps track progress and provides a historical record of actions taken. Additionally, saving records in accordance with the jurisdiction's specific requirements ensures compliance with legal, regulatory, and funding guidelines. This documentation may also be valuable for future recovery planning, reporting, and potential audits. By maintaining accurate and organized records, jurisdictions can strengthen their recovery efforts and demonstrate their commitment to long-term resilience and accountability.

# APPENDIX A: LANDSCAPE ASSESSMENT INSTRUCTIONS

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The landscape assessment provides a foundational understanding of the affected community's demographics, children's programs, and environmental health context. This report serves two key purposes: (1) to equip recovery personnel for informed, targeted engagement with local stakeholders, and (2) to support the federal recovery leadership team identify priority children's programs for engagement and focus interviews on the most relevant environmental health concerns.

## Community Demographics

Community demographic data help frame the overall landscape of children's needs and are essential for identifying populations that may require targeted outreach. Teams should begin by reviewing existing reports such as the ASPR Health, Education, and Human Services Recovery Support Function (HEHS-RSF) Mission Placemat or FEMA's Community Assistance Tool. These sources often contain synthesized demographic and vulnerability data relevant to disaster recovery, but generally capture pre-disaster, moment-in-time information about the community.

If additional detail or local context is needed, teams should consult open-source datasets such as:

- The [U.S. Census Bureau's data.census.gov](https://data.census.gov) for population breakdowns by age, race/ethnicity, language, income, housing, and more
- State or county-level Geographic Information System (GIS) portals for maps and layered data (e.g., population density, school locations, broadband access)
- The [CDC's Social Vulnerability Index \(SVI\)](#) and [PLACES Project](#) for social determinants of health
- Local government websites or planning documents for contextual reports on growth trends, infrastructure, or service gaps

Demographic data should focus on characteristics relevant to children and youth, such as:

- Total population and number/percent of children (0–17)
- Racial, ethnic, and linguistic diversity
- Household income and child poverty rates
- Housing stability and access to transportation
- Educational enrollment and special populations (e.g., students with disabilities, English learners)

## Children's Programs

To inform recovery planning and guide future assessment activities, develop a preliminary inventory of children's programs in the affected community. In coordination with state and federal recovery leadership, determine which program types are most relevant to the current mission.

This section provides a high-level census of children's programs across five key service areas:

- Child Care
- Education
- Health
- Protection & Juvenile Justice
- Youth & Community Services

Where available, include quantitative information such as the number of providers, enrollment or service counts, and geographic coverage. This data can help prioritize site visits, identify critical populations, and support recovery planning.

More detailed guidance, including definitions and key considerations for each program area, is available on the linked Children’s Program Resource Pages.

<b>Types of children’s programs</b>	<b>Possible data sources</b>
<p><b>Child Care</b></p> <ul style="list-style-type: none"> <li>Center-based child care</li> <li>Faith-based child care</li> <li>Home-based child care</li> <li>Informal child care</li> <li>Specialty child care</li> </ul>	<ul style="list-style-type: none"> <li>• State Child Care Licensing Agency</li> <li>• State Child Care Resource and Referral (CCR&amp;R) Networks</li> <li>• Local Early Childhood Coalitions or Planning Councils</li> <li>• <a href="#">Child Care Aware of America</a></li> </ul>
<p><b>Education:</b></p> <ul style="list-style-type: none"> <li>Boarding schools</li> <li>Charter schools</li> <li>Head Start/Early Head Start</li> <li>Private schools</li> <li>Public schools</li> </ul>	<ul style="list-style-type: none"> <li>• State Department of Education Websites</li> <li>• <a href="#">National Center for Education Statistics</a></li> <li>• <a href="#">NCES Private School Universe Survey (PSS)</a></li> <li>• <a href="#">National Alliance for Public Charter Schools</a></li> <li>• <a href="#">National Institute for Early Education Research (NIEER)</a></li> <li>• ACF – <a href="#">Office of Head Start</a></li> </ul>
<p><b>Health:</b></p> <ul style="list-style-type: none"> <li>Advanced/Critical Care with a Pediatric Capability</li> <li>Health Centers and Clinics, including Federally Qualified Health Centers and Rural Health Centers</li> <li>Maternal &amp; Child Health Programs</li> <li>Pediatric Disaster Network</li> <li>Pediatric Environmental Health Specialty Unit</li> <li>Pediatric Hospital</li> <li>Specialty Care Providers</li> <li>Suicide Prevention &amp; Crisis Intervention</li> <li>Youth and Young Adult Behavioral Health or Substance Use Disorder Facilities</li> </ul>	<ul style="list-style-type: none"> <li>• State Department of Health – Hospital Licensing or Facility Registry</li> <li>• American Hospital Association (AHA) – <a href="#">State Hospital Associations</a></li> <li>• HRSA – <a href="#">Find a Health Center</a></li> <li>• HRSA – <a href="#">Maternal &amp; Child Health (State Title V Programs)</a></li> <li>• <a href="#">Emergency Medical Services for Children – State Programs</a></li> <li>• <a href="#">Pediatric Environmental Health Specialty Units</a></li> <li>• <a href="#">Children’s Hospital Association</a></li> <li>• <a href="#">Behavioral Health or Substance Use Disorder Treatment Locator</a></li> </ul>
<p><b>Justice &amp; Protection:</b></p> <ul style="list-style-type: none"> <li>Child Protective Services</li> <li>Foster Care</li> <li>Juvenile Justice</li> <li>Teen/Youth Shelters</li> </ul>	<ul style="list-style-type: none"> <li>• State Department of Child and Family Services or equivalent</li> <li>• ACF – <a href="#">Child Welfare Data</a></li> <li>• ACF – <a href="#">Runaway and Homeless Youth Services</a></li> </ul>
<p><b>Youth &amp; Community Services:</b></p> <ul style="list-style-type: none"> <li>After-School Programs</li> <li>Camps</li> <li>Faith Centers</li> <li>Recreation Centers</li> <li>Services for Children with a Disability</li> </ul>	<ul style="list-style-type: none"> <li>• State or Local Parks &amp; Recreation Departments</li> <li>• <a href="#">National AfterSchool Association</a></li> <li>• <a href="#">American Camp Association</a></li> <li>• Faith-Based Organization Networks</li> <li>• State Councils on Developmental Disabilities</li> <li>• Local United Way or Community Foundations</li> </ul>

# Post-Disaster Environmental Health Scan

Disasters can lead to a wide range of environmental health hazards, each affecting children in different ways depending on exposure, vulnerability, and infrastructure. A post-disaster environmental health scan of news articles, social media, blogs, and other open-source information can help identify emerging community concerns, perceptions of risk, and areas where additional investigation may be needed.

To conduct this scan, search the disaster name, location (e.g., county or town), and keywords related to specific environmental health hazards. For example, a search might include “Gibbs County flood + mold” or “Gibbs County wildfire + smoke + asthma.” This rapid, qualitative review helps surface localized issues and community priorities that may not yet be reflected in formal assessments.

The findings can inform planning for public health messaging, technical assistance, and environmental assessments by state and federal recovery partners.

A list of key environmental health hazard categories is included below, with links to corresponding resource pages that provide more detailed information.

## Environmental Health Concern

- |                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Air: Indoor Air Quality</li><li>• Air: Outdoor Air Quality</li><li>• Chemical: Asbestos</li><li>• Chemical: Combustion Byproducts</li><li>• Chemical: Industrial Chemicals</li><li>• Chemical: Lead &amp; Heavy Metals</li><li>• Chemical: Pesticides &amp; Herbicides</li></ul> | <ul style="list-style-type: none"><li>• Debris &amp; Physical Hazards</li><li>• Extreme Cold</li><li>• Extreme Heat</li><li>• Pest Management</li><li>• Water: Damage &amp; Mold</li><li>• Water: Drinking Water Safety</li><li>• Water: Sewage &amp; Wastewater Contaminants</li></ul> |
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# APPENDIX B: LANDSCAPE ASSESSMENT EXAMPLE

On March 16, 2025, a powerful EF-3 tornado touched down in the central corridor of Gibbs County, carving a 22-mile path through rural farmland, small towns, and unincorporated communities. Wind speeds peaked at 145 mph, damaging homes, schools, agricultural infrastructure, and critical roadways. The storm was part of a broader outbreak that affected three counties but caused its most concentrated damage in Gibbs County.

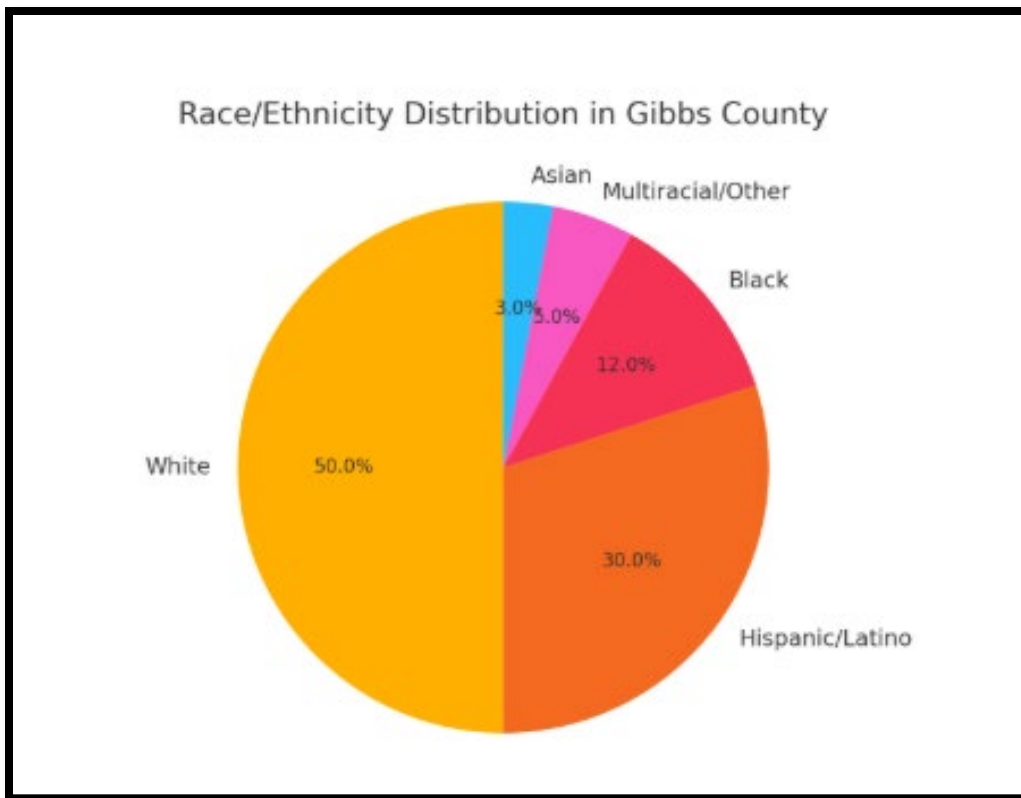
The tornado struck at approximately 2:10 PM local time, with minimal warning and while many families were at home or in school-based programs. Emergency services were overwhelmed in the initial hours, and mutual aid was activated from neighboring counties.

## Community Demographics:

Gibbs County is a rural county with a population of approximately 48,000 residents and a low population density (~53 people per square mile). Children make up roughly 22.5% of the population (~10,800 children ages 0–17).

The county is racially and ethnically diverse: approximately 50% of residents identify as White, 30% as Hispanic/Latino, 12% as Black or African American, 5% as multiracial or other races, and 3% as Asian. Around 30% of households speak a language other than English at home, with Spanish being the most common.

Figure 1: Race/Ethnicity Distribution in Gibbs County (example)



The median household income is approximately \$46,000, and nearly 25% of children live below the federal poverty line. Housing is generally older and spread across unincorporated areas, with many families facing limited access to broadband internet and public transportation. These factors may affect the accessibility of educational and health services, particularly in remote areas.

## Social Vulnerability Index (SVI) – Summary

This table summarizes key SVI indicators relevant to children’s environmental health and disaster recovery:

SVI Theme	Key Indicators	Estimated Risk Level
<b>Socioeconomic Status</b>	High poverty (25%+), low income (\$46K median)	High
<b>Household Composition</b>	Aging population (20% 65+), 10% of households are single-parent	Moderate
<b>Minority &amp; Language</b>	30% Hispanic/Latino, 30% of households speak non-English	High
<b>Housing &amp; Transportation</b>	Unincorporated areas, old housing stock, limited broadband	High

Estimated Overall SVI Score: 0.85

**Vulnerability Level: Very High**

### Known Disruptions to Children’s Services & Related Vulnerabilities:

- Childcare: Two licensed centers were destroyed; Head Start center closed indefinitely
- Education: Temporary relocations for 1 elementary and 2 middle schools
- Food Access: Disruption to school meal programs for over 1,500 children
- Behavioral Health: Increased demand for crisis counseling services among families and school staff
- Transportation: Multiple rural bus routes disrupted due to debris and damaged roads

### Data Sources:

- U.S. Census Bureau (via data.census.gov): population totals, age, race/ethnicity, language, income, housing
- CDC Social Vulnerability Index: socioeconomic and household characteristics
- State GIS portal or local planning office: housing age and broadband access
- County health or education departments: child-specific service data

## Children’s Programs

Gibbs County is a rural area with ~10,800 children under 18. The community includes a single public school district, limited early childhood care infrastructure, and school-centered services that serve as key hubs for health, nutrition, and outreach. Internet and transportation access remain barriers for many families, especially in unincorporated and agricultural zones.

### Child Care

Program Type	Count / Description	Notes & Sources
<b>Center-Based Care</b>	~7 licensed centers	Located in incorporated towns; limited infant care
<b>Family Child Care Homes</b>	~15 registered providers	Many serve 6–12 children; state licensing data used
<b>Faith-Based Care</b>	3–5 programs with part-time preschool hours	Not all are licensed; data from local networks, licensing board
<b>Informal Care</b>	Not quantified	Anecdotal reports suggest reliance on relatives or neighbors

### Education

Program Type	Count / Description	Notes & Sources
<b>Public Schools</b>	10 schools (PreK–12) in 1 district	1 high school, 2 middle, 6 elementary, 1 early learning center
<b>Charter or Magnet</b>	None	
<b>Homeschool / Private</b>	~60 registered homeschool families; 1 small church school	Estimated via state education agency data

<b>Special Education</b>	12% of students identified	Includes services for autism, speech, and learning disabilities
<b>Head Start / Early Head Start</b>	2 program sites (serving ~120 children)	Federally funded; accessed via Region VI Head Start locator

## Health

Program Type	Count / Description	Notes & Sources
<b>Pediatric Hospitals</b>	None in-county; nearest 70 miles away	Mobile and telehealth services available
<b>Federally Qualified Health Center (FQHC)</b>	1 clinic with pediatric services	Offers vaccinations and Women-Infant-Children services
<b>Rural Health Clinics</b>	2 total, with limited pediatric capacity	Limited mental health care availability
<b>Behavioral Health/Substance Use Programs</b>	1 youth-serving counselor at county health office	School-based counseling is a critical access point
<b>Suicide Prevention/Crisis Line Access</b>	Available via state 988 services	Not always culturally tailored

## Protection & Juvenile Justice

Program Type	Count / Description	Notes & Sources
<b>Child Protective Services</b>	1 regional office serving multiple counties	High caseloads; limited Spanish-speaking staff
<b>Foster Care</b>	~45 children in care from county	Some placed out-of-county
<b>Juvenile Justice Facility</b>	None in-county; services via regional hub	Youth are transported for hearings or detention
<b>Youth Homeless/Shelters</b>	None in-county	School district tracks McKinney-Vento eligibility (homeless students)

## Youth & Community Services

Program Type	Count / Description	Notes & Sources
<b>After-School Programs</b>	~5, mostly hosted at schools	Community funded; no summer-only programs
<b>Recreation Centers</b>	1 county-run facility with youth sports	Not accessible to most unincorporated areas
<b>Faith-Based Youth Groups</b>	Active in 6–8 congregations	Includes food programs, mentoring, and youth nights
<b>Youth Camps</b>	Seasonal church camps and 4-H day programs	No disability-specific options noted
<b>Services for Children with Disabilities</b>	Limited; county school district provides main access	No community-based organizations focused solely on disability inclusion

# Post-Disaster Environmental Health Scan

A structured internet search was conducted using the terms: “Gibbs County tornado,” “March 2025,” and environmental health keywords such as: mold, asbestos, air quality, chemical exposure, sewage, heat, drinking water, pests. Social media platforms and online local newspapers were searched for community-level concerns, anecdotal reports, and publicly visible posts about environmental conditions affecting children or families.

## Key Environmental Health Themes

Environmental Health Concern	Observed Issues in Media/Community Posts	Notes for Assessment Team
<b>Water: Damage &amp; Mold</b>	Multiple reports of mold growth in school gyms and mobile homes	Prioritize school inspections and home remediation support

<b>Chemical: Asbestos</b>	Local Facebook post mentioned old siding debris suspected to contain asbestos	May require state/local environmental health verification
<b>Air: Indoor Air Quality</b>	Parents commenting on “musty smell” and visible debris in reopened classrooms	Include indoor air quality (IAQ) assessments in schools and shelters
<b>Water: Drinking Water Safety</b>	One town reported boil-water advisory due to damaged pipes	Coordinate with water utility and health dept.
<b>Debris &amp; Physical Hazards</b>	Concerns about children playing near storm debris piles	Coordinate messaging on safety; consider fencing priority
<b>Pest Management</b>	Reports of rodent and mosquito increases after flooding and food spoilage	May increase exposure to vector-borne illness

# APPENDIX C: DISASTER REFERENCE GUIDE

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## How to Use This Reference Guide

*Disaster Reference Guides outline some of the ways children may be more vulnerable to environmental hazards after different types of disasters. Each disaster presents distinct risks to children's physical safety, emotional well-being, and ability to access care or remain with trusted adults.*

## Common Environmental Hazards

*This section explains how a disaster can create or worsen specific environmental health hazards, especially those that affect children. This section helps assessment teams understand what kinds of hazards to focus on and what kinds of questions to ask during interviews or site visits.*

## Educational Resources

*The Educational Resources sections throughout the Disaster Reference Guide offer quick access to trusted information related to key environmental health and safety topics that commonly arise after a disaster. These resources come from reputable agencies and organizations and are intended to support assessment team members as they navigate a wide range of potential issues in the field.*

*These resources are intended to:*

- *Provide background information on disasters that may be unfamiliar or complex.*
- *Offer practical strategies and actions that can be shared with state, tribal, territorial, and local (STTL) partners or children's programs when concerns arise.*
- *Help teams identify tools, checklists, and technical guidance that support both immediate response and long-term recovery planning.*

*Assessment team members are encouraged to use these resources to deepen their knowledge, answer questions in real time, and identify additional support that may be available to affected communities. Resources may also be referenced or shared during engagements if appropriate, especially when local partners request more information about a specific hazard or health concern.*

*All links were active when this guide was published, but they may change over time. If a link is broken or you need more information, try using a web search to find updated or related resources.*

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Children are more vulnerable during earthquakes due to their smaller size, limited mobility, and lack of understanding of danger, making it harder for them to escape or respond appropriately.

## Common Environmental Hazards

Environmental Health Hazard	How an earthquake might affect children’s health
<b>Air: Indoor Air Quality</b>	Earthquakes can cause structural damage to buildings, leading to mold growth, dust, and debris accumulation inside homes, which can worsen respiratory issues, particularly for children with asthma or other respiratory conditions.
<b>Air: Outdoor Air Quality</b>	Earthquakes can shake loose dust, dirt, and debris from collapsed buildings, roads, or infrastructure, leading to poor outdoor air quality. Children may be more vulnerable to respiratory issues from airborne particulates in the aftermath.
<b>Chemical: Asbestos</b>	Earthquake damage to older buildings, especially those built before asbestos regulations, could release asbestos fibers into the air. Children are more susceptible to long-term lung diseases due to exposure to asbestos dust from damaged infrastructure.
<b>Chemical: Combustion Byproducts</b>	If the earthquake causes fires (from gas line ruptures, for example), combustion byproducts like carbon monoxide, particulate matter, and other toxic fumes could harm children, whose respiratory systems are more sensitive.
<b>Chemical: Industrial Chemicals</b>	Earthquakes could damage chemical storage sites or industrial plants, resulting in hazardous chemical spills or leaks. Children living in or near affected areas would be at higher risk due to their increased exposure to contaminants.
<b>Chemical: Lead &amp; Heavy Metals</b>	Earthquake damage to industrial facilities, sewage treatment plants, or power plants could release heavy metals like lead or mercury into the environment. Children are more vulnerable to heavy metal poisoning due to their smaller bodies and higher absorption rates.
<b>Chemical: Pesticides &amp; Herbicides</b>	Earthquake-induced flooding or debris could spread pesticides or herbicides from nearby agricultural areas or households. Children playing outdoors are at greater risk of coming into contact with these chemicals.
<b>Debris &amp; Physical Hazards</b>	Collapsed buildings, fallen trees, and other debris pose a direct physical hazard to children, with a higher likelihood of injuries. Additionally, debris may be contaminated with hazardous materials like glass, metals, and chemicals, which children are more likely to handle or be exposed to.
<b>Extreme Cold</b>	If an earthquake leads to power outages or damages heating systems, children may be at risk of hypothermia or frostbite, especially in colder climates or during the winter months when temperatures drop.
<b>Extreme Heat</b>	In warmer climates or after power outages in the summer, the absence of cooling systems could lead to heat-related illnesses. Children are at higher risk for dehydration and heatstroke due to their lower ability to regulate body temperature compared to adults.

