



Protecting the Health of Children

A National Snapshot of Environmental Health Services



AMERICAN PUBLIC HEALTH ASSOCIATION
For science. For action. For health.

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Executive Summary

ENVIRONMENTAL HEALTH IS A KEY PART OF PUBLIC HEALTH. It focuses on the connections between people and the environment; promotes health and well-being; and helps create healthy, safe communities. Environmental health professionals work to reduce exposure to harmful substances in air, water, soil and food. This work is especially important for the protection of children.

Because they eat more food, drink more water and breathe more air for their size than adults do, children are especially vulnerable to environmental health hazards. Further, children of color and children living in poverty bear an even higher burden of environmental hazards. Any yet, there are no laws or protections dedicated to children in the environments where they may face harmful exposures. This can be at home, school, child care facilities, playgrounds, parks—anywhere children live, learn and play.

APHA in Action

In response to member outcry over the Flint, Michigan, water crisis, APHA set out to study the situation nationally. With support from the W.K. Kellogg Foundation, APHA launched the project that has culminated in the report, *Protecting the Health of Children: A National Snapshot of Environmental Health Services*.

The goals of the study were to 1) establish what services are necessary to protect children, 2) determine if and how well government agencies offer those services to the public and 3) hear from community members and service providers about their experiences.

APHA collected feedback from subject matter experts to identify 210 environmental health services that should be systematically provided to children across the country. Because consumers are most likely to look for health information online, APHA conducted a national scan of state departments of health and environmental quality websites to see if these services are available.

Results show gaps, largely around services that would be of direct benefit to the health of children. Overall:

- States inform the public about environmental health issues to a greater extent than they offer information about environmental health services they provide.
- Information is more limited on the hazards of prenatal environmental exposures, endocrine disruptors and on environmental health services in schools.
- States are more likely to make information available for services that are mandated by federal environmental health laws and policies.



In addition to the national scan, APHA visited two communities to discuss their understanding of and experiences with environmental health services. Community members in Flint, Michigan, and Washington, D.C., spoke openly about how their children have benefited from services offered, and also about the barriers they faced in trying to obtain those services.

APHA also interviewed local service providers in these communities to learn about their efforts to deliver environmental health services to children and families. The forums and interviews informed the community profiles included in this report.

Next Steps

Together, all components of the effort helped shape recommendations for local, state and federal health departments to improve the sharing of environmental health information and services. Recommendations are written for community-based organizations, advocates for children and environmental health, state departments of health and environmental quality and the federal government. They aim to:

- streamline and enhance information provided about children’s environmental health services to members of the community,
- guide advocacy priorities for organizations and individuals working to improve children’s environmental health and
- urge programmatic, practice and policy changes at the local, state and federal levels.

It is understood that a successful environmental health effort is critical to our nation’s public health. By ensuring children’s environmental health services are available to all, the field is moving one step closer to creating an equitable system for children and for generations to come. This effort is one of many steps the field of children’s environmental health and children’s advocates can take to protect the health and future of children.



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Part I: Introduction and the National Scan



What is environmental health?

The **National Environmental Health Partnership Council** defines environmental health as, “the branch of public health that focuses on the relationships between people and their environment; promotes human health and well-being; and fosters healthy and safe communities. Environmental health is a key part of any comprehensive public health system. The field of environmental health works to advance policies and programs to reduce chemical and other environmental exposures in air, water, soil and food to protect people and provide communities with healthier environments.”

Introduction — Protecting Our Children

YOUNG CHILDREN—THOSE IN UTERO TO NEWBORNS TO THOSE EIGHT YEARS OF AGE—are particularly vulnerable to environmental health hazards.¹ For their size, they breathe more air, eat more food and drink more water than adults, which leads them to take in more environmental toxicants.² Children’s behaviors, like playing on the floor and putting hands and objects in their mouths, are different from adults and can increase the risk of environmental exposure.

The environment affects children’s physical and mental development. For example, even low levels of lead exposure can result in decreased IQ and decreased physical growth.³ Exposure to mercury can cause permanent damage to the central nervous system.⁴ Such unique vulnerabilities make the effective delivery and implementation of environmental health services especially important for children.

However, there are challenges to effectively delivering environmental health services to children. Old infrastructure can be a threat to public health. For example, although lead in water pipes has been prohibited by federal law since 1986, millions of lead pipes installed before that time remain part of drinking water systems, perpetuating the risk that corroded pipes may expose people to lead.⁵

In addition, budgets for public health departments have not kept pace with inflation, straining their ability to prevent and respond to environmental health issues and provide adequate services.⁶ Similarly, the public health workforce is declining as a result of aging professionals. A shrinking workforce that is not being replaced by younger professionals makes the public health system less responsive.⁷

Governmental environmental health services are offered by a wide variety of state and local agencies, like health departments and departments of environmental quality. No single agency is responsible for resolving environmental health issues, which can limit and confound accountability. At the national level, federal policies and regulations are not comprehensive, and so provide limited or no guidance for states to take action.

All communities experience the consequences of environmental health hazards, but low-income communities and communities of color are disproportionately harmed.⁸ For example, communities



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with large percentages of African-Americans often are zoned for mixed residential, industrial and commercial use, which increases the risk of toxic environmental exposures.⁹

Even after controlling for economic status, communities with a large percentage of minority residents tend to have higher rates of mortality and environmental health hazard exposure compared to communities with a large percent of white residents.⁹ For example, children of color and children living in poverty bear a high burden of lead exposures, lead toxicity and other environmental hazards.¹⁰

According to the National Environmental Health Partnership Council,^{ix} “a cohesive environmental health system monitors and measures diseases, hazards, exposures and health outcomes; can collect data over time; and can present real-time data to quickly respond to emergencies and identify problems for program planning. All government agencies should assess the environmental health impacts of their programs and policies across all sectors to improve the health of all communities and people.”¹¹

Moreover, a complex web of governmental agencies, health care agencies, community-based and non-profit organizations and private entities are needed to work collaboratively to offer services that address priority environmental health concerns based on community needs. At the state level, governmental environmental health services are largely provided by departments of health or departments of environmental quality.

However, availability of services does not equate to their accessibility. Environmental health services can be difficult to access for a variety of reasons, including:

- Budget or staff limitations potentially hinder the availability of information on health and environmental department websites for the general public.
- The public may not be aware that the service exists. This could be due to an agency’s lack of capacity to promote services through the platforms and venues that reach those most in need.
- Information about provision of a service may not be culturally or linguistically appropriate. This limits the ability of some populations to actually use services.
- Public transit routes may not go to places when and where environmental health services are offered.
- Services to address one environmental health issue could be offered by a variety of government agencies, making it difficult for people to know where to go to access specific services they need to address a health issue.
- Some services that could protect children’s health are not yet offered in that state.

^{ix} The National Environmental Health Partnership Council is a diverse group of stakeholders that aim to expand and sustain awareness, education, policies and practices related to environmental health.



Even after controlling for economic status, communities with a large percentage of minority residents tend to have higher rates of mortality and environmental health hazard exposure compared to communities with a large percent of white residents.⁹ For example, children of color and children living in poverty bear a high burden of lead exposures, lead toxicity and other environmental hazards.¹⁰

This report synthesizes findings of a national scan of state agency websites, as well as feedback collected from community forums and phone interviews with subject matter experts. The report provides information that community advocates can use to champion environmental health information and services and that state governments can use to make them available and easy to use through their websites.

The recommendations in this document focus on how to improve public health information sharing, both online and off. The recommendations offered for community-based organizations, state departments of health and environmental quality and the federal government aim to prioritize children's environmental health services.

Scan of Essential Environmental Health Services

As noted above, the issue of access to services is complicated. In order to seek or receive a service for an environmental health concern, an individual must first be aware that the service exists. As the most widely available information distribution tool at a department's disposal, websites are an effective way to provide information to the public. APHA set out to conduct a national scan of state departments of health and environmental quality to learn what information is available online to the public about environmental health services that protect children's health. APHA conducted the scan with a 50-state review of services described on state department of health and environmental quality websites.

Because the federal government also provides many environmental health services, a review of the federal Congressional budget justifications of a number of agencies was conducted. These included the Centers for Disease Control and Prevention, the Environmental Protection Agency, the Occupational Safety and Health Administration, the Department of Housing and Urban Development, the Health Resources and Services Administration and the National Institute of Environmental Health Sciences. This process was designed to reveal how the services provided by federal government impact environmental health funding and support states in their environmental health efforts.

To hear directly from community members, forums were held in Flint, Michigan, and in Washington, D.C. APHA collaborated with local nonprofit organizations in the planning, promotion and facilitation of the events to help ensure an appropriate representation of those seeking services. These forums helped identify gaps and common themes to aid in improving the environmental public health system.

APHA also conducted expert interviews with public health professionals in Flint and D.C. for their perspective on environmental health services provided to community members. The interviews helped identify challenges organizations faced in engaging communities and working with partners

By the end of this process, the list included a total of 210 baseline environmental health services that were included in the online scan that all states should provide to protect children’s health.

to improve coordination of services. The findings from the community forums and phone interviews are encapsulated in the Community Profiles detailed in the Part II: Engaging Communities.

Identifying Services to Include in Scan

As the first step, APHA identified which environmental health services would be assessed in the scan. We developed an initial list of baseline services that should be offered by every state governmental environmental public health system to address the needs of young children. To do this, APHA reviewed services offered by the California, Maryland, Massachusetts, Michigan and Minnesota state departments of health and environmental quality. These states were selected based on their extensive service provision, as understood by team members.

APHA then spoke with experts to validate the list of services, conducting 16 phone conversations with a total of 20 experts^x on children’s environmental health issues to collect feedback on the initial list of services to include in the online scan. These conversations also offered experts the opportunity to provide recommendations for additional services to include in the scan.

To gain additional feedback, APHA’s Center for Public Health Policy hosted a Children’s Environmental Public Health Roundtable discussion at APHA’s 2016 Annual Meeting. Participants invited were local, state and federal government officials; tribal representatives; advocates; researchers and community members, and were asked to review the list of services. By the end of this process, the list included a total of 210 baseline environmental health services that were included in the online scan that all states should provide to protect children’s health.

Scan Methods

The approach to conducting the national scan evolved as the list of services developed, and as the list grew to over 200 essential environmental health services. APHA refined the scope of the project by completing the scan from the perspective of a concerned parent, caregiver, teacher or child care center staff, rather than from that of an environmental health professional who may know precisely where to go for information.

To replicate a search that a consumer might conduct, APHA identified key search terms that represented environmental health services on the websites of state departments of health and environmental quality. This practice also reduced time spent searching for a service on each site. Then APHA developed a spreadsheet to record scan results. The list of 210 services was divided into five broad categories: Inform the Public, Surveillance and Diagnosis, Training and Technical Assistance, Policy Development and Enforcement, and Link to Needed Services.

x An individual was determined to be a children’s environmental health expert based on experience advocating or advancing children’s environmental health over the years. Many experts self-identified and others were solicited to participate in the project and came from partner organizations or APHA membership. To see the full list of experts, see the Acknowledgements section.



The list of 210 services was also divided into 27 groups of health conditions or environmental health issues (hereafter referred to as services groups).

Arsenic	Asthma	Brownfields	Child Care and Schools	Childhood Cancer	Climate Change
Consumer Products	Endocrine Disruptors	Food-borne illness	Health in All Policies	Hearing Damage	Homes and Communities
General*	Ground-level Contaminants	Lead	Obesity	Occupational Health	Other**
Pesticides	Poison Exposure and Control	Prenatal Exposures	Radon	Tracking	Tribal Health
		Vector-borne Diseases	Waste Management	Water	

*General Services aims to inform the public about chemical exposures and about other service providers.

**Other is comprised of four services that consist of informing the public about asbestos, carbon monoxide, heat waves and mold.

A complete list of services by categories and health conditions can be found in Appendix A.

Conducting the Scan

To conduct the scan, four project team members first completed a pilot scan of the same state. All team members reviewed the Arkansas Department of Health website using its search function, which took each team member 10 to 15 hours to complete. While search results were consistent, the team agreed that this method was too time-intensive to apply to all 50 states.

To ensure consistency of the search for each state, and to mimic the way individuals typically search on a website, the scan methods were revised to take place in two steps. First, three members of the team looked for pages that might potentially describe the services they set out to search. This group checked each state's department of health website, then department of environmental quality website, to see if it had an A-Z list of topics or services relevant to the scan.

Next, each website's search function was used to scan for each service in the first two pages of search results. To ensure that each member of the four-person team received consistent results and spent a similar length of time reviewing websites when conducting the scan, a list of search words and phrases was developed for each service.

Team members copied the web address of relevant web pages to the spreadsheet. In the second step of the scan, the fourth member of the team determined whether those pages included information about the services. This member of the team indicated the availability of information about the service by entering "Yes," "No" or "Partial" in the spreadsheet. The team then compiled the results from each state scan into one master spreadsheet.

While completing the scan, these methods were applied to all but two states: Alaska and Ohio. The websites for these states lacked an A-Z index or a functional website search function. As a result, the scan was not conducted for these two states, and they are not included in the results.

Statistical Analysis of Scan Results

The team performed statistical analyses using IBM SPSS Statistics version 25.0 for Windows. Frequencies were measured for each service to determine the percent of states that had information available online regarding the respective services (Figure 1, page 19).

A weighted scoring system was developed to better compare the availability of online information about services across the nation. The weighting scale is as such: if the state does not offer information on its website, the state receives 0 points for that service; if the state has partial information available on its website, the service scores 0.5 points; and if the information is fully available on the state website, the service receives 1 point. The maximum score possible for each service assessed was 48 (indicating that each state assessed has information about that service fully available on its website).

Next, the team totaled points for each service. Grouped services were assessed around the same health condition or environmental health issue (i.e. Asthma, Obesity, etc.). It categorized services by type: Inform the Public (53 variables), Training and Technical Assistance (21 variables), Policy Development and Enforcement (90 variables), Surveillance and Diagnosis (27 variables) and Link to Needed Services (19 variables). Scores for groups and categories are the average of the service scores where two or more services are designated in the respective category or group.

The team also calculated scores for each state. The maximum possible score for a state was 210, indicating an answer of "yes" for each service assessed. State scores demonstrated a normal distribution. These state scores were regressed against the "health status – children" scores from the 2016 Health of Women and Children Report by the America's Health Rankings of the United Health Foundation.¹²



Summary of Findings

Children aged 0 to 8 years are uniquely vulnerable to environmental health hazards.¹³ For parents and caregivers of children, knowledge of environmental health services is an important step in using those services that address an environmental health concern. The parent or guardian is on the frontlines of advocating and protecting children. School-aged children do not have any federal agency that guarantees the safety of school and child care environments in the way the Occupational Safety and Health Administration does for workplaces.¹⁴ This underscores the importance of state services and the public's ability to use them when needed.

