



Creating The Healthiest Nation:

Children's Environmental Health

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Beginning in utero and through each childhood stage, children are particularly vulnerable to environmental health hazards. Environmental health pollutants like lead, radon, particulate matter and pesticides, even in the smallest dose, can damage both the physical and mental well-being of children, resulting in such problems as asthma, chronic stress, developmental delays and cancer.⁽¹⁾ Exposures to environmental pollutants during childhood can have a lifetime negative health impact.

Children's increased susceptibility to adverse environmental health outcomes is linked to their higher absorption rate compared to adults.⁽²⁾ For example, children, specifically newborns and infants, consume 10%–15% of their body weight in water, compared to an adult's intake of 2%–4%. This means children are exposed to greater doses of any contaminants in water than adults.⁽²⁾ At a time when their organs and systems are developing, this extra exposure has the potential to permanently harm a child's health.

Although all children are susceptible to environmental health hazards, existing disparities worsen the impact. Some children of color and children who live in underserved communities are disproportionately impacted by environmental hazards as a result of structural and systemic inequities, including racism and poverty.⁽³⁾

EQUITY

Exposure to environmental health hazards depends on where children live. Children of color are more likely to live in communities founded on residential segregation and other racial and environmental inequities and injustices. Industrial and hazardous waste sites are more prevalent in underserved communities, and the resulting toxic emissions and contaminants disproportionately burden children. This results in an increased risk of environmental health exposures and poor health outcomes.

For example, despite the national decline in elevated blood lead levels, or EBLLs, in children, Black children have a significantly higher EBLLs at 11.2% when compared to white children at 2.3%⁽⁴⁾ Multiple studies reveal similar health disparities in incidence and severity of such problems as asthma, cancer and developmental disabilities. Even within these communities, greater exposure to environmental hazards and higher rates of health issues can vary. For example, San Antonio, Texas, has one of the highest rates of asthma in the state. Studies show it ravages the city unequally,



majorly affecting ZIP codes in low-income neighborhoods such as Bexar County, which has the highest number of children in the state visiting the emergency room due to asthma episodes.⁽⁵⁾

HOUSING

Where children live, and their surrounding neighborhood, plays an integral role in determining their overall health. Children living in substandard housing conditions and underserved neighborhoods are more likely to be exposed to lead paint, water pollutants, radon, mold, mites, dust in carpets and on floors, etc., leading them to suffer adverse health and developmental outcomes. Studies have shown that historical segregation, high housing costs and housing policies are major factors that influences where families of color reside.^(6,7) Black, American Indian/Alaskan Native, and Latinx children are six to nine times more likely than white children to live in high-poverty communities.⁽⁸⁾ These communities have the highest proportion of crowded housing conditions associated with repeated hospitalization for childhood asthma.⁽⁹⁾ Other risks linked to substandard housing infrastructure are lack of safe drinking water, ineffective waste disposal, pest infestations and inadequate food storage.⁽¹⁰⁾

CHILDHOOD EDUCATION SETTINGS

On average, children spend approximately seven hours in school and/or child care per day, emphasizing the importance for having a safe and healthy school and child care environment for all. However, according to 2017 American Society of Civil Engineers' Infrastructure Report Card, nearly one-fourth of the US public-school building systems are in fair or poor condition.⁽¹¹⁾ Students in these public schools are more likely to be of color and from low-income families,⁽¹²⁾ indicative of the inequities that exists in accessing safe and healthy educational settings. In the US, household income and neighborhood quality play a large role in how school systems are funded, emphasizing how segregation and racism worsen the disparities in educational systems. High-poverty schools districts catering mostly to students of color receive about \$1,500 less per student than the national average compared to predominantly poor white school districts that receives about \$150 less.⁽¹³⁾ In terms of children's productivity, a study found schools in areas with the highest air pollution levels had the lowest attendance rates and test scores.⁽¹⁴⁾ Another study revealed a relationship between chronic absenteeism and outdoor air quality and green space.⁽¹⁵⁾ A total of 13.8 million missed school days were recorded in 2013, and asthma was identified as one of the leading cause of absenteeism due to illness.⁽¹⁵⁾ Unfortunately, no federal law requires schools to ensure safe and healthy school property, evident in the fact that schools can be located close to major roadways or oil and gas facilities, putting students at ongoing risk.⁽¹⁶⁾