Environmental Health Hazard	How an earthquake might affect children’s health
<b>Pest Management</b>	Earthquakes may disrupt waste management and increase the presence of pests like rodents and insects. Children are particularly vulnerable to diseases transmitted by pests, especially in areas where buildings have been damaged, and food storage may be compromised.
<b>Water: Damage &amp; Mold</b>	Earthquake damage can result in water leaks or flooding, leading to mold growth inside homes or buildings. Mold exposure can cause respiratory issues and allergic reactions, particularly in children with developing immune systems.
<b>Water: Drinking Water Safety</b>	Earthquake damage to water supply systems or sewage lines can lead to contamination of drinking water. Children are more susceptible to waterborne illnesses, which can lead to gastrointestinal infections or more severe health impacts.
<b>Water: Sewage &amp; Wastewater Contaminants</b>	Earthquakes can damage sewage systems or create flooding that leads to contamination from wastewater. Children are more likely to come into contact with these contaminants, increasing their risk for waterborne diseases.

## Educational Resources

[Lessons Learned: Earthquakes | ASPR TRACIE](#): This Topic Collection the most robust and most useful peer-reviewed and other public and privately developed materials (e.g., fact sheets, technical briefs, articles, toolkits, webinars, and plans) helpful to stakeholders in improving healthcare system preparedness and resilience.

[The Science of Earthquakes | U.S. Geological Survey](#): Explains how earthquakes occur due to sudden slips along faults caused by tectonic plate movements, describes associated phenomena like foreshocks and aftershocks, and details how seismic waves are recorded and measured to determine earthquake magnitude and intensity.

[Earthquakes for Kids | U.S. Geological Survey](#): Links and resources to help children understand the science behind earthquakes.

[Earthquakes | Ready.gov](#): Preparing for and staying safe during an earthquake.

[Earthquakes | EPA](#): Environmental considerations to prepare for and recover after an earthquake.

[Responding to Natural Disasters and Extreme Weather | Emergency Preparedness | CDC](#): The National Institute for Occupational Safety and Health (NIOSH) has created a document communicating key messages associated to the multiple hazards related to storms, floods, and hurricanes. The document is available for employers, emergency response and recovery workers, and volunteers.

[Earthquake Education Resources | ShakeAlert®](#): Compendium of education resources, including interactive activities, video demonstrations, and animations.

[Earthquake Resources Multimedia Library | Central United States Earthquake Consortium \(CUSEC\)](#): Free videos for edutainment. This page includes links to several other resources and publications.

[Earthquake Safety | American Red Cross](#): Learn what to do during an earthquake, and how to strengthen your home to prepare for an emergency.

Children are more vulnerable during wildfires or urban conflagrations due to their smaller size, limited ability to evacuate quickly, and heightened sensitivity to smoke and heat. They may also be at greater risk of separation from caregivers during chaotic or rapid evacuations, which can lead to increased fear and disorientation.

## Common Environmental Hazards

Environmental Health Hazard	How a fire might affect children’s health
<b>Air: Indoor Air Quality</b>	Fires release smoke and particulate matter into the air, which can infiltrate buildings and homes. Children, with their developing respiratory systems, are more susceptible to the harmful effects of poor indoor air quality, including respiratory distress and exacerbation of asthma or other lung conditions.
<b>Air: Outdoor Air Quality</b>	During and after a fire, outdoor air quality can be severely compromised due to smoke, soot, and particulate matter. Children are more vulnerable to respiratory issues, including coughing, wheezing, and long-term lung damage, from exposure to these airborne pollutants.
<b>Chemical: Asbestos</b>	Fires can disturb buildings that contain asbestos, especially older buildings, leading to the release of asbestos fibers into the air. Children are more at risk for long-term health issues like lung diseases from inhaling asbestos fibers during or after a fire.
<b>Chemical: Combustion Byproducts</b>	Fires generate harmful combustion byproducts such as carbon monoxide, volatile organic compounds (VOCs), and toxic gases like hydrogen cyanide. These chemicals pose a significant threat to children, whose smaller body size and developing organs make them more sensitive to toxic exposures.
<b>Chemical: Industrial Chemicals</b>	Fires in industrial areas or those involving chemicals stored in warehouses or factories can release hazardous industrial chemicals like solvents, pesticides, and fuels into the air and water. Children living in affected areas are at heightened risk of toxic exposure, which can lead to respiratory, neurological, or developmental issues.
<b>Chemical: Lead &amp; Heavy Metals</b>	Urban conflagrations can lead to the burning of various materials, including electronics, vehicles, and industrial waste, which may release heavy metals like lead, mercury, and cadmium into the environment. Children are particularly vulnerable to these metals, which can cause neurological damage and developmental delays.
<b>Chemical: Pesticides &amp; Herbicides</b>	Fires may burn agricultural or commercial buildings containing pesticides or herbicides, leading to the release of toxic chemicals into the environment. Children are at greater risk of poisoning or health issues from exposure to these chemicals, especially if they come into contact with contaminated soil or water.
<b>Debris &amp; Physical Hazards</b>	After a fire, there is often a large amount of debris, including burned materials, glass, and other hazardous items. Children are particularly at risk of injury from sharp objects, fallen structures, or contaminated debris, which can also carry harmful chemicals or biological agents.
<b>Extreme Cold</b>	In the aftermath of an urban conflagration, power outages, infrastructure damage, or the destruction of homes can leave children vulnerable to extreme cold, particularly in colder climates. Without access to heat, children are at risk of hypothermia, frostbite, or other cold-related illnesses.

Environmental Health Hazard	How a fire might affect children’s health
<b>Extreme Heat</b>	In warmer climates or after power outages in the summer, the absence of cooling systems could lead to heat-related illnesses. Children are more vulnerable to heat-related illnesses like dehydration, heat exhaustion, or heatstroke, particularly if they are without cooling systems.
<b>Pest Management</b>	After fires, displaced rodents and insects may seek shelter in homes, leading to an increase in pest-related health issues. Children are more at risk of diseases transmitted by pests, such as rodents carrying hantavirus or insects carrying disease-causing bacteria.
<b>Water: Damage &amp; Mold</b>	Fires that involve water sources or the destruction of buildings can lead to water damage and mold growth. Mold exposure can trigger respiratory issues, allergies, and asthma in children, whose immune systems are still developing.
<b>Water: Drinking Water Safety</b>	Fires may damage water infrastructure, either directly or due to smoke and ash contamination. If water sources become contaminated with toxic chemicals, ash, or bacteria, children are more susceptible to gastrointestinal illnesses and other health complications from consuming unsafe water.
<b>Water: Sewage &amp; Wastewater Contaminants</b>	Fire damage to sewage or wastewater systems can lead to contamination of water sources or improper waste disposal. Children are more likely to come into contact with harmful sewage contaminants, which increases their risk of waterborne diseases or infections.

## Educational Resources

[Lessons Learned: Fire/Wildfire | ASPR TRACIE](#): This Topic Collection the most robust and most useful peer-reviewed and other public and privately developed materials (e.g., fact sheets, technical briefs, articles, toolkits, webinars, and plans) helpful to stakeholders in improving healthcare system preparedness and resilience.

[Wildfires | Ready.gov](#): Preparing for and staying safe during a wildfire.

[Wildfires | EPA](#): Environmental considerations to prepare for and recover after a wildfire.

EPA maintains several webpages on wildfires and IAQ that addresses guidance for reducing wildfire smoke in homes, schools, and commercial buildings.

[Wildfires and Indoor Air Quality | EPA](#)

[Create a Clear Room to Protect Indoor Air Quality during a Wildfire | EPA](#)

[Wildfires and Indoor Air Quality in Schools and Commercial Buildings | EPA](#)

[Create a Clean Room to Protect Indoor Air Quality During a Wildfire | EPA](#)

[Wildfire Smoke and Children | Wildfires | CDC](#): Children with asthma, allergies, or other health conditions could have trouble breathing when smoke is present. This guide gives advice on how to prepare for wildfire season if you have children that fit those descriptions.

[Wildfire Safety | American Red Cross](#): Learn how to keep your family and home safe during a wildfire.

Children are more vulnerable to flooding’s health risks due to their smaller size, developing immune systems, and limited ability to avoid hazards like contaminated water and debris.

## Common Environmental Hazards

Environmental Health Hazard	How a flood might affect children’s health
<b>Air: Indoor Air Quality</b>	Floods often lead to water damage in homes and buildings, which can create an environment conducive to mold growth. Children are more susceptible to respiratory issues, including asthma and allergic reactions, triggered by mold exposure in indoor environments.
<b>Air: Outdoor Air Quality</b>	Flooding can stir up debris, mud, and contaminants, worsening air quality in the affected areas. Children are more vulnerable to respiratory distress from inhaling dust, mold spores, or particulate matter from floodwaters and debris.
<b>Chemical: Asbestos</b>	Floodwaters can disturb older buildings that contain asbestos, releasing hazardous fibers into the air. Children are at higher risk of long-term health issues, such as lung disease, from asbestos exposure, particularly in flood-affected homes or schools.
<b>Chemical: Combustion Byproducts</b>	Floods can damage industrial sites, transportation routes, and waste facilities, which may release hazardous combustion byproducts, such as carbon monoxide, into the environment. Children are particularly sensitive to these toxic substances due to their smaller lungs and higher metabolic rates.
<b>Chemical: Industrial Chemicals</b>	Chemicals from damaged factories, warehouses, or waste treatment plants can be released into floodwaters, contaminating the environment. Children are particularly vulnerable to toxic exposures from industrial chemicals, which can affect their nervous, respiratory, and immune systems.
<b>Chemical: Lead &amp; Heavy Metals</b>	Floodwaters may sweep through industrial areas, exposing children to heavy metals like lead or mercury from contaminated soil, water, or debris. Because children absorb metals at a higher rate than adults, they are more at risk for developmental and neurological damage.
<b>Chemical: Pesticides &amp; Herbicides</b>	Flooding may wash pesticides, herbicides, or agricultural runoff into surrounding areas. Children, who often play outdoors or are in direct contact with soil or contaminated water, are more at risk of poisoning or health issues from these chemicals.
<b>Debris &amp; Physical Hazards</b>	Floods leave behind large amounts of debris, including broken glass, metals, wood, and contaminated items, which pose physical injury risks to children. Additionally, debris may be contaminated with chemicals, waste, or biological agents, increasing the risk of infection or poisoning.
<b>Extreme Cold</b>	In colder climates or during winter floods, children are more vulnerable to hypothermia, frostbite, or cold-related illnesses, especially if their homes are damaged, power is lost, or heating systems are compromised by flooding.
<b>Extreme Heat</b>	If the flooding leads to infrastructure damage and power outages during hot weather, children may be at risk of heat-related illnesses, such as dehydration, heat exhaustion, or heatstroke. Without cooling systems, children are particularly susceptible to extreme heat in flooded areas.

Environmental Health Hazard	How a flood might affect children's health
<b>Pest Management</b>	Flooding often displaces rodents, insects, and other pests, leading to increased infestations in homes and schools. Children are at higher risk of diseases transmitted by pests, including rodents carrying leptospirosis or insects carrying viruses like Zika or West Nile.
<b>Water: Damage &amp; Mold</b>	Flooding damages buildings, leading to waterlogging and prolonged dampness that fosters mold growth. Children, whose immune systems are still developing, are more sensitive to mold exposure, which can lead to respiratory problems, allergies, or asthma.
<b>Water: Drinking Water Safety</b>	Floodwaters can contaminate drinking water with bacteria, viruses, chemicals, or toxins from industrial or sewage waste. Children are especially vulnerable to waterborne diseases, including gastrointestinal illnesses, due to their smaller size and higher water intake relative to their body weight.
<b>Water: Sewage &amp; Wastewater Contaminants</b>	Floods can overwhelm sewage systems, causing the release of untreated wastewater into the environment. Children are more likely to come into contact with sewage-contaminated water or soil, increasing the risk of gastrointestinal and infectious diseases, such as E. coli or Giardia.

## Educational Resources

[Lessons Learned: Floods and Landslides | ASPR TRACIE](#): This Topic Collection the most robust and most useful peer-reviewed and other public and privately developed materials (e.g., fact sheets, technical briefs, articles, toolkits, webinars, and plans) helpful to stakeholders in improving healthcare system preparedness and resilience.

[Floods | Ready.gov](#): Preparing for and staying safe during a flood.

[Flooding | EPA](#): Environmental considerations to prepare for and recover after a tsunami.

EPA maintains several webpages on flooding and indoor air quality (IAQ). This includes guidance for safely cleaning up and recovering a home or building following a flood.

[Resources for Flood Cleanup and Indoor Air Quality | EPA](#)

[Flood Cleanup: Protecting Indoor Air Quality | EPA](#)

[Flooded Homes Cleanup Guidance | EPA](#)

[Responding to Natural Disasters and Extreme Weather | Emergency Preparedness | CDC](#): The National Institute for Occupational Safety and Health (NIOSH) has created a document communicating key messages associated to the multiple hazards related to storms, floods, and hurricanes. The document is available for employers, emergency response and recovery workers, and volunteers.

[Flood Safety | American Red Cross](#): Learn how to keep your family safe during a flood, and how to clean up a flooded home.

After a hurricane, children are at greater risk of environmental health issues, including exposure to contaminated water, mold, and hazardous debris. Their developing immune systems and smaller size make them more susceptible to infections, respiratory problems, and waterborne diseases.

## Common Environmental Hazards

Environmental Health Hazard	How a hurricane might affect children’s health
<b>Air: Indoor Air Quality</b>	Hurricanes often lead to water damage in homes, leading to mold growth and poor indoor air quality. Children, with their faster breathing rates and developing respiratory systems, are particularly vulnerable to respiratory issues such as asthma, allergies, and mold-related infections.
<b>Air: Outdoor Air Quality</b>	Hurricanes can stir up debris and contaminants, worsening air quality in the affected areas. Children are more susceptible to respiratory distress from inhaling particulate matter, mold spores, and chemicals released into the air after the storm.
<b>Chemical: Asbestos</b>	Hurricanes can damage older buildings or infrastructure, which may contain asbestos. Children are more vulnerable to the long-term health effects of asbestos exposure, such as lung disease or cancer, due to their smaller lungs and increased rate of exposure.
<b>Chemical: Combustion Byproducts</b>	If hurricanes cause fires or damage industrial facilities, hazardous combustion byproducts, such as carbon monoxide, volatile organic compounds (VOCs), and smoke, could be released. Children, with their higher breathing rates and smaller body sizes, are more at risk from inhaling these toxic substances.
<b>Chemical: Industrial Chemicals</b>	If a hurricane causes flooding or damage to industrial facilities, it can release hazardous chemicals like solvents or fuels into the environment. Children, who may be exposed to contaminated air, soil, or water, are more at risk for health problems such as neurological damage, respiratory issues, or chemical burns.
<b>Chemical: Lead &amp; Heavy Metals</b>	Hurricanes can disturb areas with heavy metal contamination, such as industrial zones or old infrastructure, releasing lead, mercury, or other metals into the environment. Children are at higher risk of absorbing these metals, which can negatively affect their neurological and developmental health.
<b>Chemical: Pesticides &amp; Herbicides</b>	Hurricanes can wash agricultural chemicals, such as pesticides and herbicides, into surrounding areas, contaminating the environment. Children are particularly vulnerable to pesticide exposure, which can affect their neurological development, immune system, and cause acute poisoning from direct contact.
<b>Debris &amp; Physical Hazards</b>	Hurricanes leave behind a massive amount of debris, including trees, building materials, and hazardous waste. Children are at increased risk of injury from sharp objects, falling debris, or getting caught in collapsed structures, especially if they are playing outdoors or exploring the damaged area.
<b>Extreme Cold</b>	In some rare late-season scenarios, hurricane effects such as inland flooding in areas with power outages may put children at risk of cold-related illnesses like hypothermia. Prolonged exposure to cold or wet conditions can increase the risk for frostbite or hypothermia.

Environmental Health Hazard	How a hurricane might affect children’s health
<b>Extreme Heat</b>	Power outages from hurricanes can disrupt cooling systems, leaving children vulnerable to heat-related illnesses in the aftermath, especially in regions with high temperatures. Without air conditioning or fans, children are more likely to suffer from dehydration, heat exhaustion, or heatstroke.
<b>Pest Management</b>	Hurricanes can displace insects, rodents, and other pests, pushing them into homes or schools. Children are particularly at risk of diseases carried by pests, including leptospirosis from rodents or insect-borne diseases like Zika, West Nile, or dengue fever.
<b>Water: Damage &amp; Mold</b>	Flooding from hurricanes can cause widespread water damage, leading to mold growth in homes, schools, and community centers. Children are more susceptible to mold-related respiratory issues, allergic reactions, and other health problems, especially when they spend time in damp or water-damaged buildings.
<b>Water: Drinking Water Safety</b>	Floodwaters from hurricanes can contaminate drinking water sources with bacteria, viruses, or chemicals, making it unsafe for consumption. Children are at greater risk of gastrointestinal illnesses like diarrhea or vomiting from drinking contaminated water or coming into contact with polluted water during flooding.
<b>Water: Sewage &amp; Wastewater Contaminants</b>	Hurricanes can overwhelm sewage systems and cause the release of untreated sewage into the environment. Children are particularly vulnerable to waterborne diseases like E. coli, cholera, and other gastrointestinal infections from contact with sewage-contaminated water or soil.

## Educational Resources

[Hurricanes | General Hurricane Resources | ASPR TRACIE](#): This Topic Collection the most robust and most useful peer-reviewed and other public and privately developed materials (e.g., fact sheets, technical briefs, articles, toolkits, webinars, and plans) helpful to stakeholders in improving healthcare system preparedness and resilience.

[Hurricanes | Ready.gov](#): Preparing for and staying safe during a hurricane.

[Hurricanes | EPA](#): Environmental considerations to prepare for and recover after a hurricane.

[How the Hurricane Made Me Feel \(Activity Sheet\) | CDC](#): An activity sheet that helps children express and process their emotions following a hurricane.

[How the Hurricane Made Me Feel \(Activity Sheet\) | CDC \(Spanish\)](#): Spanish version of the children’s worksheet designed to support emotional expression after a hurricane.

[Responding to Natural Disasters and Extreme Weather | Emergency Preparedness | CDC](#): The National Institute for Occupational Safety and Health (NIOSH) has created a document communicating key messages associated to the multiple hazards related to storms, floods, and hurricanes. The document is available for employers, emergency response and recovery workers, and volunteers.

[Hurricane Safety | American Red Cross](#): Learn how to keep your home and family safe during a hurricane or typhoon.

After a landslide, children are more vulnerable to environmental health risks, such as exposure to contaminated water, soil, and debris, due to their developing immune systems and increased contact with hazardous materials.