This scan provides a unique examination of the availability of information about environmental health services provided online by state governments. APHA conducted its national scan of state websites to provide a snapshot of the baseline environmental health services offered in 48 states^{xi}. This study identifies available environmental health services information, highlights existing information gaps and notes challenges in gaining access to the information.

Using the methods and scoring system described in the Scan Methods section, APHA conducted a quantitative analysis of the scan results to examine the availability of information about children's environmental health services provided online by state-level departments of health and environmental quality.

Of the five broad categories (Inform the Public, Surveillance and Diagnosis, Training and Technical Assistance, Policy Development and Enforcement, and Link to Needed Service) into which the 210 baseline services were classified (See page 6 or Appendix A), Inform the Public received the highest score. This indicates that most states (60%) provided information to the public online about certain environmental health concerns. The category Surveillance and Diagnosis did not have as much information available and scored the lowest. This indicates that the least number of states (36%) offered information on this service category. (See Table 1.)

Table 1. The Mean Score Of Each Service Category For Each Service Group (Average ± Standard Error Of The Mean)

Service Category	# of Services per Category	Average Score (out of 48)	Percentage (of states)
Inform the public	53	29.8 ± 1.7	60%
Training and Technical Assistance	21	25.1 ± 2.7	52%
Link to Needed Services	19	25.1 ± 2.6	52%
Policy Development and Enforcement	90	23.2 ± 1.5	48%
Surveillance and Diagnosis	27	17.1 ± 2.3	36%

The results of the scan suggest that states are more likely to make information available about services required by federal environmental health laws and policies. Turning to the environmental health services, the six services with the most frequently provided information include regulate

xi As mentioned above, the scan excluded Alaska and Ohio due to the states lacking an A-Z index or a functional website search engine.

The results of the scan suggest that states are more likely to make information available about services required by federal environmental health laws and policies. On the other hand, the scan found that, in general, states provide limited information about environmental health services in schools and child care settings, the hazards of prenatal environmental exposures in the home and hearing damage.

treatment of hazardous waste; educate the public about the dangers of lead; regulate storage of hazardous waste; monitor drinking water quality through enforcing the Safe Drinking Water Act; maintain websites to display current outdoor air quality; and provide information about radon health risks. (See Table 2.)

Table 2. The Six Services For Which States Most Frequently Provided Information

Environmental Health Baseline Service (Most to Least)	Score (out of 48)
Regulate treatment of hazardous waste	46.0
Educate public about the dangers of lead	46.0
Regulate storage of hazardous waste	45.5
With federal support, enforce Safe Drinking Water Act - Monitor drinking water quality	45.5
Maintain websites to display current outdoor air quality	45.5
Provide information about radon health risks	45.0

On the other hand, the scan found that, in general, states provide limited information about environmental health services in schools and child care settings, the hazards of prenatal environmental exposures in the home and hearing damage. (See Table 3.) There is a lack of information on how endocrine disruptors potentially impact a child’s health and the links between the environment and childhood cancer.

Table 3. The Six Services For Which States Least Frequently Provided Information

Environmental Health Baseline Service (Least to Most)	Score (out of 48)
Require schools to have carbon monoxide detectors	0.5
Require child care facilities to have carbon monoxide detectors	1.0
Publicly report indoor air quality in schools, particularly for asthma triggers	1.5
Investigate clusters of hearing damage	1.5
Conduct environmental assessment of homes of pregnant mothers to prevent prenatal exposures	1.5
Conduct tests for radon in child care facilities	2.0

Based on scan findings, a parent or caregiver looking for services online is likely to learn how to determine if his or her child has an elevated blood lead level, but not how to schedule a home environmental assessment. Identifying environmental health services for children and then determining whether information about them is available on state websites, as APHA did in this study, provides valuable information for states and advocates interested in improving the delivery of services to children.

As mentioned in the Scan Methods section, APHA further clustered the services into groupings that address health conditions or environmental health issues, called service groups. (See page 6 or Appendix A.)

Fifteen service groups (a little more than half of the total number of groupings that address health conditions or environmental health issues) provide information about individual services in 75 percent of states reviewed. (See Table 4.)

TABLE 4. The Service In Each Service Group For Which States Most Frequently Provided Information

Health Condition or Environmental Health Issue Group	Website contains information about the following services	Score out of 48
Lead	Information on health hazards of lead	46.0
Waste Management	Regulation of hazardous waste treatment	46.0
Asthma	Current outdoor air quality	45.5
Water	Enforcement of the Safe Drinking Water Act by monitoring drinking water quality	45.5
Radon	Information about radon health risks	45.0
Other	Information on mold	44.5
Brownfields	Technical assistance for remediating brownfields	43.5
Food-Borne Illness	Information on potential chemical exposures through food, like mercury in fish	43.5
Ground-Level Contaminants	Technical assistance with inspection of underground storage tanks for proper maintenance or removal	42.5
Vector-Borne Diseases	Information about increased risk of vector-borne conditions in response to surveillance data	42.0
Hearing Damage	Hearing screenings	41.5
Climate Change	Information on protection from flooding	40.5
Obesity	Community obesity programs	40.0
Poison Exposure and Control	Enforcement of regulation compliance on use of poisonous, including radioactive, materials	37.5
Arsenic	Information on arsenic health risks	36.0

The scan found that state websites provide only limited information about services in schools and child care centers. Of the six lowest-scoring services that address a specific health condition or environmental health issue, four should be delivered in schools or child care centers. Their average score is 1.25 out of 48. Similarly, the service group^{xii} with the third-lowest score is Child Care and Schools, with a score of 8.6. Of the 27 service groups, nine^{xiii} include services delivered in schools or child care centers.

Of those nine service groups, seven states had their lowest-scoring service in a school or child care center. (See Table 5.) This may be attributed to the vast differences in resources supporting schools

xii Also known as the health condition or environmental health issue group.

xiii *The Health Condition or Environmental Health Issue Group: Obesity; service: "Provide access to healthy and affordable foods in child care centers"* is not indicated on the table, as it received a score of 22.5. Yet, it is a critical service delivered in a school or child care center.

and child care centers. Additionally, policies regarding child care center accreditation vary from state to state, and health departments at the state and local levels may not track such accreditation information.

TABLE 5. The Service In Each Service Group For Which States Least Frequently Provided Information

Health Condition or Environmental Health Issue Group	Website contains information about the following services	Score
Poison Exposure and Control	Requirement that schools have carbon monoxide detectors	0.5
Prenatal Exposures	Environmental assessment of homes of pregnant mothers to prevent prenatal exposures	1.5
Radon	Tests for radon in child care facilities	2.0
Asthma	Publicly report indoor air quality in schools, particularly for asthma triggers	2.5
Child Care and Schools	Enforcement of safe siting requirements for schools and child care facilities	3.0
Lead	Enforcement of regulations to keep lead out of toys	3.0
Lead	Results of inspections of public places	3.0
Occupational Health	Policies that protect children under 18 in the workplace, including in agricultural settings and in family-owned businesses	3.0
Homes/Communities	Mandated use of green cleaning products and techniques in child care facilities	3.5
Pesticides	Agricultural pesticide use mapping	4.5
Vector-Borne Diseases	Response to complaints of standing water	5.0
Endocrine Disruptors	Regulation enforcement to keep endocrine disruptors out of building materials	6.5
Hearing Damage	Information on hazards of prolonged exposure to loud noise, particularly industrial and traffic noise	7.0
Water	Safe drinking water for people living in places with contaminated water	7.0
Food-Borne Illness	Inspection of child care centers where food is prepared	7.5
Climate Change	Development of maps that display potential environmental public health risks posed by climate change	8.5
Tracking of Environmental Health Hazards and Health Effects	Long-term surveillance of those who have received services to remediate the effects of environmental exposure	8.5
Childhood Cancer	Information on potential links between childhood cancers and the environment	12.5
Ground-Level Contaminants	Information about contaminants frequently found in soil	15
Arsenic	Information about available arsenic-related services	18.5
General	Information about services available in the community	18.5
Waste Management	Inspection of work sites in schools to ensure contractors have proper training to handle asbestos and other potentially hazardous substances	21.0
Brownfields	List of brownfields in the state	31.0
Other	Information on heat waves	34.5

Note: Health condition or environmental health issue group provided in school or child care center are highlighted in orange.

Overall, states do a better job of informing the public about environmental health issues than about the services they offer to address those issues.

States provided important information about some environmental health services for children on their departments of health and environmental quality websites, though much information about other valuable services remained lacking. The average state score was 106.7 out of a possible total of 210, with a range of 51.5 to 164.5. On average, states provided readily available information for about half of the baseline set of environmental health services.

In the highest-scoring state, APHA recorded a score of 164.5. That leaves 45.5 more points, or nearly one fourth of total points, that it could have scored for providing information about services. There are many opportunities for states to better inform the public about the environmental health services they offer. (See page 6 for full list of service groups.) The full data set is available in Appendix B of this report.

Limited information online about services

Overall, states do a better job of informing the public about environmental health issues than about the services they offer to address those issues. The highest-scoring service category is Inform the Public, with the 53 services in that category averaging a score of 29.8. In comparison, the second-highest scoring categories, with a score of 25.1, are Training and Technical Assistance and Link to Needed Services.

The Surveillance and Diagnosis category, which includes inspections and many environmental health services delivered in homes and schools, has the lowest score of the five categories, with a score of 17.1. The highest-scoring group of health conditions or environmental health issues, with a score of 39.2, is Brownfields^{xiv}, which consists of one service in the Inform the Public category and two services in the Training and Technical Assistance category. (See Tables 6 and 7.) States can strengthen the information available online about services to address environmental health hazards on which they educate the public.

TABLE 6. The Five* Service Groups For Which States Most Frequently Provided Information (Average ± Standard Error Of The Mean)

Service Group	# of Services	Score (out of 48)	Percentage
Brownfields	3	39.2 ± 4.1	82%
Water	12	37.9 ± 3.0	79%
Waste Management	15	35.5 ± 2.0	74%
Ground-Level Contaminants	3	33.0 ± 9.0	69%
Obesity	6	30.8 ± 3.0	64%

* Other was an additional service group, consisting of informing the public about asbestos, carbon monoxide, heat waves and mold, that also had a high score. It was not, however, included in the table above as it lacked a cohesive set of services.

xiv The National Environmental Health Partnership Council is a diverse group stakeholders to help expand and sustain awareness, education, policies and practices related to environmental health.



By providing limited information about which services should be delivered in schools and child care centers, states are missing an opportunity to serve children in one of the settings where they spend most of their time. On average, children spend 6.64 hours per weekday in school.¹

TABLE 7. the five service groups for which states least frequently provided information (average ± standard error of the mean)

Service Group	# of Services	Score (out of 48)	Percentage
Prenatal Exposures	2	3.0 ± 1.5	6%
Endocrine Disruptors	3	7.7 ± 0.9	16%
Child Care and Schools	6	8.6 ± 1.8	18%
Homes/Communities	4	11.1 ± 4.9	23%
Occupational Health Conditions	4	15.5 ± 5.4	32%

By providing limited information about which services should be delivered in schools and child care centers, states are missing an opportunity to serve children in one of the settings where they spend most of their time. State health agencies have little to no information on the environmental conditions and practices of schools. On average, children spend 6.64 hours per weekday in school,¹⁵ which is similar to the 7.72 daily hours employees spend in the workplace.¹⁶

Federal environmental health laws associated with increased online information

The study results also suggest that the existence of a federal law or policy to mandate or support states in providing environmental health services increases the likelihood that information about those services is provided on state websites. As mentioned previously, by law, the federal government supports states to implement four of the six highest-scoring services: regulate treatment of hazardous waste; regulate storage of hazardous waste; with federal support, enforce the Safe Drinking Water Act by monitoring drinking water quality; and maintain websites to display current air quality.

State treatment and storage of hazardous waste programs are authorized by the Environmental Protection Agency (EPA) through the Resource Conservation and Recovery Act (RCRA), which also charges EPA with providing oversight of state implementation of the law.¹⁷

The Safe Drinking Water Act (SDWA) empowers EPA to set nationwide standards for the quality of drinking water, and states can request authority from EPA to implement those standards. EPA supports states in maintaining drinking water quality by providing guidance and assistance.¹⁸

The Clean Air Act (CAA) requires the federal government to publicly report air quality¹⁹, and states can embed EPA’s air quality reporting tool on their websites.²⁰ EPA also supports states in implementing the CAA by setting air quality standards²¹ and providing grants for states to implement the law.²²

The study results also suggest that the existence of a federal law or policy to mandate or support states in providing environmental health services increases the likelihood that information about those services is provided on state websites.

The pattern of federal mandates or support leading to increased availability of information also holds true for the top-scoring service groups. The top five highest-scoring service groups are: Brownfields, Water, Waste Management, Ground-level Contaminants and Obesity. Of these service groups, Brownfields consists of three services for which states receive federal support to implement through the Small Business Liability Relief and Brownfields Revitalization Act.²³

States are required by or receive support from the federal government to implement nine out of 12 services in the Water group through the SDWA, the Clean Water Act and EPA Guidance.^{18, 24, 25} Similarly, in the Waste Management group, 13 of 14 state services are either mandated or supported by the federal government through the Resource Conservation and Recovery Act, the Emergency Planning and the Community Right to Know Act and OSHA standards.^{17, 26-30}

In the Ground Level Contaminants group, one of the three services — assistance with the inspection of leaking underground storage tanks — is supported by the federal government through the Resource Conservation and Recovery Act.¹⁷ More complete descriptions of these federal policies can be found in Appendix C.

The federal government has a leading role in helping states implement environmental health programs. Our national scan results show that states make information about these services available to the public on their websites.

Limited information on endocrine disruptors

This national scan demonstrates the need for increased federal efforts to reduce the presence of endocrine disruptors in the environment. The Endocrine Disruptors group is one of the lowest-scoring service groups (ranked 26 out of 27 service groups), with a score of 7.7 out of a possible 48. This result is concerning for children, as certain stages in childhood — the prenatal, perinatal and puberty stages — are more susceptible to endocrine disruptors across the entire lifespan.³¹

There are many potential reasons for this lack of information. First, federal action on endocrine disruptors is currently focused on identifying these substances, rather than on prohibiting their presence in the environment. In addition, the science on endocrine disruptors is evolving.³² Currently, it is unknown how many chemical substances disrupt the endocrine system and all of the ways in which endocrine disruptors affect health.³³

Lastly, there are many ways for people to be exposed to endocrine disruptors.³⁴ Substances found in common objects, like foods, plastics and the lining of cans of food, may contain endocrine disruptors.³⁴ Household dust and contact in the workplace are also common sources of endocrine disruptor exposure.³¹ Evolving research and multiple common paths of exposure may make it difficult for states to provide useful, accurate information to the public on reducing exposure to endocrine disruptors.