NEIGHBORHOOD CONDITIONS

Insufficient infrastructure such as a lack of safe parks and poorly maintained and connected sidewalks in communities of color limits the amount of time children can actively interact with their environment. Many underserved communities are near high-density roads, polluting industries, toxic waste sites and more, exposing children to elevated levels of harmful air pollutants and negatively impacting their health and well-being.⁽¹⁷⁾ Poor air quality in communities of color, due to aerosolized pollutants, increased exposure to ozone, carbon monoxide and particulate matter, leads to a disproportionate burden of asthma in children of color. According to the US Environmental Protection Agency, Black children are twice as likely to be hospitalized for asthma and are four times as likely to die from asthma as white children.⁽¹⁸⁾ A recent study showed that air pollutants can cross the placental barrier. Researchers found a probable link between high prenatal exposure to emissions from motor vehicles as a result of living in close proximity to high-traffic roadways while pregnant and elevated blood pressure in children.⁽¹⁹⁾

i The Agency for Toxic Substances and Disease Registry devised an approach that can be used to ensure the Early Care and Education programs are not placed on property, in buildings, or next to facilities where there are hazardous chemicals (https://www.atsdr.cdc.gov/safeplacesforECE/cspece_guidance/siting_criteria.html).

CLIMATE CHANGE

Climate change increases the risks of exposure and intensifies the health impacts of environmental health pollutants. For example, climate change is known to increase the frequency and intensity of extreme heat events, thereby influencing air pollution levels. Poor air quality linked to increased presence of ground level ozone and particulate matter, which affects the lungs, exacerbates the condition of children with existing respiratory health issues like asthma and can cause developmental delays.⁽²⁰⁻²³⁾ Extreme heat events are also known to disproportionately impact low-income communities lacking green spaces and tree canopies, especially those within urban areas in the US.⁽²⁴⁾ Children are at a greater risk of dehydration, heat stroke, heat exhaustion and some respiratory health concerns during extreme heat events, especially child athletes.^(25,26)

RECOMMENDATIONS

Children, regardless of where they live, learn and play, should have the opportunity to live in a safe and healthy environment to achieve optimal health.



Ensure equity and justice are the basis for any decision making process regarding children and their health. For example, equity and social justice are embedded in the operations of all government agencies in Seattle-King County. This includes the use of an Equity Impact Review, a process and tool to identify, evaluate and communicate the potential positive and negative impacts of a policy or program on equity.⁽²⁷⁾



Strengthen the Office of Children's Health Protection Regulatory Support and Science Policy Division within the US Environmental Protection Agency, to set standards and policies that continually protect children's health and their environment.



The federal government must ensure state and local health agencies are held accountable for the implementation of children environmental health laws and regulations.



The federal government must strengthen and ensure existing plans and policies such as the Fair Housing Act, which provides equitable and safe access to affordable, safe housing regardless of socio-economic status. If needed, propose, implement and enforce new policies that benefit everyone and promote equity.



Federal, state and local entities should collaborate, fund and enforce routine testing and inspection of homes for environmental health hazards such as radon, lead and mold.



Government agencies must ensure those conducting home inspections have a basic understanding of how housing conditions can impact health.



Education, public health and environmental protection agencies at the federal and state levels should develop a mechanism that ensures cross-agency collaboration for protecting children's environmental health at school and in child care settings.⁽¹⁵⁾



State and local governments should work with urban planners and community organizations with anti-displacement strategies in place to increase green spaces and access to green spaces in underserved communities.



Federal lawmakers should propose and enact laws like the Pollution Prevention Act solely focused on addressing climate change and its effects.

For more recommendations on strengthening children's environmental health, see APHA policy statements 201710, "Protecting Children's Environmental Health: A Comprehensive Framework" and 20197, "Addressing Environmental Justice to Achieve Health Equity." (Available at www.apha.org/policy-statements).

SUMMARY OF APHA'S REPORT ON CHILDREN'S ENVIRONMENTAL HEALTH⁽¹⁾



In 2019, APHA released “Protecting the Health of Children: A National Snapshot of Environmental Health Services,” a report on the availability and accessibility of children’s environmental health services. A national scan of department of health and department of environmental quality websites was conducted for 48 states to gain insight on the information available to the public about environmental health services for children. To learn if the public was aware of and used the information available on state websites, APHA hosted forums and engaged with community members in Flint, Michigan, and Washington, D.C. Key challenges identified during the forum discussions: excessive formalities and the lack of coordination among different agencies providing services. The report recommended intentionally engaging with community members from the start to identify resources, needs and their environmental health priorities to determine and offer needed services.

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