## Common Environmental Hazards

Environmental Health Hazard	How a landslide might affect children's health
<b>Air: Indoor Air Quality</b>	Landslides can stir up dust and debris, leading to poor indoor air quality in affected areas. Children, who breathe faster and have smaller airways, are particularly vulnerable to respiratory issues, such as coughing, wheezing, or asthma, from inhaling dust and particulate matter.
<b>Air: Outdoor Air Quality</b>	Similar to indoor air quality, landslides can cause the release of dust, soot, and debris into the outdoor air, compromising air quality. Children, whose lungs are still developing, are more susceptible to the harmful effects of poor air quality, especially if they have pre-existing respiratory conditions.
<b>Chemical: Asbestos</b>	Landslides in areas with older buildings or infrastructure may disturb materials containing asbestos, releasing harmful fibers into the air. Children are more vulnerable to the long-term health effects of asbestos exposure, including lung disease, due to their smaller lung capacity and faster respiratory rates.
<b>Chemical: Combustion Byproducts</b>	If landslides involve the destruction of structures containing chemicals or flammable materials, hazardous combustion byproducts, such as carbon monoxide or volatile organic compounds (VOCs), could be released. Children's developing organs and respiratory systems make them more sensitive to toxic air pollutants.
<b>Chemical: Industrial Chemicals</b>	Landslides may damage industrial or agricultural facilities, causing the release of chemicals into the environment. Children are at increased risk of exposure to industrial chemicals, which can affect their respiratory, neurological, and immune systems, particularly if they come into contact with contaminated soil or water.
<b>Chemical: Lead &amp; Heavy Metals</b>	Landslides can disturb soil and debris in areas with heavy metals, such as lead or mercury from nearby industrial sites, which may be released into the environment. Children are more likely to absorb these metals at higher rates, increasing their risk of neurological and developmental damage.
<b>Chemical: Pesticides &amp; Herbicides</b>	Landslides in rural or agricultural areas may move soil and debris contaminated with pesticides and herbicides. Children who are exposed to contaminated soil or water, either through play or consumption, are at higher risk of pesticide poisoning or other health issues related to chemical exposure.
<b>Debris &amp; Physical Hazards</b>	Landslides often leave large amounts of debris, such as rocks, mud, and broken building materials. Children are particularly at risk for physical injuries, such as cuts, bruises, or crush injuries, from coming into contact with or playing near unstable debris.
<b>Extreme Cold</b>	In mountainous or colder regions, landslides may block roads, damage infrastructure, or disrupt heating systems, leaving children vulnerable to cold-related illnesses like hypothermia or frostbite, especially if homes or shelters are destroyed or damaged.

Environmental Health Hazard	How a landslide might affect children’s health
<b>Extreme Heat</b>	While landslides themselves do not cause extreme heat, the aftermath of landslides, such as infrastructure disruptions or power outages in hot climates may lead to heat stress or heatstroke in children. Without access to air conditioning or cooling systems, children in affected areas could face increased risk of heat-related illnesses.
<b>Pest Management</b>	Landslides can displace rodents, insects, and other pests, causing them to seek shelter in homes and schools. Children are at higher risk of contracting diseases transmitted by pests, such as leptospirosis from rodents or insect-borne illnesses like West Nile virus.
<b>Water: Damage &amp; Mold</b>	Landslides can cause water damage to homes, schools, and infrastructure, leading to mold growth in damp environments. Children, especially those with respiratory conditions like asthma, are more vulnerable to mold exposure, which can trigger allergic reactions and exacerbate breathing problems.
<b>Water: Drinking Water Safety</b>	If landslides damage water infrastructure or contaminate water sources with debris or hazardous materials, drinking water may become unsafe. Children are more susceptible to gastrointestinal illnesses, such as diarrhea or stomach infections, from consuming contaminated water.
<b>Water: Sewage &amp; Wastewater Contaminants</b>	Landslides may disrupt sewage systems or cause wastewater to overflow, leading to contamination of the local environment. Children are particularly vulnerable to waterborne diseases, such as cholera or E. coli, from exposure to sewage-contaminated water or soil.

## Educational Resources

[Lessons Learned: Floods and Landslides | ASPR TRACIE](#): This Topic Collection the most robust and most useful peer-reviewed and other public and privately developed materials (e.g., fact sheets, technical briefs, articles, toolkits, webinars, and plans) helpful to stakeholders in improving healthcare system preparedness and resilience.

[The Landslide Handbook – A Guide to Understanding Landslides | U.S. Geological Survey](#): This handbook is intended to be a resource for people affected by landslides to acquire further knowledge, especially about the conditions that are unique to their neighborhoods and communities.

[Landslides & Debris Flows | Ready.gov](#): Preparing for and staying safe during landslides and debris flows.

[Responding to Natural Disasters and Extreme Weather | Emergency Preparedness | CDC](#): The National Institute for Occupational Safety and Health (NIOSH) has created a document communicating key messages associated to the multiple hazards related to storms, floods, and hurricanes. The document is available for employers, emergency response and recovery workers, and volunteers.

[Landslide Safety | American Red Cross](#): Landslides have occurred in almost every state and can cause significant damage.

Children are particularly vulnerable after a tornado due to their developing bodies, which make them more susceptible to physical injuries, airborne toxins, and contaminated food or water.

## Common Environmental Hazards

Environmental Health Hazard	How a tornado might affect children's health
<b>Air: Indoor Air Quality</b>	Tornadoes can cause significant structural damage, including roof and wall collapses, leading to water damage and mold growth in affected homes and buildings. Children, with their faster respiratory rates and developing lungs, are especially susceptible to mold-related health problems, such as asthma attacks or allergic reactions.
<b>Air: Outdoor Air Quality</b>	The force of a tornado can stir up debris, dirt, and dust, leading to poor outdoor air quality in affected areas. Children are more vulnerable to respiratory issues, including coughing, wheezing, or difficulty breathing, as they have faster breathing rates and smaller airways than adults.
<b>Chemical: Asbestos</b>	Tornadoes may damage older buildings or infrastructure that contain asbestos, causing dangerous fibers to be released into the air. Children are at higher risk for the long-term effects of asbestos exposure, including lung disease and cancers, due to their smaller lung capacity and increased breathing rates.
<b>Chemical: Combustion Byproducts</b>	If tornadoes cause fires or damage industrial sites, harmful combustion byproducts like carbon monoxide, smoke, and volatile organic compounds (VOCs) could be released into the air. Children's developing bodies and higher breathing rates make them more susceptible to the toxic effects of these chemicals, which can cause respiratory distress and other health issues.
<b>Chemical: Industrial Chemicals</b>	Tornadoes can damage industrial facilities, leading to the release of hazardous chemicals like solvents, fuels, and other toxic substances into the environment. Children are especially at risk of exposure to these chemicals, which can cause poisoning, neurological damage, or respiratory issues.
<b>Chemical: Lead &amp; Heavy Metals</b>	Tornadoes may disturb industrial or construction sites containing heavy metals such as lead, mercury, or cadmium, releasing them into the environment. Children are more likely to absorb these metals, which can lead to developmental delays, learning disabilities, and other neurological issues.
<b>Chemical: Pesticides &amp; Herbicides</b>	If a tornado strikes agricultural areas, pesticides, herbicides, or fertilizers may be dispersed into the environment. Children are particularly vulnerable to the harmful effects of pesticide exposure, including neurological and developmental issues, as well as acute poisoning from direct contact or ingestion.
<b>Debris &amp; Physical Hazards</b>	Tornadoes create large amounts of debris, including broken trees, metal, glass, and building materials. Children are at increased risk of injury from sharp objects, falling debris, or getting caught in unstable structures, especially if they are playing or wandering near the damaged area.

Environmental Health Hazard	How a tornado might affect children’s health
<b>Extreme Cold</b>	While tornadoes typically occur in warmer weather, the destruction caused by a tornado, including power outages or damaged homes, could leave children exposed to cold conditions. Without heat or adequate clothing, children are more vulnerable to cold-related illnesses, such as hypothermia or frostbite, in the aftermath.
<b>Extreme Heat</b>	If tornadoes cause widespread power outages, children may be left without cooling systems in hot climates. Without air conditioning or fans, children are at increased risk of heat-related illnesses such as dehydration, heat exhaustion, or heatstroke, especially if they are exposed to high temperatures for extended periods.
<b>Pest Management</b>	Tornadoes can displace rodents, insects, and other pests, causing them to seek shelter in homes or buildings. Children are more vulnerable to diseases transmitted by pests, such as leptospirosis from rodents or insect-borne diseases like West Nile virus, Zika, or Lyme disease.
<b>Water: Damage &amp; Mold</b>	Tornadoes can cause flooding, water damage, or broken water pipes, creating an environment conducive to mold growth in homes, schools, and other structures. Children are more vulnerable to mold exposure, which can exacerbate asthma, trigger allergic reactions, and cause respiratory distress.
<b>Water: Drinking Water Safety</b>	Tornadoes may cause damage to water treatment facilities or disrupt water infrastructure, leading to contamination of drinking water. Children are especially susceptible to waterborne illnesses, such as diarrhea, vomiting, and other gastrointestinal infections, from consuming contaminated water or coming into contact with polluted water.
<b>Water: Sewage &amp; Wastewater Contaminants</b>	Tornadoes may disrupt sewage systems or cause wastewater to overflow, contaminating the environment. Children are more vulnerable to diseases transmitted through sewage-contaminated water, including E. coli, cholera, and other gastrointestinal diseases.

## Educational Resources

[Lessons Learned: Tornadoes | ASPR TRACIE](#): This Topic Collection the most robust and most useful peer-reviewed and other public and privately developed materials (e.g., fact sheets, technical briefs, articles, toolkits, webinars, and plans) helpful to stakeholders in improving healthcare system preparedness and resilience.

[Severe Weather 101 | NOAA National Severe Storms Laboratory](#): Explains what a tornado is and how to identify a tornado or dangerous storm.

[Tornadoes | Ready.gov](#): Preparing for and staying safe during tornadoes.

[Tornadoes | EPA](#): Environmental considerations to prepare for and recover after a tornado.

[Responding to Natural Disasters and Extreme Weather | Emergency Preparedness | CDC](#): The National Institute for Occupational Safety and Health (NIOSH) has created a document communicating key messages associated to the multiple hazards related to storms, floods, and hurricanes. The document is available for employers, emergency response and recovery workers, and volunteers.

[Tornado Safety | American Red Cross](#): Learn how to stay safe during a tornado, and how to improve your home’s ability to withstand tornadoes.

During recovery from a catastrophic tsunami, children may face environmental health risks such as waterborne diseases, exposure to mold and contaminated food, and injuries from lingering debris, all of which can severely impact their developing immune systems and respiratory health.

## Common Environmental Hazards

<b>Environmental Health Hazard</b>	<b>How a tsunami might affect children’s health</b>
<b>Air: Indoor Air Quality</b>	Tsunamis can cause widespread flooding and water damage, potentially leading to mold growth in homes, schools, and other buildings. Children are more susceptible to mold-related respiratory problems, such as asthma, coughing, and allergic reactions, due to their higher breathing rates and developing lungs.
<b>Air: Outdoor Air Quality</b>	Tsunamis may stir up dust, debris, and contaminants in the air, reducing outdoor air quality. Children are particularly vulnerable to respiratory distress from inhaling particulate matter, dust, or chemicals carried by the waves or debris, as their airways are smaller and more sensitive.
<b>Chemical: Asbestos</b>	Tsunami waves may damage older buildings and infrastructure that contain asbestos, releasing harmful fibers into the air. Children, with their smaller lungs and increased rate of breathing, are more susceptible to long-term health effects from asbestos exposure, including lung disease and cancers.
<b>Chemical: Combustion Byproducts</b>	Tsunamis can lead to fires in affected areas, and the aftermath may include the release of combustion byproducts, such as carbon monoxide, VOCs, and smoke. Children are more vulnerable to the toxic effects of these chemicals due to their developing respiratory systems and higher rates of exposure.
<b>Chemical: Industrial Chemicals</b>	Tsunami flooding can damage industrial facilities and release hazardous chemicals like solvents, fuels, and other toxic substances into the environment. Children are more vulnerable to these chemicals, which can cause poisoning, respiratory distress, and neurological effects.
<b>Chemical: Lead &amp; Heavy Metals</b>	Tsunami waves can disturb industrial or construction sites that contain heavy metals, such as lead, mercury, or cadmium. Children are particularly at risk for absorbing these metals, which can lead to neurological damage, developmental delays, and other health problems.
<b>Chemical: Pesticides &amp; Herbicides</b>	Tsunamis can wash agricultural chemicals, such as pesticides, herbicides, and fertilizers, into nearby environments. Children are particularly vulnerable to these chemicals, which can lead to neurological issues, developmental delays, and acute poisoning from contact or ingestion.
<b>Debris &amp; Physical Hazards</b>	Tsunamis generate massive amounts of debris, including wreckage from buildings, vehicles, trees, and other structures. Children are at an increased risk of injury from sharp objects, falling debris, or getting trapped in collapsed structures or debris piles.
<b>Extreme Cold</b>	In some tsunami-affected regions, if the disaster occurs during colder months, children may be exposed to cold weather due to damage to homes, lack of shelter, or power outages. Prolonged exposure to cold can lead to hypothermia, frostbite, or other cold-related illnesses in children, who are more vulnerable to temperature extremes.

Environmental Health Hazard	How a tsunami might affect children's health
<b>Extreme Heat</b>	If a tsunami causes power outages or disrupts cooling systems in warmer climates, children may be at risk for heat-related illnesses such as heat exhaustion or heatstroke. With the added stress of the disaster aftermath, children's risk of dehydration or overheating increases due to their smaller bodies and higher energy demands.
<b>Pest Management</b>	Tsunami flooding can displace insects, rodents, and other pests, pushing them into homes, schools, and shelters. Children are more vulnerable to pest-borne diseases, such as leptospirosis from rodents or insect-borne illnesses like Zika, West Nile virus, or malaria.
<b>Water: Damage &amp; Mold</b>	Floodwaters from a tsunami often cause extensive damage to buildings, which can lead to mold growth in schools, homes, and public spaces. Children, with their developing immune systems and respiratory systems, are more vulnerable to the harmful effects of mold exposure, including respiratory issues and allergic reactions.
<b>Water: Drinking Water Safety</b>	Tsunami flooding can contaminate drinking water supplies with bacteria, chemicals, and other pollutants. Children are at increased risk for waterborne diseases, including diarrhea, vomiting, and other gastrointestinal illnesses, from drinking or coming into contact with contaminated water.
<b>Water: Sewage &amp; Wastewater Contaminants</b>	Tsunamis can overwhelm sewage and wastewater systems, causing the release of untreated waste into the environment. Children are more susceptible to waterborne diseases, such as E. coli, cholera, and other gastrointestinal infections, from exposure to contaminated water sources.

## Educational Resources

[Lessons Learned: Tsunamis | ASPR TRACIE](#): This Topic Collection the most robust and most useful peer-reviewed and other public and privately developed materials (e.g., fact sheets, technical briefs, articles, toolkits, webinars, and plans) helpful to stakeholders in improving healthcare system preparedness and resilience.

[Tsunamis and Tsunami Hazards | U.S. Geological Survey](#): Explains how a tsunami forms and describes the life cycle of a tsunami.

[Tsunamis | Ready.gov](#): Preparing for and staying safe during tornadoes.

[Tsunami | EPA](#): Environmental considerations to prepare for and recover after a tsunami.

[Responding to Natural Disasters and Extreme Weather | Emergency Preparedness | CDC](#): The National Institute for Occupational Safety and Health (NIOSH) has created a document communicating key messages associated to the multiple hazards related to storms, floods, and hurricanes. The document is available for employers, emergency response and recovery workers, and volunteers.

[Tsunami Preparedness | American Red Cross](#): Learn how, why, and where to evacuate if conditions suggest a tsunami risk in your area.

Volcanic eruptions present numerous environmental health hazards. Children's unique vulnerability due to their developing respiratory systems, higher exposure risks, and greater susceptibility to pollutants makes them especially at risk for a range of health issues in the aftermath.

## Common Environmental Hazards

Environmental Health Hazard	How a volcano might affect children's health
<b>Air: Indoor Air Quality</b>	Volcanic eruptions release ash and gases that can infiltrate homes, schools, and other buildings, potentially leading to indoor air pollution. Children are more vulnerable to respiratory issues from inhaling volcanic ash or toxic gases, such as sulfur dioxide, as their lungs are still developing, and they have faster breathing rates than adults.
<b>Air: Outdoor Air Quality</b>	Volcanic ash clouds and gases can significantly degrade outdoor air quality, leading to respiratory problems for anyone exposed. Children's developing respiratory systems, higher breathing rates, and smaller airways make them more susceptible to the harmful effects of airborne ash, particulate matter, and gases like sulfur dioxide, which can cause asthma, coughing, and difficulty breathing.
<b>Chemical: Asbestos</b>	Volcanic ash may contain mineral particles like asbestos, which could be released into the air after an eruption. Due to their higher inhalation rates and smaller lung capacity, children are more susceptible to inhaling these particles, which can lead to long-term respiratory issues, lung diseases, or cancer later in life.
<b>Chemical: Combustion Byproducts</b>	Volcanic eruptions can trigger fires in nearby areas, resulting in the release of combustion byproducts such as carbon monoxide and other toxic gases. Children are more at risk from these gases, which can cause poisoning, respiratory distress, and neurological issues due to their developing bodies and higher vulnerability to air pollutants.
<b>Chemical: Industrial Chemicals</b>	In areas with nearby industrial facilities, volcanic eruptions may damage infrastructure, leading to the release of hazardous chemicals. Children are particularly vulnerable to exposure to these chemicals, which can cause poisoning, respiratory issues, and long-term developmental harm.
<b>Chemical: Lead &amp; Heavy Metals</b>	Volcanic eruptions can release heavy metals such as mercury, arsenic, and lead, which may become part of the ash cloud or contaminate surrounding areas. Children are more likely to absorb these metals, leading to developmental delays, neurological issues, and other health complications.
<b>Chemical: Pesticides &amp; Herbicides</b>	In agricultural areas, volcanic ash may mix with pesticides or herbicides, creating a toxic environment for children. Children are more susceptible to pesticide poisoning, which can lead to neurological and developmental issues, as well as acute illness from direct exposure.
<b>Debris &amp; Physical Hazards</b>	Volcanic eruptions often generate significant amounts of debris, including large rocks, ash, and mudflows (lahars). Children, especially those who are playing or wandering in affected areas, are at greater risk for injuries from falling debris, flying rocks, or being trapped in landslides or mudflows.

Environmental Health Hazard	How a volcano might affect children’s health
<b>Extreme Cold</b>	While volcanic eruptions often occur in warm climates, ash clouds can block sunlight, leading to sudden cooling in the affected areas. Children may be more vulnerable to cold-related illnesses like hypothermia or frostbite if they are exposed to prolonged cold temperatures without proper clothing or shelter.
<b>Extreme Heat</b>	If the volcanic eruption damages power lines or infrastructure in warm climates, children may be at risk due to disrupted cooling systems. Children are more susceptible to heat-related illnesses such as heatstroke and dehydration, due to their smaller bodies and higher metabolic rates.
<b>Pest Management</b>	Volcanic eruptions can displace pests, including insects and rodents, which may seek shelter in homes and shelters. Children are more vulnerable to diseases carried by pests, such as leptospirosis from rodents or vector-borne diseases like Zika or West Nile virus, which may increase in the aftermath of a volcanic eruption.
<b>Water: Damage &amp; Mold</b>	Volcanic ash can damage water systems, leading to contamination of water sources. Children are more susceptible to waterborne diseases like diarrhea, cholera, and dysentery from consuming contaminated water, which may result from the destruction of water infrastructure or contaminated floodwaters.
<b>Water: Drinking Water Safety</b>	The release of volcanic ash can also contaminate water supplies, making them unsafe for drinking. Children are at higher risk of gastrointestinal illnesses from drinking contaminated water, as their immune systems are still developing, and they may drink more water relative to their size.
<b>Water: Sewage &amp; Wastewater Contaminants</b>	In volcanic areas where the eruption disrupts sewage systems, the release of untreated sewage into water sources can occur. Children are more vulnerable to waterborne diseases like E. coli or dysentery from exposure to sewage-contaminated water.

## Educational Resources

[Lessons Learned: General | ASPR TRACIE](#): This Topic Collection the most robust and most useful peer-reviewed and other public and privately developed materials (e.g., fact sheets, technical briefs, articles, toolkits, webinars, and plans) helpful to stakeholders in improving healthcare system preparedness and resilience.

[About Volcanoes | U.S. Geological Survey](#): Explains what a volcano is, how it occurs, and how to identify different types of volcanoes.

[Volcanoes | Ready.gov](#): Preparing for and staying safe during tornadoes.

[Volcanoes | EPA](#): Environmental protection considerations after a tsunami.