The endocrine disruptors service group is one of the lowest-scoring service groups (ranked 26 out of 27 service groups), with a score of 7.7 out of a possible 48. This result is concerning for children, as certain stages in childhood — the prenatal, perinatal and puberty stages — are most susceptible to endocrine disruptors across their entire lifespan.

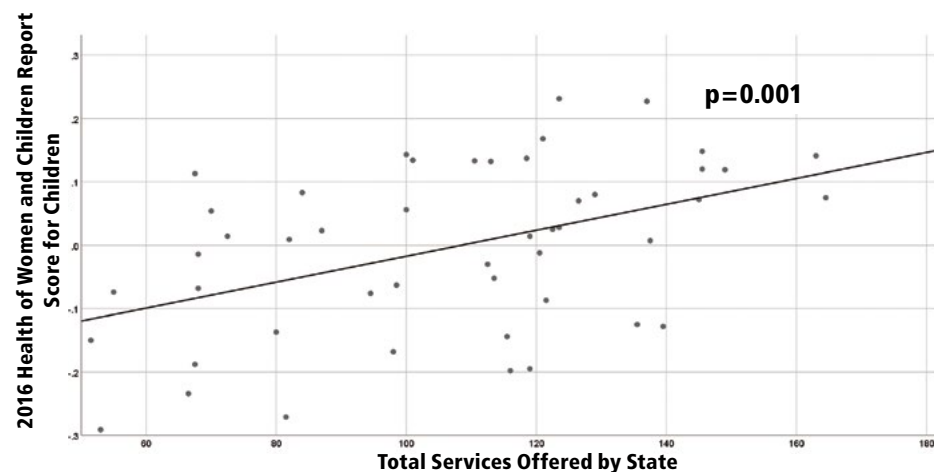
Link between national scan and state health rankings

Overall, the results of the national scan are associated with health outcomes. The state scores in the national scan are correlated with the state health rankings in the United Health Foundation’s 2016 Health of Women and Children Report. (See Figure 1.) These rankings are based on 60 measures, including access to preventive services, the number of children with multiple adverse childhood experiences, infant and child mortality, exposure to household smoke and levels of high school graduation.

A small p-value ($p \leq 0.001$) suggests strong association. The R^2 value examines the scatter of the data points around the regression line, where an R^2 value of 0 suggests that none of the variance is explained by the statistical model. An R^2 value of 1 indicates that the regression line perfectly fits the data, indicating that higher scoring states in the scan also had better health rankings.

The association between the national scan scores and the state health rankings are important because they show that availability of information about environmental health services is associated with the health measures identified by the United Health Foundation. This association also could inspire further research, as identifying the commonalities between the measures in the scan and the United Health Foundation report could lead to the development of policies and programs to improve health.

FIGURE 1: Association between APHA National Scan State Scores and Health Of Women And Children Report



Limitations

APHA has identified limitations to this project and would like to raise them as issues for future studies to address. First, although the project is a national scan, it does not include Washington, D.C., Puerto Rico or the United States Territories. It also does not consider services provided by entities other than state governments, like local health departments, tribal and federal governments, community-based organizations, children's hospitals and Pediatric Environmental Health Specialty Units. Additional limitations are described below.

Point-in-time snapshot

The results of the scan only represent a cross-sectional assessment of state websites at one point in time. APHA conducted the scan from March to September of 2017, and state websites may have changed since then. State agencies may have improved website search functions, added additional information and reorganized how information is presented. As more time passes, it is likely that websites reviewed in the scan will be updated or changed. Future scans using similar methods could possibly yield different results.

In addition, the regression analysis against the health rankings in the Health of Women and Children Report compares data published in 2016 to data from the national scan, which was conducted in 2017. It is possible that national scan data collected at a different time could return different results.

Unrepresentative of general public

While APHA attempted to conduct the scan in a way similar to how members of the general public might — for example, by avoiding jargon in search terms — it is not possible to exactly replicate the way multiple individuals would conduct an internet search. APHA assumed the general public would use state website search functions, rather than a search engine, such as Google. Additionally, the scan was conducted by people familiar with health policy and environmental health hazards experienced by children. This made the search more feasible for the APHA team than a member of the general public to identify services.

Does not measure accessibility of language used to convey information

The scan does not indicate whether services are accessible in the traditional sense in terms of language, ability or literacy level. Information on websites is often not available in multiple languages, which is a barrier to members of the public dominant in languages other than English. The scan also did not assess whether websites were Section 508 compliant^{xv}, which would include features such as closed captioning, subtitling and screen reader capability for persons with limited vision or blindness, deafness, seizure disorders and other disabilities. Further, information available on a website may not be written in a manner that is accessible to persons with low literacy levels.

xv According to the U.S. General Services Administration, under the Rehabilitation Act of 1973, Section 508, requires agencies must give disabled employees and members of the public access to information comparable to the access available to others.

Does not account for digital divide

The scan does not reflect the experiences of individuals and communities with no or limited access to computers, tablets, smartphones or the internet. While APHA reviewed state agency websites on desktop and laptop computers to identify information available for consumers, not all members of the public have such devices. According to Pew Research Center, in 2015 approximately 13 percent of U.S. adults were “smartphone only” internet users, meaning they own a smartphone but do not have a home broadband subscription. This group is more likely to be younger, lower-income, less educated or black or Hispanic.³⁵

Members of the public who search for information on websites using mobile devices or tablets are likely at a disadvantage, as many websites do not display the same way there that they display on desktop and laptop computers, making them more difficult to navigate. Furthermore, beyond posting information on their websites, there may be additional methods states use to inform the public about available services — including flyers, meetings, phone hotlines and contacts with community health workers — that the scan did not take into account.

Not all states included

State websites vary in quality, and states with websites that are easy to search may appear to have more available services. APHA was able to use the standard scan methods for the vast majority of states. Some exceptions were made for states whose search functions did not work as anticipated — for example, by returning results for the entire state government, rather than just the department of health or environmental quality, or by not having an A to Z index. However, while conducting the scan from March to September of 2017, APHA could not apply these methods consistently for two states, Alaska and Ohio, so they were not included in the scan.

Does not reflect provision or actual use of services

Although the scan identifies availability of information on a wide variety of services, it does not indicate whether a webpage includes information about how to obtain the service, whether the service is actually provided or the quality of the service.





Part II: Engaging Communities

Approach and Methods to the Community Forums

While the scan identified availability of information, hearing perspectives from community members, the intended beneficiaries of environmental services, was imperative to getting a more comprehensive understanding of accessibility to environmental health services for children. APHA held forums in Flint, Michigan, and Washington, D.C., for parents and caregivers of children, particularly those ages 0 to 8. The goal of the forums was to explore the community's awareness of environmental health, the health issues that preside in their community, the availability of environmental health services that address their concerns and how to access these services to meet the needs of the community.

As a national membership organization, APHA partnered with local and/or community-based organizations to ensure appropriate representation of community members and host successful community forums. The forums were made possible through partnerships with community partners, who have the access, relationships and trust with community members. This proved crucial to creating an environment in which people could speak candidly about their experiences. Below are the approach and methods used for planning and conducting the community forms.

Flint, Michigan

The Flint water crisis magnified the leadership and infrastructure challenges that can fracture environmental health systems and damage human health. For this project, it was imperative that APHA speak with members of the Flint community to learn more about their experiences in trying to obtain services for their children.

APHA staff began by contacting Ella Green Moton, APHA Executive Board member and longtime Flint resident. Ms. Greene Moton advised that it would be best to have a known and trusted community facilitator to increase participation. She connected staff with E. Yvonne Lewis, co-director of the Healthy Flint Research Coordinating Center.

HFRCC is a joint collaboration between the Flint community, represented by the Community-Based Organization Partners, the National Center for African American Health Consciousness, Michigan State University, the University of Michigan-Flint and the University of Michigan-Ann Arbor. The goal of HFRCC is to establish equitable relationships between community and academia.

APHA staff held an initial call with Ms. Green Moton and HFRCC to discuss the goals and objectives of the forum, determine a timeline and distribute responsibility. APHA provided HFRCC with a stipend to offset the costs associated with hosting the event (e.g. promotion, printing, food and beverages). APHA and HFRCC co-developed a promotional flyer. HFRCC took the lead on participant recruitment through communications with residents, who are known for working extensively in the community, and through outreach to the faith-based community.

APHA staff also completed the process of going before the Community-Based Organization Partners — Community Ethics Review Board. Comprised of Flint-area volunteers, CERB is a community-based and community-driven review process that promotes an understanding of ethical conduct in research and demands accountability in Flint and Genesee counties. The process helps ensure that community needs and concerns about research are heard and that projects are sensitive to the community



culture. It also incorporates a feedback loop, to provide results back to the community for its use and benefit, as well as a written critique to the investigator.

APHA staff completed the CERB online intake form, sharing the goals, objectives and activities for the project. This was then posted online for community members to review and provide feedback. APHA staff then attended the March CERB meeting via Zoom to present the project to the CERB reviewers and receive their feedback. A written report of the review was developed and shared with APHA staff.

The Flint community forum was held on April 24, 2018 from 5:30–8 p.m. at the Genesee County Community Action Resource Department, an established community resource and event space with ample parking and along local bus route. Twenty-five parents and caregivers of school-aged children (0-8 years old) attended the forum. Participants were given a \$30 Visa gift card in appreciation for their time. APHA and HFRCC decided it would be important to have local public health professionals attend and hear community concerns, participating in a listen-only capacity. Four representatives from the City of Flint and the Genesee County Health Department attended the forum.

Washington, D.C.

APHA headquarters is located in Washington, D.C., which also has had its share of notable environmental health crises, including lead contamination in the drinking water in the early 2000s. APHA staff thought it was important to get firsthand experiences with the local environmental health system. Staff was connected with Dr. Janet Phoenix, Manager of Asthma Health and Education Services at Breathe DC. This is a local nonprofit focused on promoting healthy lifestyles and preventing lung disease throughout D.C., especially in communities affected by health disparities. Given her extensive experience with community engagement, Dr. Phoenix strongly encouraged APHA staff to host two community events — one in Ward 7 and one in Ward 8, which have the poorest health outcomes in the city.

APHA staff held several calls with Dr. Phoenix to discuss the goals and objectives of the forum, determine a timeline and distribution of responsibility. APHA provided Breathe DC with a stipend to offset the costs associated with hosting the event (e.g. food, printing, child care).

Breathe DC took the lead in promoting and recruiting for the event. A promotional flyer was co-developed and disseminated through the DC Asthma Coalition and Breathe DC distribution lists. APHA staff worked with evaluation consultant Shattuck and Associates to draft an agenda with exercises and points of discussion for the forums.

The Washington, D.C., community forums were held on July 25 and August 14, 2018 from 5:30–7:30 p.m. at the United Medical Center in Southeast D.C. (Ward 7) and the Department of Employment Services in Northeast D.C. (Ward 7) respectively. Both locations offered parking and were along public transit routes.

A total of 20 parents and caregivers of school-aged children attended the forums. Participants were given a \$30 Visa gift card in appreciation for their time. Students from a local university were onsite to do activities with the children of parents attending the forums.



Instrument development

APHA staff worked with evaluation consultant Shattuck and Associates to draft an agenda with exercises and points of discussion for the forums. The draft agenda was revised based on feedback provided by HFRCC. Shattuck also developed handouts to accompany various exercises and a survey to measure participant satisfaction with the forum. See Appendix D for the sample agenda, interview guides and participant satisfaction survey used in the community forums and expert phone interviews.

Forum proceedings

At each forum, participants were provided with a buffet dinner from a local caterer upon entering. Prior to the start of the event, APHA staff reviewed the consent/disclosure forum with participants and addressed any questions they had. A consent form was collected for each participant. APHA staff co-facilitated the forum and took notes on and digitally recorded the breakout discussions and report outs.

Participants were asked to complete handouts that accompanied various exercises throughout the forum, and staff collected them and entered the information into MS Excel for recording keeping purposes.

At the conclusion of the forum, each participant completed a seven-question satisfaction survey. Survey results inform subsequent community forums and APHA's overall evaluation of the project.

Interviews

APHA staff conducted phone interviews with Flint and Washington, D.C.-based environmental health service providers to obtain their perspectives on engaging communities and working with partner organizations to promote available services.

Community Profiles

The following community profiles capture experiences with environmental health services as described by the community members who attended the forums Flint and D.C., as well as the local environmental health service providers who participated in interviews with APHA staff.



Flint, Michigan: Barely Surviving Above Waterline

Flint, Michigan, gained national attention in April 2014 when it became widely publicized that the city's drinking water was being contaminated with bacteria and lead. In an effort to save the city money, officials switched the water supply to the Flint River and treated the water using Flint's old water treatment facility. Surface water, such as from rivers and lakes, contains more micro-organisms and is usually highly corrosive.

The Flint water treatment facility did not have the capacity to handle the highly corrosive chloride in the Flint River that reacted with the iron pipes. The corrosion of pipes caused lead to leach into the water supply and harmful bacteria levels to spike. Over 9,000 children and even more pregnant women were exposed to dangerous levels of lead. Additionally, Flint residents suffered the third-largest outbreak of Legionnaire's disease from exposure to the bacteria *Legionella pneumophila*, which causes a severe form of pneumonia.

While the water contamination was particularly disturbing, Flint's public health system had been in crisis for decades by this time. Flint, known as Vehicle City, experienced a significant economic setback in the 1990s when General Motors closed 11 of its automobile plants, which employed the majority of Flint's population.

A long history of racism, segregation and discriminatory housing practices also has plagued Flint, which is now one of the poorest cities in America. According to a 2016 U.S. Census Bureau report, Flint has the nation's highest childhood poverty rate. Additionally, in 2016, Flint was named the most violent city in America and had the highest rate of abandoned houses, compromising community welfare and lowering property values. These long-standing problems have been exacerbated by the water crisis.

Genesee County Health Department and the city's public health responders remain overwhelmed and under-resourced as they struggle to address the long-term deleterious effects of the water crisis, as well as the health problems associated with high levels of poverty and unemployment. Government and community agencies face a long journey as they seek to restore the trust of a community already compromised when complaints about dirty water and concerns about health were met with false assurances that the drinking water was safe.

Many Flint community members present at the forum worried about long-term learning disabilities, as well as the unforeseen effects of lead poisoning on their children. They expressed a deep concern about the mental health of the community, post-traumatic stressors from the water contamination and how lead exposure has compromised the mental health of their children. One community member also spoke of the feeling that the government has a disregard for the community's overall health and wellbeing.

"Red Tape" — Accessing Environmental Health Services

"Too much red tape," "too much run around," "too invasive" and "humiliating" are just a few

One community member reported that the process had harmed her dignity and self-esteem because it was so invasive and had required such persistence to receive the necessary assistance for her family.

of the ways community members at the forum described the process of seeking environmental health services for their children and families. Most community members recounted a long process constrained by inconvenient hours and days spent trying to access the resources needed for their children.