[Responding to Natural Disasters and Extreme Weather | Emergency Preparedness | CDC](#): The National Institute for Occupational Safety and Health (NIOSH) has created a document communicating key messages associated to the multiple hazards related to storms, floods, and hurricanes. The document is available for employers, emergency response and recovery workers, and volunteers.

[Volcano Preparedness | American Red Cross](#): Learn about the hazards of an erupting volcano and how to keep your family safe.

A wind storm may result in extended power outages, making children vulnerable to environmental health hazards such as temperature extremes, respiratory issues from poor air quality or mold, and increased risks from disrupted sanitation and healthcare access.

## Common Environmental Hazards

Environmental Health Hazard	How a wind storm might affect children’s health
<b>Air: Indoor Air Quality</b>	Power outages can disrupt heating, cooling, and air circulation systems in homes and schools, leading to poor indoor air quality. Children are more vulnerable to respiratory issues from mold growth or the buildup of indoor pollutants due to their developing lungs and faster breathing rates.
<b>Air: Outdoor Air Quality</b>	Wind storms can stir up dust, debris, and particulate matter, reducing outdoor air quality. Children, with their higher respiratory rates and smaller airways, are more susceptible to the harmful effects of inhaling particles like dust or pollutants from damaged industrial sites.
<b>Chemical: Asbestos</b>	Wind storms can cause damage to older buildings or infrastructure containing asbestos, releasing harmful fibers into the air. Children are particularly vulnerable to inhaling these fibers, which can lead to respiratory issues, lung diseases, or even cancers in the long term.
<b>Chemical: Combustion Byproducts</b>	Wind storms may lead to fires, and power outages can exacerbate the effects of fire damage, releasing combustion byproducts such as carbon monoxide and volatile organic compounds (VOCs) into the air. Children are more susceptible to toxic gases, which can cause poisoning, respiratory distress, and neurological issues due to their smaller airways and higher exposure levels.
<b>Chemical: Industrial Chemicals</b>	Damaged industrial facilities and disrupted infrastructure caused by wind storms may release industrial chemicals, such as solvents or fuels, into the environment. Children are at increased risk for poisoning, respiratory issues, and long-term developmental problems from exposure to these chemicals.
<b>Chemical: Lead &amp; Heavy Metals</b>	In areas with industrial sites, wind storms can disturb hazardous materials such as heavy metals, including lead or mercury, which may become airborne. Children are more likely to absorb these metals, leading to developmental delays, neurological damage, and other health complications.
<b>Chemical: Pesticides &amp; Herbicides</b>	Wind storms can disperse agricultural chemicals like pesticides and herbicides into residential areas. Children are particularly vulnerable to these chemicals, which can cause neurological issues, developmental delays, or acute poisoning from direct exposure or ingestion.
<b>Debris &amp; Physical Hazards</b>	Wind storms can generate large amounts of debris, such as fallen trees, branches, and damaged buildings, which can pose injury risks. Children are more likely to be injured by flying debris or by being trapped in collapsed structures, especially if they are outside during the storm.

Environmental Health Hazard	How a wind storm might affect children’s health
<b>Extreme Cold</b>	In cases where power outages occur during colder weather, children may be exposed to extreme cold without proper heating. Children are more vulnerable to cold-related illnesses such as hypothermia or frostbite due to their smaller body size and higher heat loss rates.
<b>Extreme Heat</b>	If power outages occur during hot weather, children may be at risk of heat-related illnesses such as heatstroke, dehydration, or heat exhaustion. Without air conditioning or refrigeration for food and medications, children may be more vulnerable to heat-related health risks, as their bodies are less capable of regulating temperature.
<b>Pest Management</b>	Wind storms may displace pests like rodents, insects, and other animals, causing them to invade homes and shelters. Children are more susceptible to diseases transmitted by pests, such as leptospirosis from rodents or vector-borne diseases like Zika or West Nile virus from insects.
<b>Water: Damage &amp; Mold</b>	Wind storms often cause water damage to homes, schools, and public buildings, leading to mold growth and standing water. Children are more susceptible to mold-related health issues, including respiratory problems, allergies, and asthma, due to their developing immune systems and higher exposure levels.
<b>Water: Drinking Water Safety</b>	Power outages can disrupt water treatment plants, potentially leading to contamination of drinking water supplies with bacteria, chemicals, or other pollutants. Children are particularly vulnerable to waterborne diseases like diarrhea, vomiting, or gastrointestinal illnesses from consuming contaminated water.
<b>Water: Sewage &amp; Wastewater Contaminants</b>	Wind storms can overwhelm sewage systems, potentially causing untreated wastewater to be released into the environment. Children are more at risk for waterborne diseases such as E. coli or cholera from exposure to contaminated water from broken or damaged sewage lines.

## Educational Resources

[Lessons Learned: General | ASPR TRACIE](#): This Topic Collection the most robust and most useful peer-reviewed and other public and privately developed materials (e.g., fact sheets, technical briefs, articles, toolkits, webinars, and plans) helpful to stakeholders in improving healthcare system preparedness and resilience.

[Severe Weather 101 | NOAA National Severe Storms Laboratory](#): Explains what a tornado is and how to identify a tornado or dangerous storm.

[Severe Weather | Ready.gov](#): Preparing for and staying safe during severe weather.

[Responding to Natural Disasters and Extreme Weather | Emergency Preparedness | CDC](#): The National Institute for Occupational Safety and Health (NIOSH) has created a document communicating key messages associated to the multiple hazards related to storms, floods, and hurricanes. The document is available for employers, emergency response and recovery workers, and volunteers.

[High Wind Safety | American Red Cross](#): Learn how to keep your home and family safe during high wind events.

Children are vulnerable to environmental health hazards after a winter storm due to their increased risk of hypothermia, frostbite, and respiratory issues from cold air, along with limited access to heat, healthcare, and safe food or water during disruptions.

## Common Environmental Hazards

Environmental Health Hazard	How a winter storm might affect children’s health
<b>Air: Indoor Air Quality</b>	During winter storms, power outages may limit heating systems and ventilation, leading to indoor air quality issues such as carbon monoxide buildup or increased humidity that fosters mold growth. Children, with their developing respiratory systems and higher respiratory rates, are more vulnerable to these pollutants, which can cause asthma, respiratory infections, and other health problems.
<b>Air: Outdoor Air Quality</b>	Severe winter storms can create outdoor air quality issues by contributing to increased pollution from vehicle emissions (if roads are cleared with salt or other chemicals) and the use of alternative heating sources like wood stoves or generators. Children are more susceptible to these pollutants, which can irritate their lungs and exacerbate asthma or cause other respiratory problems.
<b>Chemical: Asbestos</b>	In older homes, winter storms can cause structural damage that may release harmful substances like asbestos into the air. Children are especially vulnerable to inhaling asbestos fibers, which can lead to long-term respiratory issues, including lung cancer and mesothelioma, due to their smaller lungs and higher exposure rates.
<b>Chemical: Combustion Byproducts</b>	The use of space heaters, wood stoves, and other alternative heating sources during power outages can lead to the release of combustion byproducts like carbon monoxide, nitrogen dioxide, and particulate matter. Children are more vulnerable to poisoning and respiratory distress from these gases, which can cause severe neurological effects and lung damage.
<b>Chemical: Industrial Chemicals</b>	Winter storms can disrupt industrial activities or storage, leading to the release of hazardous chemicals into the environment. Children are more vulnerable to chemical exposure from damaged industrial sites, as they may have increased chances of direct contact with contaminated areas, leading to poisoning or long-term health effects.
<b>Chemical: Lead &amp; Heavy Metals</b>	If a winter storm causes widespread flooding or damage to industrial sites, heavy metals like lead or mercury may be released into the environment. Children are particularly at risk from exposure to these metals, which can cause developmental delays, neurological damage, and other serious health complications.
<b>Chemical: Pesticides &amp; Herbicides</b>	Flooding or damage caused by a winter storm can displace pesticides or herbicides from agricultural areas, potentially contaminating residential areas. Children’s developing bodies make them more susceptible to the toxic effects of these chemicals, which can lead to neurological or developmental harm.
<b>Debris &amp; Physical Hazards</b>	Winter storms often cause trees to fall, power lines to break, and structures to collapse, creating significant debris. Children are more likely to be injured by falling trees, flying debris, or by becoming trapped in collapsed structures, especially when they are playing outdoors or in uninspected areas.

Environmental Health Hazard	How a winter storm might affect children’s health
<b>Extreme Cold</b>	One of the most direct hazards of winter storms is exposure to extreme cold, which can lead to hypothermia and frostbite. Children are particularly vulnerable to these cold-related illnesses because of their smaller body size, higher heat loss rates, and greater need for adequate clothing and shelter to regulate body temperature.
<b>Extreme Heat</b>	Extreme heat is not a typical environmental hazard during winter storms.
<b>Pest Management</b>	As winter storms displace pests like rodents seeking shelter indoors, they may introduce new health risks. Children are more vulnerable to diseases carried by pests, such as leptospirosis from rodents, or illnesses caused by pests like ticks, fleas, and mosquitoes in areas where these animals may invade homes.
<b>Water: Damage &amp; Mold</b>	Winter storms may cause flooding or frozen pipes to burst, leading to water damage and the potential growth of mold in homes, schools, and other buildings. Children are more likely to develop respiratory issues, allergies, or asthma exacerbations due to exposure to mold spores and damp environments.
<b>Water: Drinking Water Safety</b>	If winter storms cause power outages, water treatment plants may stop functioning properly, potentially leading to contamination of drinking water with bacteria or chemicals. Children are particularly vulnerable to gastrointestinal illnesses and dehydration from consuming contaminated water.
<b>Water: Sewage &amp; Wastewater Contaminants</b>	Winter storms can cause sewage systems to back up or fail, leading to the release of untreated sewage into water sources. Children, especially those exposed to raw sewage or floodwaters, are more at risk for waterborne diseases like E. coli, cholera, and other gastrointestinal illnesses.

## Educational Resources

[Lessons Learned: Extreme Cold | ASPR TRACIE](#): This Topic Collection the most robust and most useful peer-reviewed and other public and privately developed materials (e.g., fact sheets, technical briefs, articles, toolkits, webinars, and plans) helpful to stakeholders in improving healthcare system preparedness and resilience.

[Severe Weather 101 | NOAA National Severe Storms Laboratory](#): Understanding winter weather and the science behind the forecast.

[Winter Weather | Ready.gov](#): Preparing for and staying safe during tornadoes.

[Snow and Ice | EPA](#): Environmental protection considerations after a snow or ice storm.

[Responding to Natural Disasters and Extreme Weather | Emergency Preparedness | CDC](#): The National Institute for Occupational Safety and Health (NIOSH) has created a document communicating key messages associated to the multiple hazards related to storms, floods, and hurricanes. The document is available for employers, emergency response and recovery workers, and volunteers.

[Winter Storm Safety | American Red Cross](#): Learn how to stay safe during a blizzard and how to prevent or thaw frozen pipes.

# APPENDIX D: CHILDREN'S PROGRAMS AT-A-GLANCE

## How to Use These At-a-Glance Fact Sheets

*This section provides a brief overview of potential environmental health impacts that may affect each type of children's program.*

## Types & Definitions

*The Types and Definitions section provides descriptions of the different categories and subtypes of children's programs commonly found in communities. These include Child Care, Education, Health, Protection & Juvenile Justice, and Youth & Community Services. Each category outlines the range of services, typical settings, and populations served to help assessment teams understand the diverse landscape of children's services they may encounter and to support consistent documentation. Use these definitions as a reference when identifying programs in the field, categorizing them in your reporting, or communicating with partners who may use different terminology.*

## Partners

*Partners at the local, state, federal, and non-governmental levels all play important roles in disaster recovery. Recovery is locally led, state-managed, and federally supported with non-governmental organizations contributing critical expertise, services, and resources. The lists in this section highlight examples of partners who may be invited to take part in assessment activities or discussions about environmental health risks to children. These lists are not exhaustive. Other state, tribal, territorial, or local organizations may also be involved based on the community's needs and context. All links were active when this guide was published, but they may change over time. If a link is broken or you need more information, try using a web search to find updated or related resources.*

## Methods of Engagement

*The Methods of Engagement section offers practical strategies to help assessment teams connect with and learn from the individuals and organizations that deliver children's services. Each method is tailored to the specific type of program and accounts for operational realities, workforce capacity, and the diversity of service models. The goal is to create flexible opportunities for providers to share concerns, describe post-disaster impacts, and identify emerging needs. Use this section to guide your planning and outreach, choosing the approaches that best fit the provider types present in the community. Combining multiple methods such as surveys, focus groups, and partner-led outreach can improve participation, ensure a wider range of perspectives, and build trust with providers who may be unfamiliar with disaster assessment processes.*

## Considerations

*The Considerations section highlights important context and operational details about each type of children's program. These notes are designed to help assessment teams understand the broader environment in which programs operate, including potential barriers to participation, regulatory frameworks, and common disaster-related challenges. Use this section to inform your planning, tailor your outreach, and anticipate the types of support or coordination that might be needed. Understanding these nuances can strengthen partnerships and ensure that assessments are both respectful of program operations and responsive to real-world conditions.*

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Child care settings may be affected by environmental health hazards such as contaminated drinking water, mold, poor air quality, or structural damage, which can pose serious risks to young children who are more sensitive to these exposures. Disruptions to sanitation, heating/cooling, or safe outdoor play spaces can further impact children’s health.

## Types & Definitions

**Center-based child care** operates in a dedicated facility that is usually licensed to meet state regulations and standards for health, safety, and staffing. Depending on the provider, center-based child care may provide care to infant through school-aged children and may offer before and after school care.

A **faith-based child care** provider is a center-based program affiliated with a religious organization that offers child care services. These facilities may differ from other center-based child care by incorporating spiritual or religious values into its curriculum or environment.

**Home-based child care** providers offer care services in a private residence, typically caring for a smaller number of children in a more intimate, home-like setting.

**Informal child care**, also known as **family, friend, and neighbor care**, refers to child care outside the licensed child care systems, often in the caregiver’s or child’s home. This includes care provided by nannies and au pairs.

**Specialty child care** includes programs designed to meet the unique needs of specific populations, such as children with disabilities, chronic health conditions, or those from multilingual, military, or migrant families.

## Partners

### *State, Tribal, Territorial, or Local Partners*

<ul style="list-style-type: none"> <li>State Human Services Agency</li> </ul>	<ul style="list-style-type: none"> <li>State Child Care and Development Fund (CCDF) Lead Agency</li> </ul>
<ul style="list-style-type: none"> <li>Territorial Departments of Health &amp; Services</li> </ul>	<ul style="list-style-type: none"> <li>Tribal Child Care Programs (under Tribal CCDF or Tribal Temporary Assistance for Needy Families)</li> </ul>
<ul style="list-style-type: none"> <li>State Department of Health or Environmental Health Division</li> </ul>	<ul style="list-style-type: none"> <li>Local Child Care Resource and Referral Agencies (CCR&amp;Rs)</li> </ul>

### *Federal Partners*

<ul style="list-style-type: none"> <li>Administration for Children and Families (ACF)</li> </ul>	<ul style="list-style-type: none"> <li>Federal Emergency Management Agency (FEMA)</li> </ul>
<ul style="list-style-type: none"> <li>Centers for Disease Control and Prevention (CDC)</li> </ul>	<ul style="list-style-type: none"> <li>Environmental Protection Agency (EPA)</li> </ul>

### *Non-Governmental Partners*

<ul style="list-style-type: none"> <li><a href="#">Child Care Aware® of America (CCAoA)</a></li> </ul>	<ul style="list-style-type: none"> <li><a href="#">National Association for the Education of Young Children (NAEYC)</a></li> </ul>
<ul style="list-style-type: none"> <li><a href="#">National Indian Child Care Association (NICCA)</a></li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Zero to Three</a></li> </ul>
<ul style="list-style-type: none"> <li><a href="#">Save the Children</a></li> </ul>	<ul style="list-style-type: none"> <li><a href="#">American Academy of Pediatrics (AAP)</a></li> </ul>
<ul style="list-style-type: none"> <li><a href="#">Children’s Environmental Health Network (CEHN)</a></li> </ul>	<ul style="list-style-type: none"> <li><a href="#">National Resource Center for Health and Safety in Child Care and Early Education</a></li> </ul>

# Methods of Engagement

- **Focus Groups by Provider Type:** Organize separate small-group discussions with each type of provider to understand their unique concerns, operating environments, and post-disaster challenges. This allows providers to speak freely among peers who share similar circumstances.
- **Surveys with Tailored Questions:** Design and distribute brief, easy-to-complete surveys (digital or paper) tailored to each provider type. Include questions about physical safety, environmental conditions, disruptions to care, and needs related to children's health after the disaster.
- **Partner with Local Child Care Networks or Resource & Referral Agencies:** These organizations already have established relationships with a wide range of child care providers and can help convene meetings, distribute materials, and elevate the voices of smaller or underrepresented programs (especially informal and home-based care).
- **Listening Sessions at Existing Provider Meetings:** Join standing meetings or training sessions hosted by licensing agencies, early childhood coalitions, or local nonprofits to conduct listening sessions with providers where they already gather.
- **Community Mapping or Needs Walkthroughs:** Invite providers to participate in walkthroughs or mapping exercises of their facilities or neighborhoods to identify hazards or vulnerabilities post-earthquake. This can be especially useful for home-based, informal, and faith-based providers.
- **One-on-One Interviews:** Conduct brief, semi-structured interviews with a sample of providers where group participation may be less feasible due to varied or irregular operations.
- **Language- and Culture-Appropriate Outreach:** Ensure engagement materials and sessions are available in multiple languages and reflect the cultural context of providers, particularly for informal care and those serving multilingual families.
- **Child Care Recovery Advisory Panel:** Form a short-term advisory group with at least one representative from each provider type to provide ongoing input into the assessment findings and recovery planning.

## Considerations

- After a disaster, families depend on the resumption of child care to return to work, complete home and community repairs, and regain a sense of normalcy. They count on their child care provider to keep their children safe.
- A significant portion of child care is unlicensed and unregulated and is therefore unlikely to participate in this assessment process. Mitigation actions or public information campaigns should consider the needs of all types of care providers.

Schools can face environmental health hazards such as exposure to mold, asbestos, poor indoor air quality, and contaminated water following disasters, all of which pose heightened risks to children’s health and learning. Structural damage, compromised sanitation, or nearby chemical releases can further disrupt safe learning environments and delay recovery for students and staff.

## Types & Definitions

**Boarding schools** are educational institutions where students both live and attend school on campus. These schools may serve elementary through high school-aged children and can be public, private, or operated by tribes or other entities, often providing structured academic and residential programs.

**Charter schools** are independently operated schools that may be publicly funded and are established through a charter agreement with a state or local authority. They have more flexibility in curriculum and operations than traditional public schools, while still being held accountable for academic performance and student outcomes.

**Head Start and Early Head Start** are federally funded programs that provide early childhood education, health, nutrition, and family support services to low-income children and families. Head Start serves preschool-aged children, while Early Head Start focuses on infants, toddlers, and pregnant women.

**Private schools** are independently funded and operated educational institutions that may be secular or affiliated with a religious organization. They are not governed by public school districts and typically charge tuition, though they may offer scholarships or financial aid.

**Public schools** are government-funded schools that provide no-cost education to children from kindergarten through 12th grade. Operated by local school districts and overseen by state education departments, they are required to follow state curriculum standards and serve all eligible children in their community.

## Partners

### *State, Tribal, Territorial, or Local Partners*

<ul style="list-style-type: none"> <li>State/Tribal/Territorial Education Agency</li> </ul>	<ul style="list-style-type: none"> <li>Local Education Agency</li> </ul>
<ul style="list-style-type: none"> <li>Charter School Authorizers</li> </ul>	<ul style="list-style-type: none"> <li>State or Local Early Learning Coalitions</li> </ul>
<ul style="list-style-type: none"> <li>Local School Boards and Superintendents</li> </ul>	<ul style="list-style-type: none"> <li>School Facilities or Operations Directors</li> </ul>

### *Federal Partners*

<ul style="list-style-type: none"> <li>U.S. Department of Education</li> </ul>	<ul style="list-style-type: none"> <li>Federal Emergency Management Agency (FEMA)</li> </ul>
<ul style="list-style-type: none"> <li>Centers for Disease Control and Prevention (CDC)</li> </ul>	<ul style="list-style-type: none"> <li>Environmental Protection Agency (EPA)</li> </ul>
<ul style="list-style-type: none"> <li>Administration for Children &amp; Families (ACF)</li> </ul>	<ul style="list-style-type: none"> <li>Bureau of Indian Education (BIE)</li> </ul>

### *Non-Governmental Partners*

<ul style="list-style-type: none"> <li><a href="#">National Association of State Boards of Education (NASBE)</a></li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Council of Chief State School Officers (CCSSO)</a></li> </ul>
<ul style="list-style-type: none"> <li><a href="#">National Association of State Directors of Special Education (NASDSE)</a></li> </ul>	<ul style="list-style-type: none"> <li><a href="#">National School Boards Association (NSBA)</a></li> </ul>

## Non-Governmental Partners

- |                                                                                                                        |                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• <a href="#">American Association of School Administrators (AASA)</a></li></ul> | <ul style="list-style-type: none"><li>• <a href="#">National Association of Charter School Authorizers (NACSA)</a></li></ul> |
| <ul style="list-style-type: none"><li>• <a href="#">National Indian Education Association (NIEA)</a></li></ul>         | <ul style="list-style-type: none"><li>• <a href="#">National Parent Teacher Association (PTA)</a></li></ul>                  |

## Methods of Engagement

- **Partner with School Districts and Education Agencies:** For public and charter schools, coordinate with local education agencies, superintendents, and school boards to facilitate communication, schedule meetings, and identify key contacts at individual schools.
- **Host Tiered Stakeholder Roundtables:** Organize roundtable discussions that include a mix of leadership (e.g., principals, administrators) and operational staff (e.g., facilities managers, school nurses) from each school type to discuss environmental hazards and recovery priorities.
- **Conduct Targeted Listening Sessions:** Hold small, school-type-specific listening sessions to surface concerns unique to boarding schools, private institutions, or charter organizations like building ownership status, funding streams, and oversight differences.
- **Develop and Distribute School-Specific Surveys:** Create surveys that address facility damage, disruptions to operations, environmental exposures, and student/family needs. Tailor language for each school type and allow anonymous responses to encourage honest input.
- **Engage School Nurses and Health Coordinators:** These professionals often have direct insight into children's health patterns, school environments, and the intersection of health and facilities, especially in public and Head Start settings.
- **Collaborate with State or Regional Education Associations:** Tap into associations for private schools, boarding schools, and charter networks. These organizations can help disseminate materials, host joint meetings, or act as intermediaries.
- **Include Youth Voice Where Appropriate:** Especially in charter, public, and boarding schools, consider youth roundtables or feedback opportunities for older students to share perspectives on how environmental health issues are affecting their learning and well-being.
- **Establish an Education Recovery Workgroup:** Form a cross-sector working group with representatives from each school type, education agencies, health departments, and emergency managers to advise on findings and coordinate recovery strategies.

## Considerations

- Public schools are often designated as shelters or disaster recovery hubs and may face competing demands between continuing education and hosting emergency operations, complicating their ability to focus on environmental assessments.
- Head Start and Early Head Start programs are federally regulated and prioritize comprehensive child development, including health and nutrition. Partnerships should align with their performance standards and family engagement requirements.
- Private and charter schools may not fall under the same local jurisdiction as public schools and may have limited relationships with emergency management or public health authorities.
- Children may also receive schooling at home. These home schools may be part of a larger community network, affiliated with a religious organization, or managed independently within the home.

Health facilities may face environmental health hazards such as utility failures, air or water contamination, or damage to medical infrastructure, which can interrupt care for children and increase health risks during critical periods. These disruptions can be especially dangerous for medically fragile children, those with behavioral health needs, and communities relying on specialized pediatric services during and after a disaster.

## Types & Definitions

Facilities with **advanced/critical care with pediatric capability** provide specialized care for critically ill or injured children, often in ICUs or emergency departments, with advanced medical technologies and pediatric specialists.

**Health centers and clinics (including Federally Qualified Health Centers and Rural Health Centers)** offer primary care and pediatric services to underserved populations, with a focus on accessibility and affordability.

**Maternal & child health programs** deliver services to improve the health of mothers, infants, and children, including prenatal care, immunizations, and developmental screenings.

**Pediatric Disaster Networks** are coordinated networks of pediatric healthcare providers ensuring access to medical care for children during disasters and public health emergencies.

A **pediatric hospital** is a healthcare facility dedicated to diagnosing and treating children, offering specialized care and services from newborns to adolescents.

**Specialty care providers** are healthcare professionals who focus on specific pediatric conditions, such as pediatric cardiologists or neurologists, providing specialized diagnostic and treatment services.

**Suicide prevention & crisis intervention facilities** offer immediate care for children and young adults facing mental health crises, including suicidal ideation, and connect them to ongoing mental health support.

**Youth and young adult behavioral health or substance use disorder facilities** provide treatment for behavioral health challenges or substance use disorders in children and young adults, offering therapy and counseling services.

## Partners

### *State, Tribal, Territorial, or Local Partners*

<ul style="list-style-type: none"> <li>State, Tribal, Territorial Departments of Health</li> </ul>	<ul style="list-style-type: none"> <li>Local Health Departments</li> </ul>
<ul style="list-style-type: none"> <li>Maternal and Child Health (MCH) Programs</li> </ul>	<ul style="list-style-type: none"> <li>Hospital and Healthcare Coalitions</li> </ul>
<ul style="list-style-type: none"> <li>Behavioral Health Authorities</li> </ul>	<ul style="list-style-type: none"> <li>State or Local Suicide Prevention Coalitions</li> </ul>

### *Federal Partners*

<ul style="list-style-type: none"> <li>Administration for Strategic Preparedness &amp; Response (ASPR)</li> </ul>	<ul style="list-style-type: none"> <li>Health Resources &amp; Services Administration (HRSA)</li> </ul>
<ul style="list-style-type: none"> <li>Office of the Assistant Secretary for Health (OASH)</li> </ul>	<ul style="list-style-type: none"> <li>Indian Health Service (IHS)</li> </ul>
<ul style="list-style-type: none"> <li>Centers for Disease Control and Prevention (CDC)</li> </ul>	<ul style="list-style-type: none"> <li>Environmental Protection Agency (EPA)</li> </ul>
<ul style="list-style-type: none"> <li>Centers for Medicare &amp; Medicaid Services (CMS)</li> </ul>	

## Non-Governmental Partners

<ul style="list-style-type: none"><li>• <a href="#">American Academy of Pediatrics (AAP)</a></li></ul>	<ul style="list-style-type: none"><li>• <a href="#">Children’s Hospital Association</a></li></ul>
<ul style="list-style-type: none"><li>• <a href="#">National Association of County and City Health Officials (NACCHO)</a></li></ul>	<ul style="list-style-type: none"><li>• <a href="#">Association of State and Territorial Health Officials (ASTHO)</a></li></ul>
<ul style="list-style-type: none"><li>• <a href="#">National Association of Community Health Centers (NACHC)</a></li></ul>	<ul style="list-style-type: none"><li>• <a href="#">Pediatric Environmental Health Specialty Units (PEHSU)</a></li></ul>
<ul style="list-style-type: none"><li>• <a href="#">Suicide Prevention Resource Center (SPRC)</a></li></ul>	<ul style="list-style-type: none"><li>• <a href="#">National Network to Eliminate Disparities in Behavioral Health</a></li></ul>

## Methods of Engagement

- **Coordinate Through Local and Regional Health Systems** Engage hospital systems, healthcare coalitions, and local health departments as conveners. They can help connect to pediatric units, critical care teams, and specialty providers across facilities.
- **Conduct Focus Groups by Provider Type:** Host small, tailored focus groups to surface concerns specific to each health provider type (e.g., pediatric behavioral health vs. maternal & child health programs), allowing for deeper discussion of environmental health impacts on children.
- **Offer One-on-One Listening Sessions:** For overburdened or high-priority facilities, offer short, private interviews to gather candid input, especially from providers like crisis intervention programs, rural clinics, or environmental health specialty units.
- **Collaborate with State Title V and MCH Programs:** These maternal and child health leaders have statewide oversight and relationships with a range of pediatric services, making them excellent partners in identifying and coordinating engagement with relevant providers.
- **Engage Providers via Pediatric Emergency Preparedness Channels:** Many pediatric hospitals and specialty networks participate in emergency preparedness coalitions. Pre-existing relationships can simplify engagement to gather input on environmental health threats post-disaster.
- **Conduct Environmental Walkthroughs or Technical Assessments:** Offer voluntary facility walkthroughs (virtually or in-person) to identify environmental health risks such as mold, ventilation issues, or contamination and jointly prioritize recovery actions.
- **Partner with Behavioral Health Agencies and Youth-Serving Systems:** Work through youth behavioral health systems, school-linked mental health programs, and substance use treatment centers to ensure their unique environmental concerns (e.g., quiet space, air quality, safety) are included.

## Considerations

- Many pediatric-serving health facilities are already overwhelmed post-disaster with increased medical needs and may have limited staff time to participate in non-clinical assessments.
- Federally Qualified Health Centers (FQHCs) and Rural Health Centers often serve medically underserved populations and are required to meet federal reporting standards, making them important partners for identifying health disparities in environmental exposures.
- Behavioral health and substance use disorder providers may observe early signs of environmental trauma but might not frame them in environmental health terms. Engagement should bridge clinical and environmental health language.

# PROTECTION & JUVENILE JUSTICE

Children in protection and juvenile justice programs may have limited ability to advocate for themselves or relocate. The programs may experience environmental health hazards like poor air or water quality, mold, overcrowding, or utility disruptions that threaten the safety and well-being of children in their care.

## Types & Definitions

**Child Protective Services (CPS)** is a government-run program responsible for responding to reports of child abuse and neglect. CPS assesses child safety, supports families through services and case management, and may remove children from dangerous situations to ensure their well-being and protection.

**Foster care** is a temporary out-of-home placement system for children who cannot safely live with their biological families due to abuse, neglect, or other challenges. Children in foster care live with trained and licensed caregivers while child welfare professionals work toward family reunification or permanent placement.

The **juvenile justice** system encompasses courts, detention centers, probation services, and community-based programs that serve youth involved in criminal or delinquent behavior. It aims to promote accountability and rehabilitation while protecting public safety and supporting positive youth development.

**Teen and youth shelters** provide emergency housing and supportive services for adolescents facing homelessness, family rejection, abuse, or other crises. These shelters often include access to counseling, education, and case management to help stabilize youth and connect them with longer-term care options.

## Partners

### *State, Tribal, Territorial, or Local Partners*

- |                                                                       |                                          |
|-----------------------------------------------------------------------|------------------------------------------|
| • State, Tribal, Territorial Human Services or Social Services Agency | • Local or Regional Child Welfare Agency |
| • State Foster Care Systems or Licensing Boards                       | • Juvenile Justice Agencies              |
| • Family & Youth Courts                                               | • Teen and Youth Homeless Shelters       |
| • County Behavioral Health Agencies                                   | • Youth Ombudsman Offices                |

### *Federal Partners*

- |                                                |                                                                    |
|------------------------------------------------|--------------------------------------------------------------------|
| • Administration for Children & Families (ACF) | • Substance Abuse & Mental Health Services Administration (SAMHSA) |
| • Department of Justice (DOJ)                  | • Indian Health Service (IHS)                                      |
| • Housing & Urban Development (HUD)            | • Bureau of Indian Affairs (BIA)                                   |

### *Non-Governmental Partners*

- |                                                          |                                                                                 |
|----------------------------------------------------------|---------------------------------------------------------------------------------|
| • <a href="#">Child Welfare League of America (CWLA)</a> | • <a href="#">National Court Appointed Special Advocates (CASA) Association</a> |
| • <a href="#">National Network for Youth</a>             | • <a href="#">National Center for Youth Law</a>                                 |
| • <a href="#">Annie E. Casey Foundation</a>              | • <a href="#">Tribal Law and Policy Institute</a>                               |
| • <a href="#">Youth MOVE National</a>                    | • <a href="#">National Foster Youth Institute</a>                               |

# Methods of Engagement

- **Coordinate with Child Welfare and Juvenile Justice Agency Leadership:** Start with leadership at the county or state level for CPS, foster care, and juvenile justice systems. These entities often oversee or license multiple facilities and programs and can facilitate introductions and streamline engagement.
- **Participate in Existing Multidisciplinary or Child Welfare Coordination Meetings:** Leverage standing meetings (e.g., child welfare coalitions, juvenile justice planning committees, youth homelessness workgroups) to present assessment goals and invite collaboration.
- **Use Trauma-Informed Listening Sessions:** Host sessions with frontline workers (e.g., case managers, shelter staff, probation officers) that center psychological safety. Focus questions on how environmental conditions post-disaster affect children's well-being, placement stability, access to services, and trauma.
- **Offer Individualized Interviews with Program Managers:** Conduct 1:1 interviews with directors of teen shelters, group homes, juvenile detention centers, and foster care placement coordinators to capture detailed, sensitive operational concerns.
- **Work Through Legal and Advocacy Partners:** Engage organizations that advocate for children in protective or justice settings (e.g., CASA programs, legal aid, youth rights coalitions). These groups can amplify children's lived experiences and support ethical engagement.
- **Include Youth and Family Voice Through Trusted Intermediaries:** Work with shelters and foster care providers to identify safe, supported opportunities for young people or caregivers to share concerns, especially around environmental conditions in housing, shelters, or detention.
- **Conduct Targeted Environmental Health Risk Assessments:** Where feasible, offer assessments of shelter facilities, group homes, or juvenile justice centers focusing on air quality, water, ventilation, overcrowding, or unsafe surroundings post-disaster. Consider partnering with environmental health scientists from state or local public health, EPA, or CDC.
- **Survey Frontline Staff for Trends:** Develop a short, anonymous survey for caseworkers, probation officers, and shelter staff to surface patterns and concerns around children's health and safety in environments affected by the disaster.
- **Collaborate with Foster Care Licensing or Oversight Units:** Engage those who inspect and monitor foster homes. They may already be tracking environmental risks or have knowledge of homes affected by structural damage, contamination, or utility outages.
- **Leverage Cross-System Recovery Initiatives:** If the region has a children's recovery task force or cross-agency disaster response structure, ensure protection and juvenile justice partners are active members and that their insights inform recovery priorities.

## Considerations

- Children in protective custody or shelters may be living in temporary or transitional housing where environmental risks (mold, poor ventilation, toxins) are high but hard to track. Staff in these programs may need support identifying and reporting these issues.
- Juvenile justice programs are governed by strict safety and custodial rules that may limit outside access to facilities; collaboration must be coordinated through appropriate legal and administrative channels.
- Providers may be hesitant to engage if they perceive environmental assessments as regulatory oversight. Trust-building and clear, non-punitive framing will be critical.

# YOUTH & COMMUNITY SERVICES

Youth and community services programs may be disrupted by environmental health hazards such as unsafe facilities, poor air quality, contaminated water, or lack of power. These spaces are critical for children's development and emotional recovery after a disaster.

## Types & Definitions

**After-school programs** provide structured care, enrichment, and supervision for school-aged children outside of regular school hours. These programs often offer academic support, recreational activities, and social development opportunities in safe and accessible settings.

**Camps** offer seasonal, overnight, or day-based experiences that promote recreation, learning, and social engagement for children and youth. Programs may vary in focus, such as outdoor education, sports, arts, or specific populations, and are often staffed by trained counselors in dedicated facilities or natural settings.

**Faith centers** are places of worship and community gathering that often provide child- and youth-focused programming such as mentoring, education, counseling, and emergency support. These centers may serve as trusted and culturally relevant anchors for families, especially during recovery from a disaster.

**Recreation facilities** are facilities that provide physical activity, wellness, and social programs for children and youth. Operated by local governments, nonprofits, or the private sector, these centers may include sports leagues, arts classes, and safe spaces for informal play and connection.

**Services for children with a disability** support the developmental, educational, medical, and social needs of children with physical, intellectual, or developmental disabilities. Programs may include therapy, early intervention, special education coordination, assistive technologies, and caregiver support, often tailored to promote inclusion and accessibility.

## Partners

### *State, Tribal, Territorial, or Local Partners*

- |                                                                                             |                                                                                                      |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>State/Tribal/Territorial Education Agencies</li></ul> | <ul style="list-style-type: none"><li>County or Municipal Parks and Recreation Departments</li></ul> |
| <ul style="list-style-type: none"><li>Local Disability Services</li></ul>                   | <ul style="list-style-type: none"><li>Tribal Youth Services or Cultural Programs</li></ul>           |
| <ul style="list-style-type: none"><li>Public Libraries</li></ul>                            |                                                                                                      |

### *Federal Partners*

- |                                                                                                  |                                                                                            |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>Administration for Children &amp; Families (ACF)</li></ul> | <ul style="list-style-type: none"><li>Department of Education</li></ul>                    |
| <ul style="list-style-type: none"><li>Department of Agriculture (USDA)</li></ul>                 | <ul style="list-style-type: none"><li>Federal Emergency Management Agency (FEMA)</li></ul> |
| <ul style="list-style-type: none"><li>Indian Health Service (IHS)</li></ul>                      | <ul style="list-style-type: none"><li>AmeriCorps</li></ul>                                 |

### *Non-Governmental Partners*

- |                                                                                                  |                                                                                                      |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>Faith-Based Coalitions or Interfaith Councils</li></ul>    | <ul style="list-style-type: none"><li><a href="#">Boys &amp; Girls Clubs of America</a></li></ul>    |
| <ul style="list-style-type: none"><li><a href="#">YMCA/YWCA</a></li></ul>                        | <ul style="list-style-type: none"><li><a href="#">Big Brothers Big Sisters of America</a></li></ul>  |
| <ul style="list-style-type: none"><li><a href="#">National AfterSchool Association</a></li></ul> | <ul style="list-style-type: none"><li><a href="#">National Summer Learning Association</a></li></ul> |
| <ul style="list-style-type: none"><li><a href="#">EasterSeals</a></li></ul>                      | <ul style="list-style-type: none"><li><a href="#">The Arc</a></li></ul>                              |

## Methods of Engagement

- **Connect Through Local Community Coalitions or Youth Networks:** Identify and attend meetings of local youth-serving coalitions, community alliances, or family support networks where multiple providers come together to coordinate programming and services.
- **Partner with Intermediary Organizations or Umbrella Networks:** Engage state or regional associations of after-school programs, disability service networks, camp associations, or faith-based coalitions. These groups often act as conveners or capacity builders.
- **Conduct Listening Circles or Community Forums:** Organize small, community-based discussions with youth service staff and volunteers to understand how environmental hazards are affecting their spaces and the children they serve, especially in high-impact areas.
- **Use Accessible Surveys for Staff and Volunteers:** Distribute short, clear surveys (paper or digital) to capture input from a wide range of program types, including those run by part-time staff or volunteers, on environmental concerns and program disruption.
- **Host Joint Planning or Training Sessions:** Partner with environmental health scientists at the state, local, or federal level to offer trainings or collaborative planning sessions on environmental health risks in children's spaces post-disaster. This encourages shared problem-solving and builds program buy-in.
- **Collaborate with Parks & Recreation Departments:** Work with municipal or county parks and rec staff who oversee recreation centers and summer camps. They often maintain facilities and can flag structural or environmental issues.
- **Engage Disability Advocates and Service Coordinators:** Consult with organizations or case managers who support children with disabilities to ensure accessible engagement and inclusion of specialized services in assessments.
- **Use Youth Ambassadors or Peer Advocates:** Where appropriate, involve youth leaders or peer mentors from community programs in outreach or data collection. They can provide direct insight and encourage participation from other young people.
- **Map Services and Gaps Geographically:** Work with local partners to map youth-serving organizations and overlay environmental hazard data to prioritize outreach to high-risk neighborhoods or under-resourced zones.

## Considerations

- Many of these programs operate out of non-traditional or shared-use spaces (e.g., basements, churches, community centers) where environmental controls and inspections are inconsistent.
- Programs serving children with disabilities may be especially sensitive to disruptions in routine and sensory environments. Engagement must consider accommodations and accessibility in communication and recovery plans.
- Faith-based and volunteer-led programs often have strong community ties but may operate independently of formal emergency management structures, requiring relational outreach and local intermediaries for engagement.

# APPENDIX E: ENVIRONMENTAL HAZARDS SUMMARY SHEETS

## How to Use These Summary Sheets

*The top text on each page provides a very brief overview of how the environmental health hazard may specifically affect children due to their physical size and developing bodies.*

### Discussion Prompts for Children's Programs

*These prompts are designed to help guide a conversation, not to serve as a checklist. Use them to start open-ended discussions and follow up with deeper questions based on what the program leader shares.*

*The questions aim to help you understand:*

- Which environmental health hazards the children's program has seen or heard concerns about.
- Whether any children have shown symptoms that may be related to those hazards.
- What public information or education efforts are reaching families and staff.
- What steps the children's program is taking to reduce risks and protect children.