One community member reported that the process had harmed her dignity and self-esteem because it was so invasive and had required such persistence to receive the necessary assistance for her family. Community members also described a lack of coordination among government agencies such that they had to provide the same personal information multiple times, which they found both stressful and humiliating.

Tamara Brickey is with the Genesee County Health Department. Her account of the challenges she faced as she worked to inform the community and provide environmental health services closely mirrored the community's sentiments. She noted that the health department struggles with "being under capacity," as she described the tremendous barriers the community faces, from a lack of trust in government information to a lack of transportation to access services.

She also referred to the "red tape" the community must work through to obtain the resources they need. Further, Brickey emphasized that the health department has been "stretched thin" by addressing the intense demands of the low-income population, whose members were already in great need before the water crisis.

Brickey said the health department was "in recovery" and establishing a "new normal" because the water crisis had monopolized most of the time and energy of its staff for the last four years. Employees are working hard and wearing multiple hats to not only to restore the trust of the community, but also to ensure that residents receive the resources they need to recover and thrive.

"Our Biggest Challenge is Lack of Coordination"

E. Yvonne Lewis, co-director of Healthy Flint Research Coordinating Center, concluded that, while there has been a surge in resources available to the Flint community since the crisis, there is no one single mechanism for informing families and community members about these resources.

She noted that there is now a 2-1-1 contact center and a revamped website, as well as updates on the radio and in community newspapers. But she acknowledged that there is still no physical site where residents can inquire about the resources they need. Lewis also said there have been a lot of changes, including the end of grant-funded programs, which is very frustrating and confusing for community residents.

She explained to forum participants that, when addressing environmental health, it takes a multidisciplinary approach to tackle such broad and complex issues. However, it is still paramount that government agencies and community leaders and representatives are speaking the same language to effectively address the priority issues of the community.

Lewis explained to forum participants that, when addressing environmental health, it takes a multidisciplinary approach to tackle such broad and complex issues. However, it is still paramount that government agencies and community leaders and representatives are speaking the same language to effectively address the priority issues of the community.

Some residents had sufficient resources to move during the water crisis, but they stayed, demanding change and their right to safe and healthy living conditions.

The HFRCC is working closely with the community to do the research needed to improve outreach and communication and remove other barriers to access.

Why Flint is a Community Worth Fighting for: “Our People are Resilient”

When asked how Flint is resilient in the face of the public health crisis, one community member described her hometown as “home and memories.” Some residents had sufficient resources to move during the water crisis, but they stayed, demanding change and their right to safe and healthy living conditions. Flint residents are committed to restoring and revitalizing their hometown.

As well as challenges, community members reported success stories of receiving resources for young children and revitalizing some of the city’s schools following the water crisis. Forum attendees explained that the national focus on the Flint water crisis prompted an outpouring of resources for children, including free summer programs, free early-learning programs, free lunch programs and programs for low-income families.

The APHA forum engaged community members and public health providers to identify critical gaps in communication and service delivery. The feedback gathered revealed that Flint now has a strong network of resources but lacks the capacity to deliver these resources through an easy, accessible and streamlined process.

Illuminating the barriers experienced by government employees and community members will help to rebuild trust, create tangible solutions and build on the resilience that allows Flint residents to thrive against all odds. APHA will continue this conversation and will work to promote successful strategies to improve educational outreach and service delivery in Flint.

Forum attendees explained that the national focus on the Flint water crisis prompted an outpouring of resources for children, including free summer programs, free early-learning programs, free lunch programs and programs for low-income families.



A Tale of Two Cities: Asthma Disparities in Washington, D.C.



Asthma is a common lung disease affecting 1 in 11 children in the United States. While national asthma rates have been leveling off and trending toward a potential decline, the condition remains prevalent among low-income families of color. Black, Latino and American Indian/Alaska Native families have asthma rates almost three times higher than the rates of their white counterparts.³⁶

These racial/ethnic disparities are especially prominent in Washington, D.C., which has the highest rates of pediatric asthma in the country — double the national average — and among the highest rates of children being hospitalized for asthma attacks.³⁷ The rate of asthma-related emergency room visits in D.C.'s low-income neighborhoods is 10 times that of more affluent neighborhoods.³⁸ The reasons for these disparities are complex and include a plethora of economic and social factors, such as lack of access to quality health care to substandard housing and work conditions that place them at greater risk for frequent and prolonged exposure to environmental allergens and irritants that worsen asthma.

Housing Disparities Closely Linked to Asthma Disparities

“More affordable housing, parks, family-centered [neighborhoods],” said one forum participant when asked to name the critical environmental health needs of her community. This sentiment was echoed many times over throughout the two forums APHA hosted in the nation’s capital. Housing affordability and quality vary widely across the city and are a critical public health concern.

Caitlin Russi, staff attorney for the Children’s Law Center, explained that within D.C., the living conditions in Wards 5, 7 and 8 are much worse than in other areas. She further noted that income disparities separate D.C. residents geographically, with families who receive Section 8 housing vouchers^{xvi} being placed mainly in low-resourced areas and old housing structures with potentially hazardous conditions that exacerbate asthma. These include exposure to second-hand smoke in the home at least once monthly, rodents, cockroaches and water leaks that lead to mold. Assisted renters, such as those who use Section 8 vouchers, are more susceptible to these asthma triggers and, in general, renters have little ability to address these triggers because of unknown leasing restrictions or building wide-problems.³⁹

Russi advocates on issues related to housing and environmental conditions that exacerbate asthma for families in D.C. and provides legal representation related to these issues. However, she emphasized that, while she can provide these resources, the families who are most in need are facing hardships on several fronts at once, and may not have the time or energy to obtain and utilize these resources.

^{xvi} The housing choice voucher program, Section 8, is funded by the U.S. Department of Housing and Urban Development and administered locally by public housing agencies to assist very low-income families, the elderly and persons with disabilities with securing affordable housing.

“More affordable housing, parks, family-centered [neighborhoods],” said one forum participant when asked to name the critical environmental health needs of her community.



Repeatedly, forum participants emphasized the effects community violence, broken sidewalks, second-hand smoking and poor water quality have on their and their children's health.

The exact cause of asthma is unknown; however, it develops due to a combination of genetic and environmental factors. Common environmental exposures include first-, second- and third-hand cigarette smoke; pests, such as cockroaches, mice and rats; mold; and poor outdoor air quality caused by high levels of pollution. Asthma is controllable with proper care. Its management requires a coordinated response involving families, clinicians, schools, public and environmental health providers and decisionmakers at all levels.

Some parents attending the forum said that they had to be their own advocates for their children. Some were able to obtain home remediation services through local agencies or were successful in getting their landlords to take measures, such as pulling up carpet, installing air filters and addressing pest problems. Others worked with Russi and her colleagues to pursue legal action to improve housing conditions for their families.

The Effects of “Survival Stress”

Washington, D.C., is now experiencing one of the biggest economic transformations in the U.S., and the city's renaissance has attracted more than 70,000 new residents since 2010. The city has one of the strongest markets in the nation, replete with new restaurants, retail, parks, 50 new bike lanes and revitalized schools, all of which are welcome signs of community development and revitalization.

However, it can also result in gentrification, in which community residents are displaced by more affluent ones. This adversely impacts under-resourced communities and can result in negative health outcomes among the elderly, poor, women, children and ethnic minorities. The district is no stranger to this pattern — the economic boom has led to large financial and health inequities among long-time D.C. residents, and many are now struggling to stay in a city they have called home for generations.

Many of the parents attending the forums described facing challenges associated with divestment or disengagement from the city government in their neighborhoods. They expressed feelings of government agencies “not caring” about them and elected officials who only seem to want to hear their concerns during an election cycle.

“As far as sanitation, I'd like for our streets in Wards 7 and 8, and 6 even, to be as clean as those in Wards 1, 2 and 3. I've called sanitation directly, City Council and the mayor's office repeatedly in an attempt to keep my streets clean,” said one parent. Repeatedly, forum participants emphasized the effects community violence, broken sidewalks, second-hand smoking and poor water quality have on their and their children's health.

Participants spoke of what Georgetown Assistant Professor Christopher King calls “survival stress.” King describes it as the stress of keeping up with the increasing cost of living in D.C. and trying to obtain the resources their families need to thrive and be healthy.

The increasing number of restaurants, retail establishments and construction projects also has an effect that is particularly problematic for families dealing with asthma — a rapid escalation of the

rodent population. In 2017, there were over 5,000 calls to 311 about rodent control, according to The Washington Post.⁴⁰

Forum participants expressed deep concerns about rodent infestations in their homes, schools, libraries and other neighborhood gathering places. “The city does a poor job with abatement of rodents, especially rats,” said one participant. An allergic reaction to rodent dander and droppings can cause a severe asthmatic response among children. Organizations, such as Breathe DC, conduct home visits to help families identify and obtain resources to address indoor environmental triggers of asthma, including rodents and other pests. As a referral-based agency, Breathe DC sometimes has a backlog of requests for home visits and other services. “The demand exceeds capacity often,” said Janet Phoenix, MD, manager of the Breathe DC home visiting program. Phoenix maintains that Breathe DC manages to address all referrals, but that it can take a few months before services are delivered.

Asthma Services in D.C.: A Complex and Often Invisible Web

In response to the high rates of pediatric asthma in D.C., several organizations have been on the front lines working to educate, advocate and coordinate care for families. As a result, D.C. has a vast network of services and resources available for families of children with asthma. However, awareness about the available services varied significantly across forum participants.

Many parents attending the forums spoke frequently and highly about IMPACT DC, an award-winning asthma program based at Children’s National Health System. IMPACT aims to reduce emergency department visits by connecting families with advocates, as well as local resources for services and educational classes and trainings to help them better manage their children’s asthma. On the other hand, Lisa Jennings, a health promotion specialist at the American Lung Association, noted that parent outreach and education is one of the hardest aspects of asthma prevention, even though ALA has offered incentives and free resources.

Her organization’s efforts includes meeting with parents after school, participating in health fairs and partnering with other organizations to disseminate asthma education. ALA also has a computer-based Asthma 101 training program. However, Jennings acknowledges that parents may not have enough time to dedicate to the training during outreach events, and many do not have a computer or internet access at home.

Dr. Phoenix also described a lack of knowledge among families about which organizations and agencies can provide the specific help they need for asthma management. She noted that many local organizations have limited capacity and, as a result, outreach and promotion often are not priorities. Further, there may be a disconnection between the outreach and education strategies employed by the agencies and community needs and priorities.

Forum participants expressed interest in receiving asthma education from clinicians, including their primary care providers and school nurses. “Nurses especially will give you that extra attention. They’ll take the time to explain triggers, the readings, talk about management and answer any questions you might have,” one parent said.

Parents also expressed a need for support groups and a network of parents, who understand what they are experiencing and can share successes. Several participants commented that they learned a lot of new information about available services from other parents at the forums.

In addition, parents often look to their D.C. IMPACT caseworkers, use D.C.'s 311 line or website and/or talk to other parents to learn about services for their children. They also reported that text message alerts and educational text messages would be a very convenient way for them to receive their asthma education, important tips for managing care and information about available services. Text alerts about air quality, weather-related asthma triggers and other asthma information can be helpful to parents as they help their child manage asthma. "Life is busy, so to get an alert [on your phone] would be a nice reminder," one parent said.

Community-Driven Solutions to Close the Gap

Overall, among forum participants and service providers, there was recognition that, for D.C. families dealing with asthma, this is often on a long list of many challenges they face. According to Jennings, low-income parents have only enough time, energy and money to dedicate to their highest-priority needs, and asthma education is not their highest priority. Her work has revealed that parents need help understanding how to work with their doctors, pharmacists and insurance companies to obtain the resources they need to properly manage their children's condition.

This sentiment was echoed by parents at the forum, who expressed the need for seamless systems of care and help making necessary changes before their children end up in the hospital emergency department. Parents also expressed a need for support groups and a network of parents, who understand what they are experiencing and can share successes. Several participants commented that they learned a lot of new information about available services from other parents at the forums. The parents attending the APHA forums in D.C. were very clear about their needs for their children with asthma. Continuing these conversations can help to identify barriers, assist in the dissemination of information for seamless resources and care and create a pathway toward closing this health disparity in the nation's capital.



Part III: Recommendations, Next Steps and Conclusion



Regular and intentional engagement with the community can not only increase awareness of available services, but also can build trust and raise the visibility of state and local government agencies as resources for addressing environmental health concerns. Community members must be engaged from the beginning to identify the problem and intervention, to implement the intervention and to conduct the evaluation.

Recommendations

These recommendations are based on the findings from the national scan; feedback from community members; phone interviews with environmental health service providers in Flint, Michigan, and Washington, D.C.; and input from subject matter experts on the draft report at the 2018 APHA Annual Meeting Roundtable on Protecting Children’s Environmental Health. The roundtable participants reviewed the draft report to provide their feedback on the content of the scan, discuss the utility of the report in the field of children’s environmental health and explore how to best disseminate resources to reach community advocates.

Recommendations are written for community-based organizations, advocates for children and environmental health, state departments of health and environmental quality and the federal government. The recommendations aim to streamline and enhance information provided about children’s environmental health services to members of the community. Additionally, they aim to guide advocacy priorities for organizations and individuals working to improve children’s environmental health. Advocates can use these recommendations to urge programmatic, practice and policy changes at the local, state and federal levels.

Community Engagement

Departments of health and environmental quality provide valuable services to address community needs. However, community members are not always made aware that those services are offered. Regular and intentional engagement with the community can not only increase awareness of available services, but also can build trust and raise the visibility of state and local government agencies as resources for addressing environmental health concerns. Community members must be engaged from the beginning to identify the problem and intervention, to implement the intervention and to conduct the evaluation.

Meet with community members to identify resources, needs and environmental health priorities. State and local governments continuously have to prioritize how resources are spent, including what services are provided and promoted. Learning directly from community

members about their priorities can help determine where to focus resources in terms of what services to offer, how and where to promote them and which partners could assist.

When meeting with members of the community, it is important to plan meetings or events around their availability, as engagements scheduled during regular business hours may conflict with work. Evenings and weekends may be preferable times to meet, given transportation, child care and other basic needs are met. Also, governmental agencies should allocate funding to offset the cost of participation.

It can also help to identify community leaders and champions and build their capacity to serve as messengers. Also, it is imperative for public health agencies and community organizations to create a credible source of information and develop a research agenda to build on existing research efforts.

Involve community members in the development and implementation of environmental health communications for children. State and local public health departments should speak with community members to learn the best information dissemination strategies and to gather feedback on the provision of existing services. For example, parents and caregivers attending the forums APHA hosted in Flint and D.C. stressed the importance of being able to receive information about services and general health information on mobile devices, including through websites, mobile apps and text alerts.

Coordination

Coordination can require additional time and other resources that may be in short supply for many state and local governments. At the same time, however, coordination can save resources by reducing duplication of effort and improving efficiency. It can create a more streamlined experience for parents and caregivers, too, reducing the number of agencies they need to contact for information or services.