*You don't need to be an environmental health expert. Your role is to surface important concerns and help connect the right experts and resources. Ask open-ended follow-ups to better understand specific situations and any unmet needs.*

### Ideas for Mitigation & Intervention

*The examples on this page illustrate potential activities that a children's program or a state, local, or tribal public health agency might implement to help reduce children's risk from specific environmental health hazards. They are designed to be practical, low- or no-cost actions that could be adapted for use in diverse settings, including urban areas, suburban neighborhoods, rural communities, and tribal lands.*

*These are fictional scenarios provided for discussion and planning purposes only. They are not meant to prescribe specific actions, but to spark ideas and support locally driven solutions.*

### Cultivating Allies

*Allies and partners at the local, state, federal, and non-governmental levels all play important roles in disaster recovery. Recovery is locally led, state-managed, and federally supported with non-governmental organizations contributing critical expertise, services, and resources.*

*To support an effective assessment and future recovery actions, it is important to understand which partners have roles, authority, expertise, or programs related to each environmental hazard. The following key tasks are designed to help identify and connect with partners across different levels of government and sectors.*

### Key Words

*These are common words and phrases you may hear during conversations about each environmental health hazard. If you come across a word or phrase you're unfamiliar with, it may be helpful to look it up before beginning the assessment interview.*

*Please note that these lists are not exhaustive.*

# Educational Resources

*Each Environmental Health Summary Sheet includes an Educational Resources section that provides links to high-quality materials related to the specific hazard. These resources are intended to support assessment team members by offering foundational information, practical guidance, and ready-to-share materials.*

*Assessment team members should use these resources to:*

- Increase their understanding of the environmental health hazard, including its sources, health impacts, and relevance in post-disaster settings.
- Identify existing tools, guidance, and technical assistance programs from trusted organizations such as the U.S. Environmental Protection Agency (EPA), Centers for Disease Control and Prevention (CDC), and others.
- Share credible, accessible information with state, tribal, territorial, and local (STTL) partners and children's programs, particularly when requested or when concerns about the hazard are identified during engagements.

*When appropriate, resources may be copied and pasted into follow-up communications, presentations, or planning materials. While not all were created specifically for disaster recovery, many offer practical actions or frameworks that can be adapted to meet local needs. Some resources appear under multiple environmental hazards when they are broadly relevant across different situations.*

*All links were active when this guide was published, but they may change over time. If a link is broken or you need more information, try using a web search to find the most current resources.*

Good indoor air quality is crucial for children's health because they spend a significant amount of time indoors, and exposure to pollutants and allergens can lead to respiratory impacts and illness.

## Discussion Prompts for Children's Programs

- Have you noticed any concerns from parents, staff, or children regarding air quality inside the facility, such as unusual smells, difficulty breathing, or discomfort after the disaster?
- Has the program taken any steps to assess or improve indoor air quality since the disaster, such as inspecting for mold, repairing ventilation systems, or addressing water damage?
- Are there specific areas within the facility – such as meeting rooms, hallways, or bathrooms – that seem to be more affected by poor air quality or moisture issues?
- Have parents or staff raised concerns about symptoms related to poor indoor air quality, such as headaches, coughing, or respiratory issues in children or adults?
- What steps have been taken, if any, to ensure proper ventilation and appropriate temperature and humidity levels in indoor spaces, especially if windows were damaged or the heating, ventilation, and air conditioning (HVAC) system was affected by the disaster?
- Are there any groups within the program, such as children with asthma or other respiratory conditions, that may be more at risk from poor indoor air quality?

## Ideas for Mitigation & Intervention

- **Mobile Air Quality Demonstration Program:** Use mobile health or library vans to demonstrate DIY air purifier construction and offer basic supplies (e.g., filters) during community visits and school events.
- **School HVAC Awareness Drive:** Collaborate with facilities staff and student councils to monitor and promote proper maintenance and use of existing HVAC systems, ensuring filters are changed and vents are unobstructed.
- **Cultural Caregiver Workshops:** Host workshops co-led by traditional healers and health educators on safe indoor air practices, integrating cultural knowledge (e.g., safe use of indoor burning for ceremony, alternatives for heat or pest control).

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to indoor air quality.

**Research** local and regional networks that offer education, advocacy, or direct services related to indoor air quality, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Air filtration | Air purifiers  
Airborne pollutants | Allergens  
Carbon dioxide | Carbon monoxide  
Dust mites | Formaldehyde  
Fumes | Indoor air exchange  
Indoor pollutants | Mold  
Ozone | Particulate matter  
Radon | Sick building syndrome  
Soot | Toxins | Ventilation  
Volatile organic compounds (VOCs)

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Asthma | EPA](#): A new campaign aims to educate parents and children with asthma about simple steps to prevent asthma attacks.

[Air Cleaners and Air Filters in the Home | EPA](#): Provides information on portable air cleaners and on HVAC and furnace filters commonly used in homes.

[Emergencies and Indoor Air Quality \(IAQ\) | EPA](#): Weather-related and man-made emergencies can create a range of hazards in indoor environments. People spend most of their time indoors and rely on indoor spaces for shelter. Learning about how to prepare for, respond to, and safely recover from weather-related and man-made emergencies that affect indoor environments can help protect building occupants and preserve healthy indoor air.

[Flood Cleanup: Protecting Indoor Air Quality - October 2018 | EPA](#): EPA maintains several webpages on flooding and IAQ. This includes guidance for safely cleaning up and recovering a home or building following a flood.

[Flooded Homes Cleanup Guidance | EPA](#): EPA has a series of short do-it-yourself videos demonstrating the hazards present in a flooded home and how to safely clean up your home and recover from a flood.

[Power Outages and Indoor Air Quality \(IAQ\) | EPA](#): Power outages that last longer than a few hours, often caused by extreme weather events, like storms or flooding, can have negative impacts on indoor environments. For example, without electricity, controlling the temperature indoors may be difficult or impossible, and if the ventilation system in the home or building doesn't work without power, levels of pollutants in the indoor air could increase.

[IAQ Tools for Schools Resources | EPA](#): Make indoor air quality (IAQ) a priority in your school by implementing an IAQ management program. Find tools and resources from EPA's IAQ Tools for Schools program to develop and sustain an effective and comprehensive program using simple, low-cost actions to help save money, improve health, and decrease student and staff absenteeism.

[Creating Healthy Indoor Air Quality in Schools | EPA](#): Promote a healthy learning environment at your school to reduce absenteeism, improve test scores and enhance student and staff productivity.

[Healthy Indoor Environments in Schools: Plans, Practices and Principles for Maintaining Healthy Learning Environment | EPA](#): Find a set of webinars below about best ventilation and cleaning practices, intended to help school staff in responding to concerns in their facilities.

[Reference Guide for Indoor Air Quality in Schools | EPA](#): This common-sense guidance is designed to help you prevent and solve many indoor air problems with minimal cost and involvement.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

Maintaining good outdoor air quality is vital for children because their developing bodies are more vulnerable to pollution, which can lead to serious health risks and hinder cognitive development.

## Discussion Prompts for Children's Programs

- Have there been any reports from staff, parents, or children about unusual air quality issues outside the facility, such as dust, smoke, or strong odors, that could be impacting children's health?
- Are there any outdoor sources of air pollution near the facility, like industrial facilities, highways, or wildfires, that could be contributing to poor air quality?
- Are there any areas near the facility where debris or structural damage has been left behind, which could potentially contribute to dust, particulates, or chemical contamination in the air?
- Has the facility been advised by local authorities or disaster recovery teams about the potential for long-term outdoor air quality issues due to contamination from chemicals, damaged infrastructure, or other environmental hazards?
- Are there areas near the facility where local water or air contamination could be worsening due to the ongoing effects of the disaster, such as runoff from flooded areas or hazardous material spills?
- Has the program taken any precautions to limit exposure to poor outdoor air quality, such as restricting outdoor activities during high pollution events or setting up air filtration systems indoors?

## Ideas for Mitigation & Intervention

- **School-Linked Outdoor Activity Flags:** Provide schools with colored flags or signage to indicate daily air quality and recommend safe levels of outdoor play, empowering educators and families with simple visual guidance.
- **Outdoor Activity Modification Toolkit:** Develop a simple toolkit and training for schools and childcare centers to adjust outdoor schedules based on air quality forecasts, incorporating it into safety routines.
- **Tree Planting Near Play Spaces:** Partner with local organizations or neighborhood groups to plant trees or shrubs near playgrounds and schools as a natural barrier to traffic pollution and heat.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Air pollution | Ambient air  
Carbon monoxide  
Coarse particulate matter (PM10)  
Dust storms  
Fine particulate matter (PM2.5)  
Fossil fuel combustion  
Greenhouse gases  
Ground-level ozone  
Industrial emissions | Lead pollution  
Nitrogen dioxide | Ozone  
Particulate matter  
Pollution hotspots  
Smog | Sulfur dioxide  
Vehicle emissions  
Volatile organic compounds (VOCs)  
Wildfire smoke

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[AirNow.gov | EPA](#): AirNow is your one-stop source for air quality data, education, and resources.

[AirNow Fire and Smoke Map | EPA](#): This map shows observed air quality conditions based on scale particulate as well as fire locations from incidents and satellite detections, and smoke plumes detected by satellites.

[Environmental Benefits Mapping and Analysis Program – Community Edition \(BenMAP-CE\) | EPA](#): BenMAP-CE calculates the number and economic value of air pollution-related death and illnesses.

[Air Quality System \(AQS\) | EPA](#): EPA's repository of ambient air quality data that assists in air quality assessments, designations, modeling for permit review and prepare reports for Congress as mandated by the Clean Air Act.

[Environments and Contaminants - Criteria Air Pollutants | EPA](#): The six most common air pollutants are called “criteria” air pollutants and include carbon monoxide, lead, ground-level ozone, particulate matter, nitrogen dioxide, and sulfur dioxide. This resource includes information on criteria air pollutants indicators and methods.

[Air Sensor Toolbox | EPA](#): This website provides the latest science on the performance, operation and use of air sensor monitoring systems for technology developers, air quality managers, citizen scientists and the public

[Combating Air Pollution at Schools | EPA](#): Children are more vulnerable to air pollution than adults because their natural defenses and organs are still developing. They also breathe more frequently than adults, which means they take can more pollutants. These resources are created for facilities managers, custodians, principals, administrators, and teachers.

[Children's Health Issues | Assessing Outdoor Air Near Schools | EPA](#): EPA's Healthy School Environments web site is a “one-stop shop” for resources and information on topics related to environmental health and safety in schools

[Children's Health Outreach Toolkit | EPA](#): Find factsheets, infographics, messaging, and more created for a variety of audiences and platforms about protecting children's environmental health.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

Children's developing lungs are more sensitive to asbestos, which can increase their risk of serious lung diseases like cancer and asbestosis. Even low levels of exposure can build up over time and cause health problems years later.

## Discussion Prompts for Children's Programs

- Have you noticed any signs of building damage in program facilities, shelters, or homes that may have disturbed older materials like ceiling tiles, insulation, or flooring, which could contain asbestos, especially in debris piles?
- Have families, community members, or children raised concerns about dust or debris from damaged buildings, particularly in areas where exposure to asbestos might be more likely?
- What steps have been taken to make sure families, especially in shelters or temporary housing, aren't being exposed to asbestos-contaminated debris or dust? Have any cleanup protocols been implemented?
- Given the risks, have you been able to assess if any specific areas such as school or public buildings need professional asbestos testing or remediation?
- Has there been communication from health authorities or environmental agencies about asbestos risks or recommendations, like avoiding certain areas or using protective measures during debris cleanup?
- Are you aware of any immediate reports of respiratory issues (i.e., coughing, wheezing, or shortness of breath) among children or others in affected areas that might be linked to asbestos exposure?

## Ideas for Mitigation & Intervention

- **Asbestos Risk Self-Assessment Tool:** Provide families with a one-page checklist or digital form to assess whether their home may have asbestos-containing materials and guide them on next steps for safe management or referrals.
- **Multilingual Asbestos Awareness Campaign:** Distribute simple, visual materials in multiple languages through schools and clinics to help families recognize potential asbestos hazards (e.g., in older buildings, debris) and know what not to disturb.
- **"Don't Touch – Report It" Campaign:** Equip students and staff with a simple slogan and signs for identifying and reporting suspected asbestos-containing materials rather than disturbing them, especially in schools or community centers.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Airborne fibers | Asbestosis  
Asbestos-containing materials (ACMs)  
Asthma exacerbation  
Carcinogenic risk | Chest pain  
Chronic cough | Chronic exposure  
Environmental cleanup  
Environmental contamination  
Environmental monitoring  
Exposure risk | Fatigue  
Fibrous particles  
Indoor air pollution  
Lung inflammation  
Mesothelioma risk  
Pleural effusion | Pneumonia  
Respiratory distress  
Shortness of breath  
Toxic dust | Wheezing

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Chemicals, Pesticides, and Toxics Topics | EPA](#): EPA provides information about specific chemicals and how you can protect yourself, your family, and your community.

[Learn about Asbestos | EPA](#): Information about asbestos and asbestos exposure, as well as links to information about health effects and how to protect your family from asbestos.

[Asbestos and Your Health | CDC/ATSDR](#): Information about asbestos prevention and health effects.

[Poison Center and Public Health Collaborations Community of Practice | CDC](#): The Poison Center and Public Health Collaborations Community of Practice was created to facilitate better collaboration between federal, state, and local public health agencies and poison centers.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

**Need help now? Call the Poison Help Line at 1-800-222-1222.**

# CHEMICALS: COMBUSTION BYPRODUCTS

Smoke from wildfires or building fires can carry harmful chemicals that affect children's developing lungs and immune systems. This can raise their risk of breathing problems, skin irritation, and long-term issues like hormone disruption or learning delays.

## Discussion Prompts for Children's Programs

- Have you or your staff noticed ongoing issues with smoke, soot, or ash in or around schools, shelters, or areas where children are staying or spending time?
- Are there particular areas, such as playgrounds, classrooms, or walking routes, that you're concerned may still have visible ash or dust from the fires?
- Have any families or teachers mentioned children experiencing more coughing, breathing issues, or other health symptoms since the fire?
- Are children playing or gathering in outdoor spaces that haven't yet been cleaned or tested for fire-related contamination?
- Do you know if any cleanup guidance has been provided about safely removing ash or residue from schools or family homes?
- Are you aware of whether air filtration systems in schools or shelters have been checked or upgraded since the fires?
- Have families expressed any concerns about lingering smoke odors or air quality in temporary housing or shelters?

## Ideas for Mitigation & Intervention

- **Radio and Faith-Based Messaging on Safe Cleanup:** Broadcast segments and post flyers through churches and extension offices on avoiding dry sweeping or burning debris, with clear instructions on protecting children during household cleaning.
- **Distribute Indoor Cleaning Guidance to Families:** Use public housing networks and schools to share multilingual flyers on how to safely clean soot and ash from indoor surfaces using damp cleaning methods to avoid resuspension of particles.
- **Youth and Elder-Led Cleanup Circles:** Organize intergenerational groups to share traditional and modern cleaning practices for safely removing ash and protecting children's play and sleep areas, especially in multi-family homes.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Acrolein | Air pollution  
Asthma attacks | Benzene  
Carbon dioxide | Carbon monoxide  
Cardiovascular strain  
Chronic bronchitis | Coughing  
Environmental contamination  
Formaldehyde | Indoor air pollution  
Nitrogen oxides (NOx)  
Particulate matter  
Polycyclic aromatic hydrocarbons (PAHs)  
Respiratory irritation  
Shortness of breath | Soot  
Sulfur dioxide | Toluene  
Toxic fumes | Wheezing

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Particulate Matter Basics | EPA](#): Detailed educational information about particulate matter, including health and environmental effects.

[Protecting Children from Wildfire Smoke and Ash | EPA](#): Fact sheet with helpful tips for protecting children from combustion byproducts during wildfires.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

[Wildfire Smoke and Children | CDC](#): Helpful information and resources to help protect children's health during wildfire events.

[Wildfires | Western States PEHSU](#): Links to multiple resources for further exploring wildfire and air quality data as well as associated health effects.

**Need help now? Call the Poison Help Line at 1-800-222-1222.**

# CHEMICALS: INDUSTRIAL CHEMICALS

Exposure to industrial chemicals like ammonia, chlorine, or sulfur dioxide can irritate children's airways and cause breathing problems such as coughing, wheezing, asthma, or bronchitis. Long-term exposure may lead to lasting lung damage or chronic respiratory issues.

## Discussion Prompts for Children's Programs

- Have any industrial sites (i.e., factories, warehouses, or storage tanks) been damaged or flooded, possibly releasing hazardous chemicals?
- Have there been reports of chemical odors, unusual smells, or irritation in areas where children are spending time, like shelters or schools?
- Are you aware of any chemical spills, leaks, or contamination near places children are staying or playing, such as schools, shelters, or playgrounds?
- Have local health or environmental officials shared any guidance on protecting children from chemical exposure, especially in temporary housing or schools?
- Are there any air or water quality tests happening to check for exposure to hazardous substances like ammonia or chlorine?
- Have community members reported health symptoms in children, such as coughing, eye irritation, or rashes that might be linked to chemical exposure?
- What's being done to make sure schools and shelters aren't near industrial contamination or chemical residue sites?

## Ideas for Mitigation & Intervention

- **“Know What's Nearby” Hazard Mapping Alerts:** Share clear, visual maps showing damaged industrial sites or storage facilities near homes, schools, and playgrounds to help families and providers avoid contaminated zones.
- **Safe Play Zones Guidance:** Work with schools, libraries, and community centers to communicate where it is safe for children to gather or play, using signage and social media updates, especially in neighborhoods adjacent to industrial corridors.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Ammonia | Benzene  
Carcinogenic risk | Chemical burns  
Chlorine | Cyanide | Dioxins  
Environmental contamination  
Formaldehyde | Headaches  
Herbicides | Hydrochloric acid  
Long-term exposure | Nausea  
Pesticides  
Polychlorinated biphenyls (PCBs)  
Respiratory distress | Skin irritation  
Solvents | Sulfur dioxide  
Toluene | Toxic fumes | Xylene

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Poison Help | HRSA](#): This HRSA webpage provides poison prevention resources.

[Chemicals, Pesticides, and Toxics Topics | EPA](#): EPA provides information about specific chemicals and how you can protect yourself, your family, and your community.

[Poison Center and Public Health Collaborations Community of Practice | CDC](#): The Poison Center and Public Health Collaborations Community of Practice was created to facilitate better collaboration between federal, state, and local public health agencies and poison centers.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

[National Poison Data System | America's Poison Centers](#): America's Poison Centers represents 53 Poison Centers across the country, and provides expert advice.

**Need help now? Call the Poison Help Line at 1-800-222-1222.**

# CHEMICALS: LEAD & HEAVY METALS

Exposure to heavy metals like lead, mercury, and arsenic can harm children's development, causing learning problems and lasting damage to the brain and other organs. These metals build up in the body over time and can also weaken the immune and reproductive systems.

## Discussion Prompts for Children's Programs

- Have you seen damaged infrastructure (i.e., old pipes, batteries, or electronics) in areas where children are spending time that might pose a heavy metal risk?
- Have there been reports of large debris piles with construction materials or vehicles that could be leaking heavy metals into soil or water near children's areas?
- Are there concerns about soil conditions around schools, playgrounds, or shelters, especially if debris has disturbed the soil and may have led to contamination?
- Have parents or staff noticed symptoms in children, such as stomach pain, headaches, or developmental delays) that could be linked to possible heavy metal exposure?
- Are any cleanup or testing efforts underway to check for heavy metal risks in places where children are present?
- Have environmental experts assessed the impact on local water sources, and has any updated information about water safety been shared with families?