Coordinated efforts of state-based initiatives offer a pathway for advancing children's environmental health. One example falls under the Pediatric Environmental Health Specialty Unit, a network of experts in reproductive and children's environmental health. Region 2, which includes New Jersey, New York, Puerto Rico and the U.S. Virgin Islands, led a successful, 12-year campaign. It secured state support for a network of Centers of Excellence in Children's Environmental Health that now spans New York State. Key lessons learned were:⁴⁸ build a broad coalition, forge partnerships with champions in government, conduct formal needs assessments and economic benefits, maps, include monitoring and iterative charting of the changing political landscape and be persistent. This campaign can serve as a replicable model for coordination throughout a state, which can provide better environmental health services for children.⁴¹

Dedicate staff positions to streamline and help community members navigate services. Public health liaisons and coordinators can be essential for coordinating within and across agencies and organizations. Dedicating key staff to these functions can help streamline information, outreach and service provision across government agencies and with community-based

organizations. Community health workers and other navigators can help educate parents and caregivers about environmental hazards and services available.

Provide step-by-step guidance to accessing services. Easily understandable, step-by-step guidance for accessing available services can help community members gain access more quickly to the services needed. Many services, like environmental assessments, home water quality testing and technical assistance, require multiple steps to use, such as referrals to another agency, lengthy and obscure eligibility processes and multiple appointments before services are acquired.

In addition to describing services that are available online, states could provide detailed instructions and assistance, when possible, to help users more readily access services. This could include expanding the information that 311 call centers and websites provide the public, like what services various agencies provide to address priority environmental health issues.

Develop an environmental health surveillance and information system for children in school and child care settings. State health or environmental agencies can create reporting and investigating mechanisms. They can receive complaints of environmental risks and exposures at schools and conduct or commission investigations that would identify causes and remedies as well as explore patterns indicating broader environmental health risks. State agencies can also establish informational support services for schools and parents of affected children so that they could remedy environmental problems.

Educate employees of state departments of health and environmental quality about environmental health. In order to develop an environmental health system that responds to current and emerging priorities, agency staff, whose primary focus is not environmental health, could benefit from understanding environmental health issues and the services available that can help monitor, prevent or respond to concerns. Additionally, staff in other areas of the health department, such as in chronic disease prevention, could benefit from understanding the areas of their work that overlap with environmental health services offered.

For example, asthma program staff, in addition to understanding environmental triggers for asthma, should also know which units and agencies provide services, such as conducting home inspections, monitoring air and water quality schools and others that would be of benefit to parents and caregivers of children with asthma. Nutrition education staff should have general knowledge of food safety and which units or agencies conduct food safety inspections, including those of school cafeterias.

Additionally, workforce capacity must be strengthened to take on such a coordinated approach. This can require both training of existing staff and the on-boarding of new staff. It would be beneficial to employ professionals who have undergone public health certification and/or to offer the opportunity to professionals to obtain and maintain certification. Certification for public health employees ensures professionals stay up-to-date on best practices; work in concert with standardized, nationally recognized public health practices; and work to elevate the public health field. One example is to consult the *Certified in Public Health Exam Review Guide*, for assistance in preparing

for the Certified in Public Health Exam administered by the National Board of Public Health Examiners⁴². This would allow for a uniform approach to working within a complex environmental health system⁴³.

Encourage collaboration among health departments and health care providers/payers. In order to develop a supportive system to ensure that children are protected at the individual and population levels, primary prevention interventions must be coordinated between health agencies and health care providers. Additionally, it is equally important to create an evaluation system to monitor at-risk children for environmental hazards.⁹

Actively partner with schools and child care centers to offer environmental health education. The results of the national scan indicate that states provide a very limited amount of information about environmental health services that are offered to schools and child care centers on their departments of health and environmental quality websites.

On average, children spend more than six hours per day in school for 180 days per year,¹⁵ which means they have the potential to experience prolonged exposure to any environmental hazards present in a school or child care facility. When state and local governments partner with schools and child care centers, they can educate staff and parents about the warning signs of environmental health hazards and exposures — and about the services available to address them.

The authors of this report agree with the following recommendations made in the APHA Policy Statement “Protecting Children’s Environmental Health: A Comprehensive Framework,” (Date: Nov. 7, 2017; Policy Number: 201710)⁹:

- Educators and educational affiliates, such as boards of education, school administrators, teachers and parent-teacher associations, should recognize the environmental hazards that may be present in schools, to monitor schools for the presence of these hazards and to remediate them when they are present.
- State agencies that administer quality ratings, improvement systems or programs or other non-regulatory systems for child care programs should include environmental health criteria in rating requirements.
- State and local child care licensing officials should adopt all environmental health standards, included in the third edition of Caring for Our Children^{xvii} as required regulations for licensing.

Actively partner with other federal and state agencies, as well as national and local non-profit organizations or non-governmental agencies to promote coordination of efforts. Some examples include federal agency regional offices, such as the EPA regional children’s coordinators, EPA’s Children’s Health Protection Advisory Committee, Pediatric Environmental Specialty Units, Children’s Environmental Health Network and others. Several non-governmental entities — such as the Children’s Environmental Health Network, Healthy

xvii Caring for Our Children, 3rd Edition (CFOC3) is a collection of 686 national standards that represent the best practices, based on evidence, expertise and experience, for quality health and safety policies and practices for today’s early care and education settings.

Schools Network, National Center for Healthy Housing, etc. — provide environmental health services. It is important to partner with these groups to offer a rounded perspective of services and enhance the workforce capacity. Additionally, sectors outside of public health often work toward advancing children’s environmental health — such as education, housing, transportation, etc. — and should be included in building an environmental health system for children.

For example, the city of Dallas, Texas, passed a healthy housing ordinance that incorporated healthy housing standards for the city in 2016 after years of collaboration and coordination with a coalition of community-based organizations, city agencies and technical assistance from the National Center for Healthy Housing focused on creating healthy home environments for city residents. The partnership afforded the city to pass a holistic ordinance with the aim of improving quality-of-life in Dallas.^{xviii}

Website Communications

Websites can be an effective way to provide information to the public and, in most cases, the most widely available information distribution tool at a state agency’s disposal. While online information that is searched for rather than pushed to the reader may not reach all target audiences, it is important to maintain up-to-date and relevant information online. The following are key recommendations to improve the accessibility and effectiveness of information provided online.

Indicate availability of services. To better help the public use services offered, states should indicate their availability online. All but one of the states included in the national scan informed the public about the dangers of lead poisoning. Ten states, however, did not provide information about blood lead testing for children. This is a service provided in every state.⁴⁴

All state Medicaid programs reimburse for the service,⁴⁴ and some states provide blood lead testing to all children. After warning about the health hazards of lead poisoning, which most states do, states should describe all services offered to address it. Offering a service, but not providing information about it online makes it less likely that the public will take advantage of the service.

Link to other programs. State departments of health and environmental quality should link to other programs related to health. For example, many state departments of agriculture regulate pesticides and respond to complaints of pesticide misuse. People who have been exposed to pesticides may look for information on their state’s department of health website but may not find any. Linking to other state and local agencies that address health issues would help solve this problem. This also includes linking to programs and services offered by trusted community-based organizations that can provide place-based services where people live.

Add mobile phone and tablet compatibility to websites. The websites of the 48 state departments of health and environmental quality included in the scan were primarily designed for viewing on desktop and laptop computers. APHA did not examine whether the sites have mobile versions, but since 2016, cellular phones and tablets have been used more frequently than desktop

^{xviii} To learn more about the *Moving Toward a Healthy Housing Ordinance* case study, visit: https://www.apha.org/-/media/files/pdf/topics/environment/built_environment/housing_ordinance_dallas.ashx?la=en&hash=8CDE7167B8E0ED3891AB8DA97FF427B1C81B262D

and laptop computers to access the internet.⁴⁵ State service providers should take this into account.

Provide information in languages other than only English. Information on the web pages identified in the scan was primarily in English. Some states had information in other languages, but this was often difficult to locate, and translated versions of all pages of the website were sometimes not available. In addition, many states provided information about services on PDFs, which were sometimes not available in languages other than English. The languages reflected should be based on the priority communities in need in a particular state or locality.

Create a reporting mechanism. To streamline and receive complaints of environmental risks and exposures in the community and at schools, state health agencies can set up an online portal to collect information on where parents, caregivers, teachers or administrators see a threat to children's health. They could also collaborate with the federally designated Pediatric Environmental Health Specialty Units network. State agencies could also establish informational support services for schools and parents of affected children to help them remedy environmental problems.⁴⁶

Funding

Legislators at the federal and state levels should prioritize sustained funding to strengthen the capacity of departments of health and environmental quality to protect the health of children and families. As discussed above, the location of information about services provided varies from state to state. With adequate resources and coordination, state and local governments can systematically streamline and enhance their efforts. Funding can strengthen capacity to help users navigate services through more robust call centers and websites and with the assistance of community health workers, pediatric environmental health experts and other navigators. Also important is to create an integrated system that can respond to, evaluate on-site and track at-risk children for hazardous exposures.⁹

Federal Leadership

The federal government should develop policies and dedicate funding to increase public awareness about the lowest-scoring services. Federal leadership drives state and local action. It provides support to states to implement at least three of the six highest-scoring services reviewed in the national scan. These include: regulate treatment of hazardous waste, regulate storage of hazardous waste and monitor drinking water quality.

For example, the federal government's work in reporting air quality as part of the Clean Air Act gives states access to data that they use to inform the public about current air quality and what it means for their health. Federal leadership on other environmental health issues, like endocrine disruptors and prenatal exposures, could help states provide information more readily about services to address these issues. Where no services are offered, the federal government could help states begin to address these issues by developing policies and providing funding and technical assistance.

In addition to the recommendations provided in this section, for more detailed action items, the authors of this report suggest referring to two APHA Policy Statements: "Protecting Children's

Environmental Health: A Comprehensive Framework” (Date: Nov. 7, 2017; Policy Number: 201710)⁹ and “Establishing Environmental Public Health Systems for Children at Risk or with Environmental Exposures in Schools” (Date: Nov. 7, 2017; Policy Number: 201713).⁹

Future Directions

Based on the findings of the scan, community forums, expert interviews and recommendations made at the 2016 and 2018 APHA Annual Meeting Roundtable on Protecting Children’s Environmental Health, the following is a list of next steps to move this work forward:

1. Engage entities responsible for the enforcement of environmental health services to gain a stronger perspective on barriers and gaps to enforcement.
2. Explore services offered within occupational health and safety, maternal child and health and emergency preparedness and response divisions within a state public health agency, as well as in public health laboratories.
3. Assist state and local health departments to conduct a needs assessment to understand and begin to fill in the information gaps information about essential environmental health services for children.
4. Examine rural and tribal communications channels and create a plan to engage communities that may not readily have access to the internet.
5. Partner with non-governmental agencies and nonprofit organizations to promote and disseminate information on services at the local level.
6. Evaluate the quality of service delivery, not just the content of web materials.
7. Work with state agencies to identify ways to make information on environmental health services offered at the local and tribal levels available and accessible to the public served.
8. Examine whether there are local, state and tribal public health accreditation criteria to improve the availability of electronic messaging to address information dissemination and access to services are consistent efforts in all states.

Conclusion

Environmental health services create interrelationships between people and their environment to promote human health and safety.⁴⁷ Yet many services are not publicized and many go unnoticed, like air monitoring or water sanitation. Individuals and communities should not have to ask about the efficacy of essential services provided, such as whether regulated drinking water is safe for consumption.

Based on the quantitative analysis of APHA scan results, the average state provides information for about half the services APHA staff looked for — 106 out of 210. The state that did best provided information for about 164 services. The state that did worst provided information for about 50 services. This demonstrates that even the best state could provide a lot more information to make its

services more available to the public. Parents and caregivers should be able to find information that helps to protect their children.

While states can make many improvements on web communications, other areas also can be enhanced. States can engage communities early and often when identifying priority services; coordinate among state-level governmental agencies; and garner federal support for enhanced community outreach efforts.

This project not only shed light on the challenges that states have in communicating the breadth of children's environmental health services available, but also afforded APHA the chance to discuss the range of services that state governmental agencies are equipped to provide. In speaking to parents and caregivers in Flint, Michigan, and Washington, D.C., APHA gained insight into community environmental health priorities, while educating community members on the field itself.

A number of similarities exist between parents in Flint and in D.C. Many who participated in the community forums live in under-resourced communities and regularly must make choices between competing needs and priorities for their families. All expressed deep concern about the impact the environment has on the current and future health of their children.

The Flint community is trying to recover and heal from the trauma caused by the water crisis; uncertain about the future of both the health of their families and the city they call home. Meanwhile, parents in D.C. grapple with how to create an environment in which their children will thrive as they witness widening inequities in housing and neighborhood quality.

What APHA learned from these two distinct communities further punctuates the importance of a robust environmental health system that protects children and families from environmental hazards and is responsive to their needs, especially during times of crises. Coordinated, comprehensive and intentional efforts to reduce or eliminate environmental risks to children [through available and accessible services] are a valuable investment in children's health and long-term development and in the well-being of future generations.⁹

Appendix A: Scores for groups of health conditions or environmental health issues

Groups of health conditions or environmental health issues	Score
Other (4 variables)	40.0 ± 2.3
Brownfields (3 variables)	39.2 ± 4.1
Water (12 variables)	37.9 ± 3.0
Waste management 35.5 (15 variables)	35.5 ± 2.0
Ground-level contaminants (3 variables)	33.0 ± 9.0
Obesity (6 variables)	30.8 ± 3.0
Arsenic (3 variables)	28.8 ± 5.3
Food-borne illness overall (16 variables)	25.5 ± 2.9
General (3 variables)	25.2 ± 3.4
Vector-borne diseases (13 variables)	24.1 ± 3.3
Climate change-related conditions (12 variables)	24.1 ± 3.0
Consumer Products (1 variable)	24.0
Poison exposure and control (12 variables)	23.5 ± 3.6
Asthma (40 variables)	23.3 ± 2.2
Hearing damage (4 variables)	22.0 ± 10.1
Tribal (1 variable)	21.5
Pesticides (8 variables)	20.3 ± 2.8
Lead (17 variables)	19.8 ± 3.2
Tracking (4 variables)	19.4 ± 4.0
Childhood cancer (3 variables)	19.0 ± 3.3
Radon (8 variables)	18.8 ± 6.2
Occupational health conditions (4 variables)	15.5 ± 5.4
Health in all policies (1 variable)	11.5
Homes/communities (4 variables)	11.1 ± 4.9
Child care and schools (6 variables)	8.6 ± 1.8
Endocrine disruptors (3 variables)	7.7 ± 0.9
Prenatal exposures (2 variables)	3.0 ± 1.5

Appendix B: Full list of environmental health services included in website scans

Service	Group of Health Conditions or Environmental Health Issues	Yes (%)	No (%)	Partial (%)	Score
Is information for tribes or a tribal liaison included?	Tribes	43.8	54.2	2.1	21.5
Provide information on the cause of asthma	Asthma	81.3	14.6	4.2	40
Provide information on the types of asthma	Asthma	25.0	60.4	14.6	15.5
Provide information about asthma rates	Asthma	79.2	16.7	4.2	39
Provide information on environmental asthma triggers	Asthma	83.3	10.4	6.3	41.5
Provide information on how to address environmental asthma triggers	Asthma	77.1	20.8	2.1	37.5
Provide information on environmental assessment	Asthma	45.8	43.8	10.4	24.5
Support child care providers in helping children with asthma manage the condition	Asthma	41.7	47.9	10.4	22.5
Support workplaces in helping children with asthma manage the condition *focus on schools, school-based health centers, etc.	Asthma	64.6	27.1	8.3	33
Provide information to schools about creating asthma-friendly environments	Asthma	64.6	25.0	10.4	33.5
Provide information to child care facilities about creating asthma-friendly environments	Asthma	41.7	45.8	12.5	23
Track complaints of asthma triggers in schools	Asthma	4.2	89.6	6.3	3.5
Track complaints of asthma triggers in child care facilities	Asthma	4.2	87.5	8.3	4
Provide information on health hazards of poor air quality*	Asthma	77.1	12.5	10.4	39.5
Provide technical assistance on meeting air quality standards*	Asthma	70.8	22.9	6.3	35.5
Translate research on outdoor and indoor air quality for public	Asthma	62.5	29.2	8.3	32
Maintain websites to display current outdoor air quality	Asthma	93.8	4.2	2.1	45.5
Create curriculum for school personnel on outdoor air quality	Asthma	31.3	54.2	14.6	18.5
Create curriculum for child care facility personnel on outdoor air quality	Asthma	14.6	79.2	6.3	8.5
Collect complaints of outdoor air quality*	Asthma	70.8	18.8	10.4	36.5
Investigate complaints about outdoor air quality*	Asthma	64.6	20.8	14.6	34.5
Remediate complaints of outdoor air pollution*	Asthma	56.3	27.1	16.7	31
Provide technical assistance on improving indoor air quality from water damage	Asthma	70.8	25.0	4.2	35
Provide technical assistance on improving indoor air quality from mold	Asthma	77.1	14.6	8.3	39
Create curriculum for school personnel on indoor air quality	Asthma	43.8	45.8	10.4	23.5
Create curriculum for child care facility personnel on indoor air quality	Asthma	14.6	75.0	10.4	9.5
Collect complaints of indoor air quality*	Asthma	43.8	43.8	12.5	24
Investigate complaints about indoor air quality*	Asthma	29.2	54.2	16.7	18
Remediate complaints of indoor air pollution*	Asthma	25.0	58.3	16.7	16
Inspect indoor air quality in schools, particularly for asthma triggers*	Asthma	16.7	72.9	10.4	10.5

Service	Group of Health Conditions or Environmental Health Issues	Yes (%)	No (%)	Partial (%)	Score
Inspect indoor air quality in child care facilities, particularly for asthma triggers*	Asthma	12.5	81.3	6.3	7.5
Track indoor air quality in schools, particularly for asthma triggers*	Asthma	6.3	79.2	14.6	6.5
Track indoor air quality in child care facilities, particularly for asthma triggers*	Asthma	4.2	85.4	10.4	4.5
Publicly report indoor air quality in schools, particularly for asthma triggers*	Asthma	2.1	95.8	2.1	1.5
Publicly report indoor air quality in child care facilities, particularly for asthma triggers*	Asthma	4.2	93.8	2.1	2.5
Conduct home inspections	Asthma	10.4	83.3	6.3	6.5
Conduct school inspections	Asthma	8.3	81.3	10.4	6.5
Conduct childcare facility inspections	Asthma	10.4	75.0	14.6	8.5
Regulate sources of air pollution*	Asthma	83.3	12.5	4.2	41
Enforce smoke free laws, including by conducting inspections	Asthma	83.3	14.6	2.1	40.5
Provide information about services to assist children with asthma through other organizations, such as Medicaid, home assessment services, community health care workers, etc.	Asthma	66.7	27.1	6.3	33.5
Provide information about parks and other green spaces	Obesity	41.7	47.9	10.4	22.5
Promote walkable communities	Obesity	52.1	31.3	16.7	29
Provide access to healthy and affordable foods in school	Obesity	58.3	18.8	22.9	33.5
Provide access to healthy and affordable foods in child care centers	Obesity	37.5	43.8	18.8	22.5
Provide access to healthy and affordable foods outside schools and child care settings	Obesity	66.7	12.5	20.8	37
Provide information about services available in the community	Obesity	81.3	14.6	4.2	40
Provide information on potential links between childhood cancers and the environment	Childhood Cancer	22.9	70.8	6.3	12.5
Perform surveillance of childhood cancers	Childhood Cancer	43.8	54.2	2.1	21.5
Provide information about services available in the community	Childhood Cancer	43.8	47.9	8.3	23
Provide information to public on hazards presented by prolonged exposure to loud noise, particularly industrial and traffic noise	Hearing Damage	14.6	85.4		7
Provide hearing screenings	Hearing Damage	77.1	4.2	18.8	41.5
Investigate clusters of hearing damage	Hearing Damage	2.1	95.8	2.1	1.5
Provide information about services available in the community	Hearing Damage	70.8	18.8	10.4	36.5
Educate public about the dangers of lead	Lead	93.8	2.1	4.2	46
Educate the public about current lead policies and programs to avoid lead exposure	Lead	85.4	12.5	2.1	41.5
Provide information about health hazards of lead in schools	Lead	35.4	60.4	4.2	18
Conduct home inspections, including of soil outside*	Lead	12.5	68.8	18.8	10.5
Conduct school inspections, including of soil outside*	Lead	12.5	68.8	18.8	10.5
Conduct child care facility inspections, including of soil outside*	Lead	8.3	70.8	20.8	9
Publicize results of inspections of public places	Lead	4.2	91.7	4.2	3
Conduct testing for blood lead levels in children	Lead	72.9	22.9	4.2	36

Service	Group of Health Conditions or Environmental Health Issues	Yes (%)	No (%)	Partial (%)	Score
Monitor water quality for and investigate health problems caused by lead in water	Lead	41.7	39.6	18.8	24.5
LEAD: Provide information and support to schools on how to test for lead in drinking water	Lead	56.3	43.8	0.0	27
Provide information to child care facilities on how to test for lead in drinking water	Lead	45.8	54.2	0.0	22
Enforce construction regulations to reduce exposure to lead or other harmful substances, like asbestos*	Lead	54.2	29.2	16.7	30
Enforce housing regulations to reduce exposure to lead or other harmful substances, like asbestos*	Lead	43.8	31.3	25.0	27
Inspect work sites in schools to ensure contractors have proper training to handle lead-based paint *	Lead	22.9	66.7	10.4	13.5
Develop regulations to keep lead out of toys	Lead	4.2	87.5	8.3	4
Enforce regulations to keep lead out of toys	Lead	4.2	91.7	4.2	3
Provide information on how to access financial resources for lead (or other health hazard) elimination and remodeling in homes*	Lead	22.9	75.0	2.1	11.5
Provide information about the health impacts of pesticides	Pesticides	43.8	41.7	14.6	24.5
Map agricultural pesticide use	Pesticides	2.1	83.3	14.6	4.5
Train pest control providers in integrated pest management techniques	Pesticides	29.2	66.7	4.2	15
Regulate use of pesticides	Pesticides	56.3	33.3	10.4	29.5
Collect reports of pesticide use	Pesticides	27.1	47.9	25.0	19
Investigate complaints of pesticide misuse	Pesticides	35.4	52.1	12.5	20
Regulate discharge of pesticides and other waste from animal feeding operations	Pesticides	47.9	37.5	14.6	26.5
Provide information for pesticides-related services available in the community	Pesticides	47.9	50.0	2.1	23.5
Provide materials to public about potential chemical exposure and how to avoid it	General	50.0	35.4	14.6	27.5
Operate phone line to answer public's questions about hazardous chemicals in the environment	General	58.3	35.4	6.3	29.5
Provide information about services available in the community	General	35.4	58.3	6.3	18.5
Publicize information on environmental hazards in recreational water	Water	79.2	12.5	8.3	40
Publicize information on environmental hazards in drinking water	Water	87.5	4.2	8.3	44
Conduct liquid tank and underground storage tank inspections	Water	89.6	10.4	0.0	43
With federal support, enforce Safe Drinking Water Act* - Monitor drinking water quality	Water	93.8	4.2	2.1	45.5
With federal support, enforce Safe Drinking Water Act* - Report drinking water quality	Water	86.9	4.2	6.3	44.5
Inspect drinking water recycling and treatment facilities*	Water	79.2	14.6	6.3	39.5
Inspect drinking water from private wells	Water	70.8	22.9	6.3	35.5
With federal government, enforce Clean Water Act* - Regulate discharge of waste water onto the ground and onto surface water and ground water	Water	85.4	12.5	2.1	41.5

Service	Group of Health Conditions or Environmental Health Issues	Yes (%)	No (%)	Partial (%)	Score
With federal government, enforce Clean Water Act* - Monitor surface water	Water	81.3	16.7	2.1	39.5
With federal government, enforce Clean Water Act* - Treat surface water	Water	81.3	16.7	2.1	39.5
Set water quality standards for recreational waters like pools and bathing beaches	Water	68.8	22.9	8.3	35
Provide safe drinking water for people living in places with contaminated water	Water	12.5	83.3	4.2	7
Publish list of brownfields in the state	Brownfields	60.4	31.3	8.3	31
Provide technical assistance for remediating brownfields (environmental assessments, demolition, etc.)	Brownfields	89.6	8.3	2.1	43.5
Facilitate community involvement in brownfield cleanup and remediation	Brownfields	89.9	10.4	0.0	43
Provide information to the public about contaminants frequently found in soil*	Ground Level Contaminants	27.1	64.6	8.3	15
Provide technical assistance with inspection of underground storage tanks for proper maintenance or removal	Ground Level Contaminants	87.5	10.4	2.1	42.5
Provide information to public on how to safely dispose of potentially harmful substances, like household chemicals and electronics	Ground Level Contaminants	83.3	10.4	2.1	41.5
Inform public about hazardous consumer products, particularly those containing endocrine disruptors	Consumer Products	35.4	35.4	29.2	24
Enforce regulations to keep endocrine disruptors out of consumer products	Endocrine Disruptors	10.4	70.8	18.8	9.5
Enforce regulations to keep endocrine disruptors out of building materials	Endocrine Disruptors	10.4	83.3	6.3	6.5
Enforce regulations to keep endocrine disruptors out of products for children	Endocrine Disruptors	10.4	81.3	8.3	7
Provide information on asbestos*	Other	89.6	10.4	0.0	43
Provide information on carbon monoxide*	Other	70.8	12.5	16.7	38
Provide information on heat waves*	Other	70.8	27.1	2.1	34.5
Provide information on mold*	Other	91.7	6.3	2.1	44.5
Conduct biomonitoring to track and study individual cases of exposure to environmental health hazards	Tracking	39.6	52.1	8.3	21
Report environmental health hazards to state tracking systems	Tracking	56.3	41.7	2.1	27.5
Report environmental health hazards to federal tracking systems	Tracking	41.7	56.3	2.1	20.5
Conduct long term surveillance of people that have received services to remediate the effects of environmental exposure	Tracking	14.6	79.2	6.3	8.5
Conduct inspections on environmental health hazards in schools	Child Care And Schools	16.7	60.4	22.9	13.5
Conduct inspections on environmental health hazards in school buses	Child Care And Schools	18.8	72.9	8.3	11
Conduct inspections on environmental health hazards in child care facilities	Child Care And Schools	18.8	66.7	14.6	12.5
Set safe siting requirements for schools*	Child Care And Schools	8.3	79.2	12.5	7
Set safe siting requirements for child care facilities	Child Care And Schools	6.3	87.5	6.3	4.5

Service	Group of Health Conditions or Environmental Health Issues	Yes (%)	No (%)	Partial (%)	Score
Enforce safe siting requirements for schools and child care facilities*	Child Care And Schools	2.1	89.6	8.3	3
Develop regulations on "right to know" of hazardous substances used or present in communities	Waste Management	64.6	33.3	2.1	31.5
Enforce regulations on "right to know" of hazardous substances used or present in communities	Waste Management	60.4	35.4	4.2	30
Regulate landfills	Waste Management	89.6	8.3	2.1	43.5
Regulate liquid waste handling facilities	Waste Management	60.4	33.3	6.3	30.5
Regulate waste transfer stations	Waste Management	62.5	31.3	6.3	31.5
Regulate composting sites	Waste Management	60.4	37.5	2.1	29.5
Regulate disposal of medical and infectious waste	Waste Management	77.1	16.7	6.3	38.5
Regulate treatment of hazardous waste	Waste Management	93.8	2.1	4.1	46
Regulate storage of hazardous waste	Waste Management	91.7	2.1	6.3	45.5
Regulate disposal of hazardous waste	Waste Management	87.5	8.3	4.2	43
Regulate removal of asbestos, including from construction and demolition sites	Waste Management	87.5	10.4	2.1	42.5
Investigate complaints of illegal dumping	Waste Management	64.6	27.1	8.3	33
Investigate complaints of illegal handling of pollutants	Waste Management	50.0	45.8	4.2	25
Respond to chemical spills and other emergencies*	Waste Management	87.5	12.5	0.0	42
Inspect work sites in schools to ensure contractors have proper training to handle asbestos and other potentially hazardous substances	Waste Management	37.5	50.0	12.5	21
Enforce building codes that prevent exposure to environmental hazards*	Homes/ Communities	12.5	79.2	8.3	8
Promote green infrastructure	Homes/ Communities	41.7	35.4	22.9	25.5
Mandate use of green cleaning products and techniques in schools	Homes/ Communities	8.3	77.1	14.6	7.5
Mandate use of green cleaning products and techniques in child care facilities	Homes/ Communities	4.2	89.6	6.3	3.5
Provide information to public on safe indoor burning wood practices to prevent carbon monoxide poisoning	Poison Exposure And Control	68.8	29.2	2.1	33.5
Provide information about services available in the community	Poison Exposure And Control	54.2	39.6	6.3	27.5
Track chemical exposures and injuries*	Poison Exposure And Control	33.3	62.5	4.2	17
Use surveillance data to inform public health prevention measures*	Poison Exposure And Control	37.5	56.3	6.3	19.5
Report chemical exposures and injuries*	Poison Exposure And Control	33.3	56.3	10.4	18.5
Regulate volatile organic compounds	Poison Exposure And Control	52.1	39.6	8.3	27
Regulate poisons and other high hazard chemicals	Poison Exposure And Control	56.3	33.3	10.4	29.5
License use of radioactive materials	Poison Exposure And Control	75.0	22.9	2.1	36.5