## Ideas for Mitigation & Intervention

- **Culturally Tailored Education on Heavy Metals in Traditional Food Areas:** Share guidance on how to reduce exposure from potentially contaminated soil or water near traditional gathering, hunting, or gardening sites, incorporating tribal languages and storytelling.
- **Well Water Precaution Notices:** Partner with schools and agricultural extension agents to inform families about the importance of not using private wells damaged by flooding or runoff until tested for heavy metals, using simple flyers and radio public service announcements (PSAs).
- **Soil Safety Around Play Areas:** Work with community centers and schools to temporarily restrict access to bare soil or install ground cover (e.g., mulch or grass mats) in high-risk areas where debris or contamination is suspected.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Abdominal pain | Anemia  
Arsenic | Behavioral problems  
Beryllium | Bioaccumulation  
Cadmium | Chromium  
Cognitive impairment  
Developmental delays  
Environmental contamination  
Fatigue | Headaches  
Heavy metal poisoning  
Kidney damage  
Learning disabilities  
Lead | Manganese | Mercury  
Neurotoxin | Nickel  
Organ damage | Toxicity

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Chemicals, Pesticides, and Toxics Topics | EPA](#): EPA provides information about specific chemicals and how you can protect yourself, your family, and your community.

[Protecting Children from Lead Exposures | EPA](#): PDF booklet outlining a wide range of activities and interventions that have been undertaken to protect children from lead exposure in 2018. Also available in Spanish.

[About Childhood Lead Poisoning Prevention | CDC](#): Information about childhood lead exposure prevention, symptoms, and testing.

[About soilSHOP | CDC/ATSDR](#): Explore the soilSHOP toolkit, which has information about hosting a community event with soil testing and tips from health educators.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

**Need help now? Call the Poison Help Line at 1-800-222-1222.**

# CHEMICALS: PESTICIDES & HERBICIDES

Exposure to pesticides and herbicides can harm children's developing brains and hormone systems, leading to learning problems, hormonal imbalances, and higher risks of cancer and reproductive issues. Children are more vulnerable due to their smaller size and faster metabolism.

## Discussion Prompts for Children's Programs

- Have any agricultural fields or farms been directly impacted by the disaster, such as through flooding, fires, or equipment damage, which could have resulted in pesticide or herbicide contamination in the environment?
- Given that many families are living in shelters or co-housing, have any children been exposed to agricultural chemicals, such as pesticides or herbicides, either from the air or from soil in areas where they are now staying or playing?
- Are there any reports from local farmers, public health officials, or families about an increase in symptoms such as headaches, nausea, skin rashes, or respiratory problems that could be linked to pesticide or herbicide exposure in children?
- Are there any areas near where children are spending time, such as schools or community centers, that have been recently sprayed with pesticides or herbicides, or could runoff from agricultural fields be contaminating local water sources or soil?
- Has there been any communication from local agricultural authorities or public health agencies regarding pesticide use or herbicide spraying in the area, especially regarding safety precautions for children?
- Have any local schools, child care facilities, or shelters been located near areas where pesticides or herbicides have been recently used, and have there been any recommendations for cleaning or decontamination of those spaces to reduce chemical exposure?

## Ideas for Mitigation & Intervention

- **Safe Storage Outreach for Farmers and Households:** Partner with agricultural extension agents to encourage secure, labeled storage of pesticides and herbicides in locked, elevated areas, away from where children play or gather post-disaster.
- **Community Clean Zone Mapping:** Involve youth and elders in identifying and promoting areas where chemical use is avoided or has been verified as safe, supporting trusted, child-friendly gathering spaces for outdoor play and learning.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Atrazine | Bioaccumulation  
Cancer risk | Carbamate pesticides  
Cognitive delays | Dizziness  
Endocrine disruptor  
Environmental contamination  
Fatigue | Glyphosate | Headaches  
Herbicides | Insecticides  
Learning disabilities  
Long-term exposure  
Nausea | Neurotoxin  
Organophosphates  
Pyrethroids | Respiratory irritation  
Skin rashes | Soil degradation  
Vomiting

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Poison Help | HRSA](#): This HRSA webpage provides poison prevention resources.

[Chemicals, Pesticides, and Toxics Topics | EPA](#): EPA provides information about specific chemicals and how you can protect yourself, your family, and your community.

[Pesticides and Their Impact on Children | EPA](#): Key facts and talking points about pesticides and children's health.

[Reduce Your Child's Chances of Pesticide Poisoning | EPA](#): Keep these common household pesticides out of children's reach.

[Poison Center and Public Health Collaborations Community of Practice | CDC](#): The Poison Center and Public Health Collaborations Community of Practice was created to facilitate better collaboration between federal, state, and local public health agencies and poison centers.

[Tips to Limit Various Types of Pesticide Exposures | CDC](#): Learn to prevent exposure for a variety of pesticides in this poster-like document.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

[National Poison Data System | America's Poison Centers](#): America's Poison Centers represents 53 Poison Centers across the country and provides expert advice.

**Need help now? Call the Poison Help Line at 1-800-222-1222.**

# DEBRIS & PHYSICAL HAZARDS

Disaster debris can contain sharp objects, mold, asbestos, and other hazards. Children are more likely to be hurt or exposed to toxins, which can cause injuries, infections, breathing problems, or long-term health effects.

## Discussion Prompts for Children's Programs

- Are there any concerns about dust or particulate matter from the debris piles or from ongoing demolition and repairs, particularly in areas where children are present or congregating, such as schools or shelters?
- Have there been any reports of children experiencing respiratory symptoms, skin irritation, or other health issues that could be linked to exposure to debris, dust, or materials from damaged buildings?
- In the areas where children are currently spending time, such as schools, shelters, or playgrounds, have efforts been made to clear away debris, especially from places where children are likely to play or gather?
- Have you observed any issues with ongoing demolition or repairs in the community that might create new debris hazards, particularly in areas where children are living, attending school, or spending time?
- Are there any local health advisories or guidelines that have been issued to families, schools, or shelters about the safe handling or removal of debris, especially with regards to children's health?
- Are children's programs or community leaders providing any education on the risks of debris exposure, such as the potential for injury, inhaling dust, or coming into contact with hazardous materials in debris piles?

## Ideas for Mitigation & Intervention

- **Temporary Fencing and "Keep Out" Sign Distribution:** Provide schools and homeowners in affected neighborhoods with inexpensive fencing material or pre-printed warning signs to help mark dangerous debris areas.
- **Debris Danger Zone Marking Campaign:** Partner with neighborhood groups and city services to place caution tape, signage, or visual markers around large debris piles near parks, schools, or sidewalks to prevent children from entering.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Airborne toxins  
Asbestos-containing materials (ACMs)  
Broken glass | Child safety  
Cleanup efforts | Contaminated soil  
Cuts and bruises | Debris removal  
Environmental hazards  
Fallen trees | Hazardous materials  
Heavy lifting injuries | Injuries  
Lacerations  
Long-term contamination  
Mold growth | Polluted water  
Public health risk  
Puncture wounds  
Respiratory issues | Sharp objects  
Structural damage | Toxic dust

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Protecting Yourself While Removing Post-Disaster Debris from your Home or Business | NIH](#): This factsheet is for small business owners, residents, and community/faith-based volunteer groups conducting post disaster cleanup activities.

[Dealing with Debris and Damaged Buildings | EPA](#): General advice and cautions to consider when cleaning debris after a disaster.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

Extreme cold increases the risk of hypothermia and frostbite in children, whose bodies are less able to regulate temperature.

## Discussion Prompts for Children's Programs

- Have there been any reports of families or children experiencing cold-related illnesses, such as frostbite or hypothermia, especially those living in shelters or temporary housing?
- How are families and children managing heating in shelters or temporary housing? Are there concerns about exposure to unsafe heating sources, like space heaters or open flames, that could lead to carbon monoxide poisoning or fire risks?
- Have any schools, shelters, or other community spaces had difficulty maintaining a safe indoor temperature due to damaged heating systems or lack of proper insulation?
- Have you noticed any concerns about people trying to stay warm in unsafe or unventilated spaces, such as basements, attics, or cars, that might pose a risk for carbon monoxide buildup or other hazards?
- What steps are being taken to ensure that families in shelters, hotels, or co-housing situations have access to warm clothing, blankets, and other essential supplies to protect them from the extreme cold?
- Are there any public health advisories or community programs in place to help families manage the cold, like warming stations or support for those without reliable heat in their homes?
- Have you seen any increase in cold-related injuries, such as falls or accidents due to icy conditions outside or poor road conditions?

## Ideas for Mitigation & Intervention

- **Neighborhood "Warm Watch" Program:** Encourage PTAs or local neighborhood groups to check on families with young children during extreme cold events, sharing resources and safe heating practices.
- **Cultural Warmth Education:** Host intergenerational workshops where elders teach youth traditional methods for staying warm and safe in winter (e.g., traditional layering, safe indoor heating), reinforcing cultural knowledge and health.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Body heat loss | Chilblains  
Cold acclimatization | Cold stress  
Cold-induced illnesses  
Cold-related mortality  
Cold-weather gear | Exposure risks  
Freezing temperatures | Frostbite  
Frostnip | Hypothermia  
Indoor heating | Shivering  
Snow blindness  
Thermal insulation | Trench foot  
Wind chill | Winter storm  
Winter-related injuries

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Cold Weather Safety | ACF](#): These tips help Head Start families and staff keep children safe, healthy, and warm in the winter.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

[Extreme Temperatures: Disaster Management Resources | American Academy of Pediatrics](#): Resources related to extreme temperatures and children's health, intended for pediatricians, communities, and families.

Extreme heat can cause dehydration, heat exhaustion, and heatstroke in children, whose bodies are less able to regulate temperature. Young children are especially at risk due to their lower body weight, high activity levels, and immature cooling systems.

## Discussion Prompts for Children's Programs

- Have there been any reports from staff or parents about heat-related illnesses, such as heat exhaustion or heatstroke, especially among children in shelters, hotels, or co-housing situations?
- How are families managing the heat in their temporary living conditions? Are there concerns about insufficient access to cooling devices like fans, air conditioning, or shaded outdoor spaces?
- Are there any areas near the school or shelters that have poor air circulation or limited access to shade or cooling areas, where children or families might be exposed to unsafe heat levels?
- Have you received any public health advisories about heat-related safety, such as recommendations for hydration, limiting outdoor activities, or cooling stations for residents?
- Given the heat and lack of cooling, have any activities been canceled or adjusted to keep children safe?
- Have you observed any issues with access to fresh water for families or students, especially in shelters or temporary housing, as dehydration is a key concern during extreme heat?
- Has there been any feedback from parents, community members, or children about the effectiveness of cooling options in schools or shelters, and whether they feel they are sufficient?

## Ideas for Mitigation & Intervention

- **School-Based Cooling Kits:** Distribute basic “cooling kits” (e.g., spray bottles, cold packs, portable fans) to schools and after-school programs, paired with education on recognizing heat-related illness in kids.
- **Heat Safety Education via Mobile Clinics:** Deliver simple, family-friendly heat safety tips through mobile health units and school meal distribution points, including advice on hydration, cooling, and recognizing heat stress.
- **Youth-Led Heat Mapping & Education:** Support tribal youth groups in mapping the hottest areas of their communities and presenting solutions (e.g., tree planting, water stations) at tribal council and school meetings.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Air conditioning | Dehydration  
Drought conditions  
Electrolyte imbalance  
Evaporation cooling  
Heat acclimatization | Heat cramps  
Heat exhaustion | Heat index  
Heat island effect  
Heat-related illness | Heatstroke  
Heatwaves | Hyperthermia  
Indoor cooling | Overheating  
Sunburn | Sweat evaporation  
Thermal stress | UV radiation

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Heat Earthdata | NASA](#): Extreme heat events lasting a few days to weeks at a time are occurring more frequently in major cities across the world and can have detrimental impacts on public health. NASA data can help forecast and monitor these events.

[HEAT.gov - National Integrated Heat Health Information System](#): Heat related illnesses and death are largely preventable with proper planning, education, and action. Heat.gov serves as the premier source of heat and health information for the nation to reduce the health, economic, and infrastructural impacts of extreme heat.

[Extreme Heat | EPA](#): Prepare for and respond to extreme heat events.

[Heat & Health Tracker | CDC/NCEH](#): Extreme heat events have long threatened public health in the United States. The CDC Heat & Health Tracker provides local heat and health information so communities can better prepare for and respond to extreme heat events.

[Heat & Heat-related Illness | CDC](#): The Tracking Network provides data about extreme heat, heat-related health effects, and the vulnerabilities that increase risk for health effects related to those events.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

[Extreme Temperatures: Disaster Management Resources | American Academy of Pediatrics](#): Resources related to extreme temperatures and children's health, intended for pediatricians, communities, and families.

After disasters, pests like mosquitoes, rats, and cockroaches can spread due to standing water and debris. These pests carry diseases that can be especially harmful to children, who are more vulnerable to infections.

## Discussion Prompts for Children's Programs

- Have there been any reports of increased sightings of rodents or other wildlife, such as raccoons or snakes, in areas where children are staying or gathering, like shelters, schools, or playgrounds?
- Have there been any reports of an increase in mosquito activity, particularly in areas where children are playing or spending time outdoors, and what efforts are being made to control mosquito breeding sites, such as standing water?
- Given the debris piles and the disruption in the environment, are there any concerns about the presence of pests like fleas, ticks, or mosquitoes that could increase the risk of vector-borne diseases in areas where children are staying?
- Have there been any observations of children having insect bites, rashes, or signs of allergic reactions, particularly in areas where there are large amounts of debris or displaced wildlife?
- In the areas where children are spending time, such as parks, playgrounds, or temporary housing sites, have there been any efforts to remove or control rodent populations or prevent wildlife from entering these areas?
- In the temporary shelters or other places where children are staying, have there been any reports of cockroach infestations, and what steps have been taken to manage or eliminate these pests, considering the potential health risks they pose?

## Ideas for Mitigation & Intervention

- **Partnership with Agricultural Extension to Promote Integrated Pest Management (IPM):** Promote low-cost, non-chemical methods like sealing entry points and removing attractants through farm-based education that families can also apply at home.
- **Community Walkabouts to Identify Pest Risks:** Engage youth in mapping and reporting pest-prone areas (like standing water or refuse piles), with a focus on creating cleaner, safer zones for children to gather and play.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Cockroaches | Contaminated water  
Dengue fever | Disease vectors  
Health risks | Hygiene practices  
Infection | Insecticides  
Integrated pest management  
Leptospirosis | Mosquitoes  
Nuisance pests  
Pest breeding grounds  
Pest control  
Pest-related illnesses | Rodents  
Rodenticides | Sanitation  
Stagnant water | Vector control  
Vector-borne diseases  
West Nile virus | Zika virus

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Integrated Pest Management \(IPM\) Principles | EPA](#): Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices.

[Reduce Your Child's Chances of Pesticide Poisoning | EPA](#): Keep these common household pesticides out of children's reach.

[Tips to Limit Various Types of Pesticide Exposures | CDC](#): Learn to prevent exposure for a variety of pesticides in this poster-like document.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

[Vectors & Pests | National Environmental Health Association](#): Links to webinars, toolkits, and resources to improve capacity to identify and understand emerging vectors in the United States.

Excessive mold growth caused by water damage can negatively affect children by triggering respiratory issues, allergies, and potential neurological effects.

## Discussion Prompts for Children's Programs

- Have there been any reports of increased respiratory issues or allergic reactions in children, such as coughing, wheezing, or asthma flare-ups, that could be linked to mold growth or water-damaged areas?
- Have you noticed any signs of visible mold growth in schools, shelters, or other spaces where children are spending significant time, especially in areas that were affected by the flooding?
- With the water damage from flooding or wind-driven rain, how has the local community responded to the need for mold remediation in homes, schools, and child care facilities, and is there a specific plan to protect children from mold exposure in these areas?
- Are families in shelters or temporary housing being educated on the potential health risks of mold, and are they receiving guidance on how to reduce mold exposure, especially for young children?
- Given the water damage in homes and schools, are there concerns about hidden mold growth in walls, ceilings, or other areas that are not immediately visible, and how is this being addressed?
- Are there any ongoing concerns in shelters or other child-centric spaces about dampness or humidity, which can create a breeding ground for mold, and what steps are being taken to control moisture in these areas?

## Ideas for Mitigation & Intervention

- **Radio PSA Series on Mold Risks and Child Health:** Launch short radio messages in English and Spanish explaining the health effects of mold on kids, and how to safely reduce exposure using everyday materials.
- **“Dry It Out” School Campaign:** Work with schools to send home drying and cleanup checklists in student folders, focusing on steps families can take in attics, basements, and garages where mold may go unnoticed.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Airborne mold particles  
Allergic reactions  
Asthma exacerbation | Black mold  
Chronic rhinitis | Coughing  
Dampness | Flooding  
Fungal infections | Fungal spores  
Indoor air quality  
Long-term health effects  
Mold growth | Mold remediation  
Mycotoxins | Respiratory issues  
Sinus congestion | Skin irritation  
Structural damage  
Toxic mold exposure  
Water infiltration  
Waterlogged materials | Wheezing

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Mold | EPA](#): This website provides guidance about mold and moisture for homes, schools, multifamily and commercial buildings. Molds can have a big impact on indoor air quality.

[Homeowners and Renters Guide to Mold Cleanup After Disasters | EPA](#): Offers step-by-step guidance for safely cleaning up mold in homes after flooding or other disasters, emphasizing protective equipment and cleanup techniques. This guidance is also available in Spanish.

[8 Tips to Clean Up Mold | CDC](#): Summarizes eight essential tips for safely removing mold after a flood or water intrusion.

[Mold Clean Up Guidelines and Recommendations | CDC](#): Provides clear guidance on how to clean up mold, including safe use of bleach for mold cleanup following a disaster. Some resources are available in multiple languages.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

# WATER: DRINKING WATER SAFETY

Safe drinking water is essential for children's health because it prevents waterborne diseases, supports proper growth and development, and ensures adequate hydration for their physical and cognitive functions.

## Discussion Prompts for Children's Programs

- Given the challenges with safe drinking water access during the past few weeks, do you think children have been consuming enough water overall, or have there been concerns about dehydration due to limited access to safe drinking water?
- Have there been any reports about concerns regarding the quality or safety of the water for children, especially after weeks of relying on bottled water?
- Have any children experienced gastrointestinal symptoms, such as diarrhea or vomiting, that could be related to waterborne pathogens or contamination during the period when bottled water was being used?
- Are there any specific groups of children who may be at greater risk from water quality issues, such as those with weakened immune systems, young children, or children with existing health conditions like asthma or allergies?
- What steps are being taken to assess the safety of local water sources, including potential contamination from sewage, chemicals, or debris, and how are these risks being communicated to families with young children?
- What steps have been taken to ensure that children have access to clean and safe drinking water at schools, child care centers, and other locations where they spend time, now that the public water supply is being restored?
- Are families being advised on proper water use and safety guidelines, particularly for children in areas where there might still be concerns about plumbing or water contamination?

## Ideas for Mitigation & Intervention

- **Mobile Water Testing and Filter Giveaway Events:** Partner with local extension services and health clinics to visit rural schools and churches with test kits and free or low-cost pitcher filters for households with children.
- **Radio and Text-Based Guidance on Safe Well Water Use:** Share simple messages about flushing systems, avoiding standing water, and checking for odor/discoloration through rural radio and text alerts in both English and Spanish.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Arsenic | Bacteria | Chemical runoff  
Chlorine | Contaminants  
Cryptosporidium | Diarrhea  
E. coli | Fluoride  
Gastrointestinal illness  
Giardia | Lead | Nitrates  
Pathogens | Public water system  
Safe drinking water | Viruses  
Vomiting | Water filtration  
Water purification | Water testing  
Waterborne diseases  
Well water contamination

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Private Drinking Water Well Programs in Your State | EPA](#): While most states have zero or limited regulations for private drinking water wells, states do have programs to assist well-owners.

[Easy Things You Can Do To Protect Drinking Water Sources | EPA](#): Simple steps to protect water sources.

[Children and Drinking Water Standards \(1999\) | EPA](#): This booklet explains how national standards contribute to drinking water safety.

[Drinking Water Regulations and Contaminants | EPA](#): Details about the National Primary and Secondary Drinking Water Regulations.

[Drinking Water | Drinking Water | CDC](#): Drinking water comes from a variety of sources including public water systems, private wells, or bottled water. Ensuring safe and healthy drinking water may be as simple as turning on the tap from an EPA-regulated public water system.

[Water Quality and Your Health | Drinking Water | CDC](#): Even though U.S. tap water supplies are among the safest in the world, water contamination can still occur and impact children and youth. There are many possible sources of contamination, including: sewage releases or manufacturing processes.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

[Safe Drinking Water | National Center for Health Housing](#): Check out resources and information about safe drinking water.