Service	Group of Health Conditions or Environmental Health Issues	Yes (%)	No (%)	Partial (%)	Score
Enforce compliance with regulations on use of poisonous materials, including radioactive materials*	Poison Exposure And Control	75.0	18.8	6.3	37.5
Provide information for easy access to Poison Control Centers	Poison Exposure And Control	66.7	27.1	6.3	33.5
Require schools to have carbon monoxide detectors	Poison Exposure And Control	0.0	97.9	2.1	0.5
Require child care facilities to have carbon monoxide detectors	Poison Exposure And Control	2.1	97.9	0.0	1
Provide information arsenic health risks.	Arsenic	72.9	22.9	4.2	36
Investigate potential sources of arsenic exposure	Arsenic	60.4	27.1	12.5	32
Provide information about arsenic-related services available in the community	Arsenic	35.4	58.3	6.3	18.5
Provide information about radon health risks	Radon	93.8	6.3	0.0	45
Provide information on how to test for radon in homes	Radon	91.7	8.3	0.0	44
Provide information on how to test for radon in schools	Radon	35.4	62.5	2.1	17.5
Provide information on how to test for radon in child care facilities	Radon	14.6	85.4	0.0	7
Conduct tests for radon in homes	Radon	6.3	85.4	8.3	5
Conduct tests for radon in schools	Radon	8.3	83.3	8.3	6
Conduct tests for radon in child care facilities	Radon	2.1	93.8	4.2	2
Track sites where radon has been detected	Radon	50.0	50.0	0.0	24
Provide information about radon testing and remediation services	Radon	87.5	10.4	2.1	42.5
Provide information about other radon-related services available in the community	Radon	83.3	16.7	0.0	40
Inform public of increased risk of vector borne conditions in response to surveillance data	Vector-Borne Diseases	81.3	6.3	12.5	42
Inform public of increased risks and changing patterns of vector borne conditions due to climate change	Vector-Borne Diseases	29.2	66.7	4.2	15
Inform public about ways to prevent vector borne diseases and where surveillance efforts have detected vector borne diseases	Vector-Borne Diseases	79.2	8.3	12.5	41
Conduct surveillance of vector borne diseases	Vector-Borne Diseases	68.8	25.0	6.3	34.5
Conduct surveillance of mosquito population and population of other disease vectors, like ticks	Vector-Borne Diseases	72.9	18.8	8.3	37
Inform health care providers about prevention of vector borne diseases	Vector-Borne Diseases	45.8	43.8	10.4	24.5
Inform health care providers about treatment of vector borne diseases	Vector-Borne Diseases	39.6	50.0	10.4	21.5
Manage outbreaks and assist in situations where outbreaks could occur, like floods or sewage spills*	Vector-Borne Diseases	33.3	47.9	18.8	20.5
Collect information on location of standing water	Vector-Borne Diseases	14.6	83.3	2.1	7.5
Respond to complaints of standing water	Vector-Borne Diseases	10.4	89.6	0.0	5

Service	Group of Health Conditions or Environmental Health Issues	Yes (%)	No (%)	Partial (%)	Score
Control mosquito population through elimination of standing water	Vector-Borne Diseases	39.6	56.3	4.2	20
Control mosquito population through application of pesticides	Vector-Borne Diseases	27.1	58.3	14.6	16.5
Provide information about services available in the community (ex: phone number to report standing water)	Vector-Borne Diseases	52.1	35.4	12.5	28
Provide food safety information to the public	Food-Borne Illnesses	83.3	6.3	10.4	41.5
Provide information on food business quality to the public	Food-Borne Illnesses	41.7	54.2	4.2	21
Provide information to public on potential chemical exposures through food, like mercury through fish	Food-Borne Illnesses	87.5	6.3	6.3	43.5
Inspect food businesses	Food-Borne Illnesses	66.7	33.3	0.0	32
License food businesses	Food-Borne Illnesses	66.7	31.3	2.1	32.5
Inspect school cafeterias	Food-Borne Illnesses	18.8	79.2	2.1	9.5
License school cafeterias	Food-Borne Illnesses	20.8	72.9	6.3	11.5
Inspect child care centers where food is prepared	Food-Borne Illnesses	12.5	81.3	6.3	7.5
License child care centers where food is prepared	Food-Borne Illnesses	16.7	77.1	6.3	9.5
Inspect farmers' market food vendors/cottage food	Food-Borne Illnesses	35.4	60.4	4.2	18
License farmers' market food vendors/cottage food	Food-Borne Illnesses	43.8	54.2	2.1	21.5
Investigate complaints of food quality and foodborne illness	Food-Borne Illnesses	68.8	25.0	6.3	34.5
Investigate outbreaks of food borne illness	Food-Borne Illnesses	72.9	16.7	10.4	37.5
Conduct recalls of unsafe food	Food-Borne Illnesses	45.8	50.0	4.2	23
Implement safe food regulations	Food-Borne Illnesses	68.8	25.0	6.3	34.5
Provide information about services available in the community	Food-Borne Illnesses	62.5	33.3	4.2	31
Develop maps that display potential environmental public health risks posed by climate change	Climate Change Related Conditions	12.5	77.1	10.4	8.5
Share information with public on steps they can take to prepare for climate change related events	Climate Change Related Conditions	60.4	31.3	8.3	31
Inform public about how to avoid increased presence of allergens*	Climate Change Related Conditions	25.0	62.5	12.5	15
Inform the public about how to avoid increased presence of air pollution*	Climate Change Related Conditions	64.6	14.6	20.8	36
Inform the public about how to protect themselves from mental health consequences of climate change related events	Climate Change Related Conditions	20.8	70.8	8.3	12
Inform the public about how to protect themselves from extreme heat	Climate Change Related Conditions	72.9	22.9	4.2	36
Inform the public about how to protect themselves from extreme cold	Climate Change Related Conditions	52.1	43.8	4.2	26
Inform public about how to protect themselves from flooding	Climate Change Related Conditions	81.3	12.5	6.3	40.5
Collaborate with other branches of state government on enforcing climate change policies	Climate Change Related Conditions	52.1	47.9	0.0	25
Collaborate with federal government on enforcing climate change policies	Climate Change Related Conditions	35.4	54.2	10.4	19.5

Service		Group of Health Conditions or Environmental Health Issues	Yes (%)	No (%)	Partial (%)	Score
Provide information about services available in the community		Climate Change Related Conditions	45.8	47.9	6.3	23.5
Provide information about emergency shelters for people who are effected by extreme weather events due to climate change, such as extreme heat, cold, and floods		Climate Change Related Conditions	29.2	62.5	8.3	16
Inform the public about potential links between prenatal exposures and the environment		Prenatal Exposures	6.3	87.5	6.3	4.5
Conduct environmental assessment of homes of pregnant mothers to prevent prenatal exposures		Prenatal Exposures	2.1	95.8	2.1	1.5
Provide information to the public about how to contact OSHA and state occupational health agency		Occupational Health Conditions	56.3	41.7	2.1	27.5
Develop policies to require employers that require handling of potentially hazardous materials to provide clothes washing machines.		Occupational Health Conditions	20.8	77.1	2.1	10.5
Develop policies that protect children below the age of 18 in the workplace, including in agricultural settings and in family-owned businesses.		Occupational Health Conditions	6.3	93.8	0.0	3
Provide information about services available in the community		Occupational Health Conditions	41.7	54.2	4.2	21
Collaborate with other governmental and non-governmental agencies in implementing health in all policies*		Health In All Policies	18.8	70.8	10.4	11.5
Inform the public	Training and technical assistance	Policy development and enforcement	Surveillance and diagnosis		Link to needed services	

Appendix C: Descriptions of federal policies discussed in report

Clean Air Act (CAA)

The Clean Air Act (CAA) is the comprehensive federal law that regulates air emissions from stationary and mobile sources. One of its main provisions gives authority to the EPA to establish National Ambient Air Quality Standards to protect public health and welfare by regulating emissions of hazardous air pollutants. The setting of pollution standards was coupled with federal direction of states in creating state implementation plans. Amendments to the CAA also address hazardous air pollutants by requiring issuance of technology-based standards for major sources and certain area sources. Finally, the CAA requires that EPA establish emission standards that require the maximum degree of reduction in emissions of hazardous air pollutants.

Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating pollutant discharges into U.S. waters, as well as regulating quality standards for surface waters. Under the CWA, EPA has implemented pollution control programs (such as establishing wastewater standards for industries) and developed national water quality criteria recommendations for pollutants in surface waters. The CWA also made certain pollutant discharge unlawful; EPA's National Pollutant Discharge Elimination System permit program now controls discharges.

Emergency Planning and Community Right-to-Know Act (EPCRA)

The Emergency Planning and Community Right-to-Know Act (EPCRA) was passed in 1986 in response to growing concerns regarding the environmental and safety hazards posed by the storage and handling of toxic chemicals. In hopes of reducing the likelihood of a disaster, Congress imposed requirements for federal, state and local governments; tribes; and industry. These include requirements for emergency planning, emergency notification, community right-to-know requirements, toxic release inventory forms and trade secret regulations. The Community Right-to-Know provision helps to increase the public's knowledge and access to information on chemicals at facilities, their uses and potential releases into the environment. Ultimately, the EPCRA is designed so states and communities, working with chemical facilities, can improve chemical safety and protect public health and the environment.

Small Business Liability Relief and Brownfields Revitalization Act

The act, passed in September of 2001, incorporates the Brownfield Revitalization and Environmental Restoration Act of 2001 and the Small Business Liability Protection Act, therefore amending the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund).

The Brownfield Revitalization and Environmental Restoration Act of 2001 consisted of three titles: I) codified and expanded EPA's current Brownfields program by authorizing funding for assessment and cleanup of brownfields properties, II) exempted contiguous property owners and prospective purchasers from Superfund liability and clarified appropriate inquiry for innocent landowners and III) authorized funding for state response programs and limited EPA's Superfund enforcement authority at sites cleaned up under a state response program.

The Small Business Liability Protection Act exempts minimal contributors of hazardous substances and household, small business and nonprofit generators of municipal solid waste from liability for Superfund response cost and National Priority List^{xix}. Additionally, the bill provided for expedited settlements with persons based on a limited ability to pay. The Small Business Liability Relief and Brownfields Revitalization Act was signed into law in 2002.

Safe Drinking Water Act (SDWA)

Originally passed in 1974, the Safe Drinking Water Act (SDWA) protects public health by regulating the nation's public drinking water supply. Amendments require many actions to protect drinking water and its sources (rivers, lakes, reservoirs, springs and ground water wells). EPA, states and water systems work together to ensure that national health-based standards for drinking water that protect against both naturally occurring and man-made contaminants are met.

SDWA applies to every public water system and hinges on "protection and prevention" as essential components to safe drinking water. This includes barriers against pollution, such as source water protection, treatment, distribution system integrity and public information. Through SDWA, water safety standards are enforceable and EPA and states work to increase understanding of, and compliance with, these standards.

Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act (RCRA) grants EPA authority over hazardous waste from "cradle-to-grave." This includes the generation, transportation, treatment, storage and disposal of hazardous waste. It also creates a framework for the management of non-hazardous solid wastes. Amendments to RCRA address environmental problems that could result from underground storing of hazardous materials, as well as waste minimization, phasing out of land disposals and corrective action for releases. Federal facilities are required to comply with RCRA and are subject to civil penalties for violations. The law also increases authority for the EPA, while creating more stringent hazardous waste management standards and a comprehensive underground storage tank program.

xix The National Priorities List is a list of sites of national priority among the known releases or threatened releases of hazardous substances, pollutants or contaminants throughout the U.S. and territories.

Appendix D: Community forum agendas and interview guides

APHA Community Forum Agenda SAMPLE

Meeting Objectives

After participating in the APHA Community Forums,

APHA's Center for Public Health Policy will have a greater understanding of:

1. Community members' awareness of environmental health in general and specific to their community, including environmental health strengths and issues facing their communities, particularly those issues that affect children in the community
2. Information sources used by community members
3. Community member's satisfaction with scan findings

Community members will:

1. Have an opportunity to share their opinions about environmental health strengths and issues in their communities
2. Share feedback about the APHA scan and fact sheets
3. Increase their knowledge of APHA's resources and of environmental health services in their communities
4. Increase their self-efficacy in using APHA's resources to identify gaps in environmental health services
5. Increase their self-efficacy to identify and contact state or local environmental health service providers, as appropriate

Materials

- Flip charts
- Markers
- Name tags
- Pens
- Sign-in sheet
- Post-it notes or index cards
- Consent forms
- Handout 1 – On-the-Wall Survey
- Handout 2 – Sign-up Sheet
- Handout 3 – Reaction to the Scan
- Handout 4 – Experience with Environmental Health Services
- Handout 5 – Satisfaction Survey

Pre-meeting/Registration

Provide a sign-in sheet and name tags for people as they enter the room. Also provide some index cards and a pen at each seat.

Scripted Agenda

INTRODUCTIONS, WARM-UP, AND OVERVIEW [15 minutes]

Introductions – 6-6:05 pm

Community Partner: Welcome. We are glad that you are here today! My name is _____ and I [fill in background about what they do]. We are here today to talk more about environmental health in our community. We are holding this meeting with the American Public Health Association.

We are meeting today for about two hours and we will take a short break in the middle. Restrooms are located [give location]. Please silence your cell phones to avoid distractions. [Add any other housekeeping/logistics].

I'd like to introduce you to _____ from APHA, who will be facilitating the meeting today.

APHA: Thank you. My name is _____ and I work at the American Public Health Association in the Center for Public Health Policy, the organization's internal think tank. We highlight the connections between people's environment and their health and work to create healthy communities for everyone. I am joined by my colleagues_____.

APHA Facilitator: We'd like to do a quick round of introductions. We can start with [APHA STAFF]. Let's go around the room and, if you could very briefly tell us your name, whether you are here as a community member or representing a specific organization, and one word to describe how you are feeling about participating in this meeting.

[Facilitator or note taker write down the words used to describe their feelings on newsprint. Save this newsprint to re-visit at the end of the meeting. If words duplicated, just add a check or tally mark].

[Facilitator should offer a summary statement, e.g. "Great to meet everyone. I see that most of you are excited about the meeting. We are, too!" or "Great to meet everyone. I see that some of you are unsure about today's meeting. We want you to know that there is nothing to worry about — we're going to give you an overview and then we'll dive right in."]

Warm-up Activity – 6:05 to 6:10

Purpose: Get an understanding of how audience is thinking about environmental health. Sets the stage to provide a shared definition.

I'd like to give you a little background about our current project, but before we do that, I'd like to have us do a quick activity. I'd like you to take out one of the note cards you were given earlier. I'm going to give you two minutes to jot down how you would define "environmental health." What does "environmental health" mean to you?