# WATER: SEWAGE & WASTEWATER CONTAMINANTS

Flooding or infrastructure damage can lead to sewage overflows, exposing children to pathogens, pharmaceutical residues, and household chemicals, increasing the risk of gastrointestinal infections, chemical poisoning, and long-term health issues.

## Discussion Prompts for Children's Programs

- Can you describe any immediate concerns you've heard from parents or staff regarding the safety of water in and around the program facilities, especially after the flooding or sewage overflow?
- Has the program been provided with any guidance from local health authorities on how to manage wastewater contamination, like preventing exposure for children playing outside or using water from affected sources?
- What steps, if any, has the program taken to limit children's exposure to potentially contaminated water, like through restricting access to flood zones or ensuring safe drinking water on site?
- How are local public health officials communicating with families, schools, and communities about waterborne disease risks and how to recognize symptoms, especially in children?
- Have there been any efforts from local or federal agencies to clean up or disinfect areas around the facility that might have been contaminated by sewage or wastewater, and is there a timeline for those efforts?
- What support or resources does the program need to help families access safe water or sanitation facilities, especially if they are still without clean drinking water?

## Ideas for Mitigation & Intervention

- **Well and Septic System Contamination Guidance:** Provide printed and radio-based instructions on how to check for sewage contamination in private wells or septic overflows, emphasizing how children are more vulnerable to illness.
- **Promote Child Hygiene Campaigns Through Schools:** Encourage schools to implement “wash your hands after floodwater contact” campaigns, with take-home reminders and classroom visuals tailored to young children.

## Cultivating Allies

**Coordinate** with state, tribal, territorial, and local public health agencies to identify which agencies or departments have responsibilities, roles, or authority related to asbestos.

**Research** local and regional networks that offer education, advocacy, or direct services related to asbestos, such as nonprofits, coalitions, or service providers.

**Identify** subject matter experts from federal agencies, academic institutions, or the private sector who can support assessment, interpretation, or planning activities.

## Key Words

Airborne pathogens | Ammonia  
Bacteria | Chemical contaminants  
Cholera | Cryptosporidium  
E. coli | Fecal matter  
Gastrointestinal illness | Giardia  
Heavy metals | Hepatitis A  
Leptospirosis | Nitrates  
Pathogens | Pesticides  
Pharmaceutical residues  
Rotavirus | Sewage overflow  
Skin infections | Toxic sludge  
Viruses | Waterborne diseases

# Educational Resources

[Technical Resources | ASPR TRACIE](#): The Resource Library includes resources from numerous databases from the National Library of Medicine (NLM) and other government agencies. It contains up-to-date disaster medical, healthcare system preparedness, and public health emergency preparedness materials.

[Water Contamination and Young Children | EPA](#): Find information on water safety and children's health.

[Choose Safe Places for Early Care and Education Disaster Recovery Supplement | CDC/ATSDR](#): This guidance will help you learn more about potential environmental exposures to children in childcare.

# APPENDIX F: ISSUE REPORT INSTRUCTIONS

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The Issue Report should be completed before the assessment team demobilizes from the incident. It serves as the final deliverable for the Children’s Environmental Health Post-Disaster Assessment mission. This report summarizes the key concerns identified during the assessment process and is intended to support strategic planning for the recovery team. Its purpose is to inform state, tribal, territorial, local, and federal recovery partners about the environmental health and safety issues that are most pressing to the community and most likely to impact children’s health and well-being. While the report should not include formal recommendations unless specifically requested by leadership, it is intended to support discussion, coordination, and planning of future interventions and mitigation activities.

The following sections must be included in every Issue Report. Each plays an essential role in documenting the assessment process and summarizing key findings.

- **Overview:** A brief summary of the disaster or incident and a description of how the assessment team gathered the information in the report.
- **Partners:** A list of all partners who contributed to the assessment or supported the process. This may include federal, state, tribal, territorial, local, and non-governmental (NGO) partners.
- **Key Environmental Health & Safety Concerns:** Organized by topic or theme and listed from highest to lowest priority. Each concern should include a clear heading and a short explanation supported by bullet points or brief descriptions.
- **Engagement Methods:** A description of how information was gathered, including who was engaged, through what methods (e.g., interviews, site visits, focus groups), and why these approaches were selected.
- **Completed or Ongoing Mitigation Activities:** Any known actions that have already been taken to address identified issues, whether by local programs, community partners, or recovery agencies.

Additional sections may be included as needed to provide context or supporting detail. These elements can help paint a fuller picture of local conditions and inform future recovery planning.

- **Schedule/Timeline:** A summary of when and how engagements occurred. This may be included as a narrative, calendar, or simple timeline.
- **Voices from the Community:** Direct quotes or paraphrased insights that elevate local concerns and perspectives. These should add emotional or cultural depth to the findings.
- **Data Sources and Validation:** A summary of sources used to support findings, including environmental monitoring data, government reports, or scientific literature. Could also describe how concerns were validated.
- **Photographs or Visual Documentation:** Relevant images from site visits or community partners, if available and permitted, that help illustrate concerns or community context.
- **Limitations and Gaps:** A short section identifying any known gaps in data, partners not yet engaged, or topics that require further exploration.

After the Overview and Partners sections, the remaining sections of the Issue Report may be organized in the order that best supports the story of the assessment and the needs of the recovery team. The sequence does not need to follow a strict template and can be adapted to fit the flow of information or emphasize local priorities. Appendix H provides an example Issue Report based on a fictional rural community. This sample is intended to illustrate one possible format and writing style; however, there are many acceptable ways to structure and present the findings.

Assessment Team members are encouraged to use the example as a reference—not a requirement—and adapt their approach to match the specific circumstances and context of their work.

## Overview

Briefly describe the disaster or incident that led to the assessment. Include relevant details such as the type of disaster, when and where it occurred, and the populations or areas most affected. Summarize the activities the team undertook to gather information (e.g., interviews, site visits, community meetings) and the general timeframe of the assessment. This section sets the context for the findings that follow.

## Partners

List all partners who contributed to the assessment and development of the Issue Report. This may include state, tribal, territorial, and local government entities, federal agencies, community-based organizations, NGOs, schools, and others. Including these names helps document collaboration and shows the breadth of engagement across the recovery effort. Add embedded links to agency websites as appropriate.

## Key Environmental Health & Safety Concerns

Summarize and organize the main environmental health and safety concerns identified during the assessment, prioritizing those most likely to impact children and families. Use clear subheadings for each concern and support them with short, specific bullet points. Order the concerns from highest to lowest priority based on the local context and what was heard most often during engagements.

Look for recurring themes or issues that connect multiple categories, such as housing damage, disrupted infrastructure, or limited services. If present, describe these cross-cutting concerns at the beginning of this section to help readers understand the broader context.

Avoid technical jargon and focus on how the issues affect children, caregivers, and community programs. Whenever possible, include community perspectives and real-world examples that help illustrate the concern.

## Engagement Methods

Briefly describe how information was gathered for the assessment. Include a summary of methods used, such as listening sessions, interviews, site visits, or review of local documents. Highlight efforts to include a diverse range of voices and perspectives, especially those representing children's programs and vulnerable groups.

## Completed or Ongoing Mitigation Activities

Describe any steps that have already been taken to address the identified issues. This might include local cleanup efforts, reopened childcare programs, health screenings, public education campaigns, or new policies. Including this information provides a more complete picture of the recovery landscape. It also helps recovery partners avoid duplicative activities and better target future resources where they are needed most.

## Schedule/Timeline

**(Optional)** If helpful, include a summary of the engagement schedule, such as dates of community meetings, site visits, interviews, or key milestones. This can provide context for the timing of the findings and demonstrate how the team prioritized outreach.

## Voices from the Community

**(Optional)** Use this section to highlight direct quotes or summarized perspectives from children’s program partners, caregivers, or other community members. Including community voices helps illustrate the lived experiences behind the findings and ensures that the concerns of affected populations are meaningfully represented.

## Data Sources and Validation

**(Optional)** Provide a brief explanation of how the findings were validated and what types of data were used. This may include information about how community concerns were cross-checked against environmental monitoring data, health surveillance, or other credible sources. This section can also describe how patterns or repeated themes helped validate qualitative findings.

## Photographs

**(Optional)** Include relevant, properly sourced photos or visuals that help illustrate key concerns or conditions. Captions should explain what is shown and how it relates to children’s environmental health. Be sure to follow jurisdictional guidance for consent and privacy before including any identifiable images.

## Limitations and Gaps

**(Optional)** Briefly note any limitations in the assessment process, such as time constraints, access challenges, language barriers, or missing data. This section may also highlight areas where further investigation is needed.

# APPENDIX G: ISSUE REPORT EXAMPLE

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## Children's Environmental Health Post-Disaster Assessment

**DATE:** March 31, 2025

### Overview

On March 16, 2025, a powerful EF-3 tornado touched down in the central corridor of Gibbs County, carving a 22-mile path through rural farmland, small towns, and unincorporated communities. Wind speeds peaked at 145 mph, damaging homes, schools, agricultural infrastructure, and critical roadways. The storm was part of a broader outbreak that affected three counties but caused its most concentrated damage in Gibbs County.

In response, a post-disaster environmental health assessment was conducted to understand conditions affecting children's health and safety. The assessment included meetings with local and regional partners, site visits to affected facilities, and information gathering from schools, childcare programs, and health service providers. This report summarizes the most pressing environmental health and safety concerns identified during the assessment process and is intended to support recovery partners in strategic planning and coordination.

### Partners

A range of local, state, federal, and community partners contributed to the Issue Report by sharing data, coordinating site visits, and providing insights into the impact on children and families.

#### Federal Partners

- HHS / Administration for Strategic Preparedness and Response
- HHS / CDC
- EPA, Region 4
- U.S. Department of Agriculture (USDA), Rural Development Program
- Federal Emergency Management Agency (FEMA), Recovery Directorate

#### State Partners

- Aurora Department of Public Health, Environmental Health and Children's Health Divisions
- Aurora Department of Early Care and Learning
- Aurora Emergency Management and Homeland Security Agency (AEMA/HS)

#### Local Partners

- Gibbs County Public Health Department
- Gibbs County Emergency Management Agency
- Gibbs County Department of Human Services
- Gibbs County School District, including the Office of Student Support Services

#### Community Programs

- Pine Fork Family Health Clinic
- Rolling Hills Community Mental Health Center
- Faith Outreach Ministries of South Gibbs
- Neighbor Roots Community Food and Wellness Cooperative

- Little Bear Head Start and Early Learning Center (Pine Fork)
- Sunshine Trails Family Child Care Network
- South Valley Parent Resource Center
- Gibbs County Youth Alliance

## Schedule/Timeline

### March 20, 2025 – Initial Coordination Meeting

- **Purpose:** Reviewed incident scope, confirmed assessment priorities, and coordinated entry into affected areas.
- **Participants:** Gibbs County Emergency Management Agency, Gibbs County Public Health Department, Georgia Department of Public Health, FEMA, EPA

### March 22, 2025 – Site Visit: Pine Fork Elementary and Little Bear Head Start

- **Purpose:** Assessed facility damage, air quality concerns, and continuity of services for young children.
- **Participants:** Gibbs County School District, Little Bear Head Start, Gibbs County Public Health Department, South Valley Parent Resource Center

### March 25, 2025 – Community Roundtable: Rolling Hills Town Hall

- **Purpose:** Gathered qualitative input on immediate health and safety concerns, mental health needs, and barriers to service access.
- **Participants:** Rolling Hills Community Mental Health Center, Neighbor Roots Community Food and Wellness Cooperative, Sunshine Trails Family Child Care Network, Faith Outreach Ministries, Parents and Caregivers

### March 27, 2025 – Joint Field Assessment: Rural Homes and Informal Child Care Settings

- **Purpose:** Identified risks related to water contamination, heating and cooling access, and mold exposure in homes where children receive care.
- **Participants:** Gibbs County Department of Human Services, Georgia Department of Early Care and Learning, USDA Rural Development Program, South Valley Parent Resource Center

### March 30, 2025 – Findings Review and Issue Prioritization Meeting

- **Purpose:** Reviewed preliminary findings, aligned on key concerns to elevate in the Issue Report, and discussed coordination with other sectors for recovery planning.
- **Participants:** Gibbs County Public Health Department, Gibbs County School District, Georgia Department of Public Health, HHS Regional Recovery Coordinator

## Key Environmental Health & Safety Concerns

### Disruption of Basic Environmental Health Infrastructure and Access in Vulnerable, Dispersed Settings

The most urgent concern identified during the assessment in Gibbs County was the serious damage to basic environmental health systems, which created major challenges for safe recovery, especially for families with children in rural and unincorporated areas. In every engagement activity, partners stressed that damage to housing, water systems, heating sources, and roads led to overlapping risks that hit children and low-income families the hardest. Many homes depend on private wells, septic systems, and wood stoves, which are hard to inspect or fix without organized help. Because the population is spread out, public services are limited, and basic resources are far away, it took longer to find and fix problems. In this setting, even small environmental issues—like mold or heat—can become serious when there is no strong infrastructure or support system in place.

Key observations include:

- Many families rely on private wells and septic systems, which sustained storm damage or were rendered inaccessible. Few households had the means or technical knowledge to assess the safety of their water or wastewater systems.
- Road and bridge damage delayed debris removal and limited the ability of emergency response, health, and utility services to reach affected areas quickly.
- In areas with power outages, homes that rely on wood-burning stoves or propane heaters experienced indoor air quality issues and elevated risk of fire or carbon monoxide exposure.
- The local clinic and mobile health units reported that children with asthma or respiratory conditions were experiencing worsened symptoms due to a combination of mold, dust, and smoke exposure.
- Schools and early childhood centers served as central access points for water, air-conditioned or heated shelter, and basic services, underscoring their critical role in rural resilience efforts.
- Community members and local organizations described frustration with limited access to technical assistance or funding for private repairs, and a desire for clearer guidance tailored to rural infrastructure challenges.

#### Water: Damage, Mold, and Drinking Water Safety

- Widespread water damage in homes, schools, and child care sites led to visible mold growth, especially in unventilated spaces like basements and storage rooms.
- In private wells and small water systems, damage to pump infrastructure and potential runoff from nearby agricultural sites raised concerns about drinking water safety.

#### Chemical: Pesticides, Herbicides, and Agricultural Runoff

- Flooded agricultural fields likely led to pesticide and herbicide contamination in surrounding areas, including play yards and outdoor learning spaces.
- Caregivers and local health workers reported chemical odors after the storm, particularly near large storage barns and silos.
- Concerns were raised about children's exposure during outdoor cleanup and play, especially where protective equipment is not being used.

#### Air: Indoor Air Quality

- Many buildings, including homes and early care facilities, experienced musty odors and visible fungal growth, indicating poor indoor air quality.
- Families using gas-powered generators indoors or in enclosed areas reported symptoms consistent with exposure to combustion byproducts (e.g., carbon monoxide).
- Inconsistent use of ventilation and HVAC system inspections was observed across damaged properties.

#### Debris and Waste Management

- Post-tornado debris included construction materials, treated wood, metal roofing, and insulation, posing risks of physical injury and chemical exposure.
- Improper debris storage was noted near homes and child care centers, increasing the likelihood of asbestos exposure from older buildings.
- Communities expressed a need for clearer guidance and resources to support safe sorting and removal of household and agricultural debris.

### Water: Sewage and Wastewater Contaminants

- Septic systems and small-scale wastewater systems were damaged or overwhelmed, leading to suspected contamination in surface water and backyards.
- Caregivers in mobile home parks and unincorporated areas reported sewage odors and standing water, creating concern for pathogen exposure.

### Chemical: Combustion Byproducts and Industrial Chemicals

- Improper use of heating systems during cold nights and generator exhaust near enclosed spaces increased risk of carbon monoxide exposure.
- Damage to agricultural chemical storage facilities raised concerns about potential leaks or residual contamination near child-accessible areas.

### Weather-Related Stressors: Extreme Cold and Heat

- Disruption of power and HVAC systems left many homes and facilities vulnerable to temperature extremes. Several families reported children sleeping in vehicles during cold nights.
- Local agencies voiced concern about the summer heat season approaching, particularly for families still living in damaged or structures without air conditioning.

### Chemical: Heavy Metals and Legacy Pollutants

- Community partners questioned whether legacy pollutants (like lead or arsenic in soil) may have been disturbed during debris clearing or foundation shifts.
- No formal testing has yet occurred in impacted areas, but requests for soil and paint sampling are growing.

### Pest Management

- Disruption of natural habitats and damaged buildings have led to an increase in rodents and insects, particularly in food storage areas and school kitchens.
- Several child-serving facilities reported difficulty managing pests due to limited access to professional services post-disaster.

## Engagement Methods

To understand environmental health and safety concerns affecting children after the tornado, the assessment team used several engagement methods. These approaches helped us hear directly from the people most affected and gather real-world insight about the recovery challenges in Gibbs County:

- Listening sessions and town halls were held with families, school staff, early childhood providers, and community health workers in both incorporated towns and unincorporated areas.
- Walkthrough assessments were conducted at schools, Head Start sites, and child care programs to identify environmental health concerns, including indoor air quality and water damage.
- One-on-one interviews were held with local officials, utility providers, health care workers, and agricultural extension agents to understand system-wide impacts.
- Partner coordination calls with state and federal agencies helped gather input on priorities and learn about available resources.
- Community-based translators assisted in reaching Spanish-speaking families and agricultural workers.

# Completed or Ongoing Mitigation Activities

Several important mitigation activities are already underway in Gibbs County:

- Local school districts have assessed HVAC systems and secured funding for air filter replacements and temporary classroom relocations where damage was severe.
- Public Health Outreach Teams from the state and county launched a door-to-door campaign on safe generator use, mold prevention, and well water testing.
- The Gibbs County Cooperative Extension distributed flyers and held small-group trainings on pesticide safety, cleanup after chemical spills, and child-safe gardening practices.
- Portable drinking water stations were delivered to impacted schools and child care sites that rely on well water, pending full water quality testing.
- Rodent and pest control measures have begun in school kitchens and pantries, especially in facilities reporting disrupted food storage due to power outages.

## Voices from the Community

Community members shared powerful insights about how the tornado has affected children's health and daily life. Their voices helped shape the team's understanding of what matters most in the recovery effort.

- “My son’s asthma got worse after we moved into my cousin’s trailer. It’s small and musty, but we don’t have many options right now.” — Parent, rural unincorporated area
- “We’re still trying to teach our preschoolers routines, but the noise from cleanup trucks and the smell from nearby piles of debris makes it hard for them to focus.” — Teacher, Head Start center
- “The well water smells off. I don’t trust it for drinking, not for my baby. We’re buying bottled water, but it’s hard to get enough.” — Parent, farmworker community
- “Our cafeteria lost power for three days. We threw everything out, but now we’re short on supplies and worried about mice.” — Principal, elementary school
- “Kids don’t talk much about the storm, but you can see the stress. Some still flinch when the wind picks up.” — School counselor

## Data Sources and Validation

The assessment team used multiple data sources to understand the environmental health risks to children across Gibbs County:

- Direct observations from site visits to schools, early care programs, and homes.
- Interviews and focus groups with families, educators, and local leaders.
- Environmental and public health reports shared by county agencies, the state department of health, and partner organizations.
- Maps and damage data provided by the county emergency management office, including tornado track and infrastructure status.
- Water and air quality testing results from local utilities or private providers.

To the extent possible, the team compared information across sources and followed up with local partners to confirm accuracy. Gaps in data were noted and are highlighted in the Limitations and Gaps section.

# Limitations and Gaps

While this Issue Report presents the most complete picture possible based on available information, several limitations affected the assessment process:

- **Time constraints:** The assessment window was limited, and some remote areas were not fully assessed.
- **Access issues:** Flooded roads and downed infrastructure delayed access to certain child care sites and unincorporated communities.
- **Limited testing data:** Environmental sampling (e.g., air and water testing) was not completed in all impacted locations prior to report finalization.
- **Language barriers:** Although interpreters assisted with outreach, some families with limited English proficiency may not have been reached.
- **Inconsistent documentation:** Some partners and programs lacked up-to-date records or inventories, which made it harder to assess pre- and post-disaster conditions.
- **Emotional and physical fatigue:** Community members were often overwhelmed, which may have influenced their ability to participate in assessment activities or share detailed feedback.

These gaps do not lessen the value of the findings but should be considered when using this report to guide next steps. Where appropriate, follow-up assessments or additional outreach may help fill in missing information.