[Allow time. Have someone collect cards or have them pass the cards forward.]

Let's read a few. [Pick about five to eight cards at random to read out loud.]

[Offer a summary statement that pulls together what you hear, e.g. "Great, most of you are thinking about clean water and the outdoor environment." "Wow, you are really capturing a lot of different aspects of environmental health." Then continue below].

Overview and Objectives – 6:10 to 6:15

Here is how APHA defines environmental health, both for this meeting and in the work that we do every day. The definition starts with a general definition of what the field of environmental health does. Then, it gives some examples of what

environmental health professionals do. After that, it describes the effects and goals of the field of environmental health. Last, the definition describes how the different environmental health services can be delivered together to form the environmental health system.

Defining Environmental Health: Environmental health is the branch of public health that focuses on the relationships between people and their environment.

Environmental health professional work:

- To advance policies and programs to reduce chemical and other environmental exposures.
- To protect residents and provide communities with healthier environments.
- To keep track of environmental exposures in communities and determine potential links with disease outcomes and health overall.

As an example, here are some goals and benefits of the field of environmental health:

- Drinking water should be free of contamination and available to everyone.
- Homes should be safe, affordable and healthy places for families to gather.
- Workplaces, schools and child care centers should be free of exposures that negatively impact the health of children and workers.
- Everyone should have access to safe and clean public spaces, such as parks.
- Communities are prepared for disasters with the resources to be resilient against physical and emotional damage.

Government has a leading role in operating the environmental health system, though community-based organizations, hospitals and others are also part of it. A cohesive environmental health system monitors and measures diseases, hazards, exposures and health outcomes. It can collect data over time, and it can present real-time data to quickly respond to emergencies and to identify problems for program planning. Also all government agencies should assess the environmental health impacts of their programs and policies across all sectors to improve health of all communities and people.

Project overview and meeting purpose: Now I will describe the project on children's environmental health that we have been working on. When we started this project, we were aware of recent environmental public health crises, like [THE LEAD POISONING HERE IN FLINT]. This crisis put everyone, but particularly children, at risk.

We decided to conduct a national scan on the accessibility of online information available to the public about environmental health services, focusing on the needs of children. We worked with experts in the field to identify a list of services and then we reviewed the websites of the state departments of health and environmental quality to see if information about these services was available.

Just as a note, the fact sheet on environmental health services that we will share with you later in the meeting has the results of our national scan of 48 states. We were not able to include two states in the scan because of limitations on their state websites.

As part of this project, we are also meeting with two communities to get their insights into environmental health assets and needs. We have two purposes for our meeting today. First, we'd like to learn more about your community, its strengths and environmental health issues. We'd also like to get your feedback on the materials we are working on.

The goal of our project is to take what we learned in our scan and in these community forums to offer recommendations and next steps for how to build an environmental public health system that effectively serves communities.

We will be doing a variety of activities, some as a large group and some where we break down into small groups. Sometimes we'll ask you to make notes on a worksheet — you don't need to put your names on these, but we will collect them. We're looking forward to your active participation and hearing everyone's opinions. Please don't worry if you have different opinions — there are no right and wrong answers to any of our questions. It will help us to hear different points of view.

Also, please know that we have a lot we want to cover, and sometimes we may need to move the discussion along so we get through all our questions. Lastly, we will not use your names in any of our reports. We will say things like "most participants felt this way" or "there were mixed opinions in the group about that topic."

Does anyone have any questions before we continue?

ON-THE-WALL SURVEY [15-20 minutes]

Broad Community Overview – 6:15 to 6:35

Set up: Pass out Handout No. 1 on the On-the-Wall Survey with questions and space for responses. Post the same questions on newsprint around the room.

Purpose: The On-the-Wall Survey is a qualitative and quantitative data collection tool that helps participants think broadly about their community.

We'd like to start out by getting a broad overview of your community, particularly how it's thriving, where it's struggling and what you see as the big issues it faces. We're also interested in knowing where you find out information about environmental health-related issues in your community. I'd like you to briefly answer these questions on the worksheet we are handing out.

[Pass out worksheet with these questions on it and space to respond.]

Once you've completed the worksheet, please post your answers on the newsprint around the room. If your response is already listed, just add a checkmark next to it.

Questions:

1. In what ways is your community thriving, particularly for children? What are the best things about living here?
2. In what areas is your community struggling?
3. What are the biggest environmental health-related issues facing children in your community?
4. Where do you get information about environmental health-related issues in your community?

Let's regroup and review. *[Walk through each question and summarize the responses, e.g. "Look at the wide variety of 'best things' you've identified," "Almost everyone identified clean water as the biggest issue in general and biggest health issue." "You've identified a lot of information sources — which do you think are the most trustworthy? Least trustworthy? etc. Collect Handout No. 1]*

LARGE-GROUP BRAINSTORM [15-20 minutes]

Availability of Environmental Health Services in the Community – 6:35 to 6:55

Purpose: This large-group activity will allow participants to generate available and needed children's environmental health services in the community to give a sense of knowledge of environmental health services for children.

Thank you. Now we've gotten a "big picture" idea of what's going on in your community. I'd like to get some input about the environmental health services for children in your community. *[Ask the questions below one at a time. Let group brainstorm responses. Jot answers down on newsprint.]*

Questions

1. What environmental health services are available in your community? *[Probe – Any other services? until no more are offered]*
2. What environmental health services are needed for children in your community? *[Probe – Any other services needed? Which are the most critical needed services and why do you think so? What conclusions can we draw by comparing the available services to the needed services?]*
3. How have you found out, or how would you find out, about environmental health services for children in your community? Where do you go for this kind of information?

SCAN OVERVIEW [10 minutes]

Key Findings and Fact Sheet – 6:55 to 7:05

Purpose: Introduce the group to the environmental health scan's key findings and share local fact sheet

At this time, we'd like to share information about the environmental health scan that we are working on.

APHA established which environmental health services are important to children by speaking with experts on environmental health, children's health and public health to come up with the list of 210 services. We were interested in finding out whether states provide information about these 210 environmental health services to the general public online.

So we looked on the websites of state departments of health and environmental quality. To find this information, we used the index on each website and the site's search function. As I mentioned earlier, this method worked for the vast majority of states – 48 out of 50. The websites for two states did not allow us to use these methods, so they were not included in the scan.

So what did we find?

The average state provides information for about half the services we looked for – 106 out of 210. The state that did best provided information for about 164 services. The state that did the worst provided information for about 50 services. So we know that even the best state could provide a lot more information to make its services more accessible to the public.

We also found that, overall, states are better at informing the public about health and environmental issues than they are about providing information on services to fix those issues. Here are a few examples:

We found that all of the states in the scan, except for one, included information about the dangers of lead poisoning on their website. However, there were 10 states that did not provide information about how children can get their blood lead level tested. We know this is a service provided in all states, with all children on Medicaid receiving blood lead testing, and other states testing even more children.

Similarly, many states warn about the dangers of being exposed to hazardous chemicals and poisons. Not all states provide the phone number of the poison control center, though. So overall, although states provide information about environmental health hazards, they could make information about services to address them more accessible.

Also, states provide only limited information about services in schools and child care centers. We ranked all 210 services included in the scan — from those states that most often provide information about those services to states that least frequently provide information about them. Of all 210 services we looked for, many services in schools and child care centers are the least frequently mentioned by states on their websites. In fact, four of the six least frequently identified services in the scan are provided in schools and child care centers.

These services include requiring schools and child care facilities to have carbon monoxide detectors, publically reporting indoor air quality in schools and conducting radon tests in child care facilities. For each of these services, we found that only about one state in the country provided information about them on their website.

Overall, providing accessible information about environmental health services is important for helping people access those services. Increasing awareness of the existence of a service is one of the first steps in getting people the help they need. Some services, like scheduling home assessments for asthma triggers, require learning about the service, scheduling the assessment and possibly completing paperwork. For some people, it could also require taking time off of work and following up with other service providers to eliminate the asthma triggers identified in the assessment. States should make information about environmental health services as easy to access as possible.

The fact sheet has a description of the project, a definition of environmental health, some key findings, and information about whether states have information about services on their websites. A green checkmark indicates that [MICHIGAN] provides information about the service APHA found in the scan, and an X indicates that APHA could not find information about the service while conducting the scan.

We are also writing a report that includes the full results of the scan and a discussion of their importance. We have brought copies of the current draft of the report with us, and we would be happy to share it with anyone who is interested in having a copy. We are looking for people to provide feedback on the full report. If you are interested in receiving the report, we are going to circulate a sign-up sheet for you to provide your name and email address.

Please also indicate if you might be interested in providing feedback on the report. Signing the sheet isn't a formal commitment, so you can still change your mind later if you are not able to provide feedback, but if you have any interest, go ahead and check that column on the sign-up sheet. Also, once the report is complete, we will be happy to share the full report with you [*Circulate Handout No. 2, the Sign-up Sheet*].

Does anyone have any questions about the project?

BREAK [5 minutes] 7:05 to 7:10

SMALL GROUP WORK [20-25 minutes]

Feedback on Scan and Fact Sheet – 7:10 to 7:35

Setup: Participants are broken into groups of three or four. Handout No. 3 on Reaction to the Scan is distributed to each group. One group member is the note taker.

Purpose: Gives the group a chance to provide feedback on the scan

At this time, we'd like to find out what you think about the scan and fact sheet that we just shared. We're going to ask you to break up into groups of three or four people. You can work together to answer questions about your reactions to the scan and fact sheet, whether you think they would be useful, and what effect these materials have on how you think about

environmental health services for children in your communities. I'm going to give each group a handout so you can jot down your ideas. Again, you don't need to put your names on the handouts.

Questions

1. What are your reactions to the scan and fact sheet? Consider what you like or dislike, how the materials make you feel or how this work could be improved.
2. Using a scale from 1 to 10, with 1 being not at all useful and 10 being very useful, rate how useful these resources are to you. Tell why you picked that rating.
3. In what ways does hearing about the scan and seeing the fact sheet change how you think about environmental services for children in your community?

Debrief: *In large group, ask small groups to present key findings. Take notes on newsprint.*

[Collect Handout No. 3]

SMALL GROUP WORK [15-20 minutes]

Experiences with environmental health services – 7:35 to 7:55

Setup: Participants are broken into groups of three or four. Handout No. 4 on Experience with Environmental Health Services is distributed to each group. One group member is the note taker. Purpose: Gives the group a chance to provide deeper reflection and feedback on their experiences with children's environmental health services in their community.

For our last activity, we'd like you to break into small groups again. We'd like to find out more about your personal experiences seeking or *using environmental health services* for children. We'd like to know if your experience represents a time when the *environmental health services* worked well or didn't work well. Again, we are providing a handout for you to jot down your notes.

Questions

1. What have been your personal experiences seeking or utilizing *environmental health services* for children? Describe whether your experience represents a time when environmental health services worked well or when they did not work well. Why were you trying to get the services? What happened as a result? If you don't have personal experience, you can share the story of someone you know, like a friend or a relative.
2. Now that you have learned more about the range of *environmental health services* for children, can you describe a situation in which you might have benefited from seeking services?
3. As we mentioned earlier, our goal is to be able to provide recommendations for how to improve the *environmental health* system and access to environmental health services. What do you consider the most important recommendations? Please try to come up with at least three!

Debrief: *In large group, ask small groups to present key findings. Generate a list of suggestions for improving environmental health services on newsprint. You could ask group to vote on top three most important.*

We are also interested in including some first-person experiences in our community profile. Please see me or one of the staff in the room before you leave if you are interested in contributing your story.

[Collect Handout No. 4]

CLOSING AND SUMMARY [5 minutes]

Final Thoughts – 7:55 to 8:00

- *[Offer summary of the day. Remind audience of the meeting purpose and what was learned.]*
- *[Give thank yous for everyone's input.]*
- *[Ask again for people who want to contribute their personal stories, and point out staff they can connect with to share contact information.]*
- Before we close, I'd like to ask the same question we posed at the start of the meeting: What one word can describe how you feel now that the meeting is over? *[Jot responses on flip chart, compare with earlier in the meeting]*
- *[Ask them to complete a last survey (See Handout No. 5).]*
 - As a result of today's meeting, **I know more** about essential environmental health services for children (Strongly agree to strongly disagree)
 - As a result of today's meeting, **I am more confident** that I can identify gaps in essential environmental health services for children available in my community (SA to SD)
 - As a result of today's meeting, **I am more confident** that I can identify who to contact regarding specific environmental health services for children (SA to SD)
 - As a result of today's meeting, **I feel more connected** to my community (SA to SD) Meeting satisfaction items (e.g. The meeting ran smoothly. I felt like my opinions were heard.)

APHA Community Profile Interview Guide SAMPLE

Hi [NAME],

Thanks so much for talking with us today, and for joining us during the community event on environmental health services we hosted on [DATE]. Now that you've hopefully had some time to digest the feedback community members provided, we would love to get your perspective on the environmental health services provided to community members, any challenges your organization has faced and any other reflections on the feedback provided by community members.

During today's conversation we'll talk about environmental health services more broadly, and in the second half we'll get to lead and water quality.

To make sure our notes correctly represent what you say, we would also like to take a sound recording. The recordings will not be published and only will be used to ensure the accuracy of the information included in the community profile. We will be sending a draft of the profile to you in advance of its publication, and you'll have a chance to share any concerns.

Great, could you please state your name and provide an overview of your organization and role for the recording?

1. Could you provide a broad overview of the environmental health services provided by your agency/organization?
2. What are some of the most frequently provided environmental health services provided by your agency/organization?
3. How does your agency/organization disseminate information to community members about available services?
 - What agencies and organizations do you partner with to promote services available?
4. What challenges does your organization face in informing the community about available services?
5. From your experience, what are the barriers that community members experience when accessing environmental health services?
 - Once a community member has learned about an available service, how can they use that service?
6. Many residents expressed frustration with needing to visit different entities and to provide separate documentation to receive services from various agencies. What support do local agencies provide to help community members navigate environmental health services?
 - How do agencies coordinate to reduce this burden?
7. What were your three key takeaways from the community event?

We'll be sharing the community profile with you before publishing. We're interested in potentially including quotes in the community profile. Would you be comfortable with us quoting you based on today's interview, or would you prefer your comments not be attributed?

Handout – Satisfaction Survey SAMPLE

Tell how much you agree or disagree with the following statements about today's forum.	Strongly disagree	Disagree	Agree	Strongly Agree
The meeting was well-organized.	0	0	0	0
I felt that my opinions were heard.	0	0	0	0
I liked the activities we did.	0	0	0	0
As a result of today's meeting, I know more about essential EH services for children.	0	0	0	0
As a result of today's meeting, I am more confident that I can identify gaps in essential EH services for children available in my community.	0	0	0	0
As a result of today's meeting, I am more confident that I can identify who to contact regarding specific EH services for children.	0	0	0	0

Use this space to provide any additional comments or suggestions about today's forum

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