

# American Academy of Pediatrics



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February 5, 2020

Testimony of  
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On behalf of the  
**American Academy of Pediatrics**

Testimony before the  
**U.S. House Select Committee on the Climate Crisis**

**Creating a Climate Resilient America: Overcoming the Health Risks of the  
Climate Crisis**

Good morning Chair Castor, Ranking Member Graves, and Committee members:

My name is Dr. Aparna Bole. I'm here today on behalf of the American Academy of Pediatrics (AAP), a non-profit professional organization of 67,000 primary care pediatricians, pediatric medical subspecialists, and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents, and young adults. I currently serve as the Chair of the AAP Council on Environmental Health, leading the Academy's work developing our evidence-based policy statements on issues impacting children's health, our efforts to educate pediatricians and parents about environmental health concerns, and our advocacy at every level of government for policies that improve children's environmental health.

In addition to my role with the AAP, I am an Associate Professor of Pediatrics at Case Western Reserve University School of Medicine, and I am a practicing pediatrician at UH Rainbow Babies and Children's Hospital, where I serve as Medical Director of Community Integration.

I would like to extend our appreciation to the Committee for holding this critical hearing. The AAP views addressing climate change as a vital child health priority, and I am grateful for the opportunity to testify today about the child health impacts of climate change, the child health benefits of climate solutions, and federal policy opportunities to address these.

In clinics and hospitals throughout the United States, pediatricians are witnessing the immediate harms and risks that climate change poses to the health of their patients. The AAP has long called for policies to address the global challenge of climate change and protect the health and wellbeing of children. Underpinning that work is the Academy's policy statement<sup>i</sup> dedicated to articulating the science behind the ways in which climate change impacts child health and the opportunities to address it. My testimony today will outline the scientific consensus on climate change, highlight the ways in which climate change is uniquely harmful to children's health, and offer policy recommendations for your consideration to address those effects and improve the health of children.

### **Children are Uniquely and Disproportionately Harmed by Climate Change**

Climate change is affecting the health of children in the United States here and now, and pediatricians see these effects in their patients every day. Children are uniquely vulnerable to the health impacts of climate change, and any comprehensive response to climate change must take child health into account. The World Health Organization estimates that over 80 percent of the existing global burden of disease attributable to climate change occurs in children younger than 5 years old.<sup>ii</sup> Children's immature physiology and metabolism; critical windows of development; higher exposure to air, food, and water per unit of body weight; unique developmentally appropriate behavior patterns; and dependence on caregivers place them at much higher risk of climate-related health burdens than adults.<sup>iii</sup> The health

impacts of climate change are greatest for children and communities already experiencing socioeconomic disadvantage<sup>iv</sup>, which also presents significant environmental justice concerns.

### **Climate Change is a Public Health Crisis that Uniquely and Disproportionately Harms Children**

Climate change is an ever-growing global threat that has unique and disproportionate impacts on children. A large consensus of climate scientists now conclude based on extensive scientific evidence that the major physical, chemical, and ecological changes of our planet can be attributed to human activity, which includes the burning of fossil fuels. Atmospheric carbon dioxide and other greenhouse gas levels began to increase about 100 years ago, leading to subsequent increases in global temperatures.<sup>v</sup> Warming of the planet is unequivocal. According to the Intergovernmental Panel on Climate Change, each of the last 3 decades has been successively warmer than any preceding decade since 1850. The globally averaged temperature (combined land and ocean surface) increased approximately 1°C between 1850 and 2012. Since recordkeeping began in 1880, the global sea level has risen approximately 8 inches because of melting of glaciers and thermal expansion of warmer water. In turn, the effects of climate change are creating myriad significant public health concerns. These effects are especially harmful to the health and wellbeing of children.

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### **How Climate Change Impacts Children's Health**

#### *Increasing Frequency and Intensity of Natural Disasters and Extreme Weather*

Extreme weather events, including severe storms, floods, and wildfires, directly threaten children with injury, displacement, and death. The frequency of reported natural disasters has increased over the past 40 years. Three times as many extreme weather events occurred between 2000 and 2009 as occurred between 1980 and 1989. The scale of natural disasters has also increased because of deforestation, environmental degradation, urbanization, and intensified climate variables. These events place children at risk for injury,<sup>ix</sup> loss of or separation from caregivers,<sup>x</sup> exposure to infectious diseases,<sup>xi</sup> indoor

exposure to mold and other allergens,<sup>xii,xiii</sup> and a uniquely high risk of mental health consequences, including posttraumatic stress disorder, anxiety disorders, depression, adjustment disorder, and suicide in adolescents.<sup>xiv,xv</sup>

The distinctive health, behavioral, and psychosocial needs of children subject them to unique risks from these events. Disasters can cause irrevocable harm to children through devastation of their homes, schools, and neighborhoods, all of which contribute to their physiologic and cognitive development.<sup>xvi</sup> Adverse Childhood Events (ACEs), such as the destruction of homes, schools and neighborhoods, family structures and communities, have impacts beyond childhood on adult health. Individuals with a history of ACEs are more likely to have hypertension, diabetes, and other adult health problems across the life span.<sup>xvii</sup>

#### *Rising Heat-Related Morbidity and Mortality*

Extreme heat is a leading cause of weather-related death in the U.S., and children suffer directly from the increased severity and duration of heat waves. Studies performed in multiple countries have shown an increase in child morbidity and mortality during extreme heat events. Infants younger than 1 year and high school athletes seem to be at particularly increased risk of heat-related illness and death. The experience of unusually warm temperatures during pregnancy is associated with increased risk of preterm birth,<sup>xviii</sup> which increases the risk of immediate and long-term health problems as well as infant mortality. Researchers estimate there is a greater than 90% chance that by the end of the 21st century, average summer temperatures will exceed the highest temperatures ever recorded in many regions across the world, putting children and their families at increasing risk of heat injury.<sup>xix</sup> Heat waves have become more frequent and/or prolonged in many regions, and the number of extreme cold waves in the United States is also the lowest since recordkeeping began.<sup>xx</sup>

#### *Worsening Air Quality*

Air quality can be reduced through temperature associated elevations in ground-level ozone concentration, increased pollen counts and allergy season duration, and wildfire smoke. All of these factors exacerbate respiratory disease and asthma in children.<sup>xxi</sup> Climate change-related warming leads to elevated ozone pollution, which are particularly harmful to children's developing lungs and brains and linked to poor birth outcomes, infant mortality, missed school days, and asthma attacks.<sup>xxii</sup> Fossil fuel combustion also releases harmful pollutants such as particulate matter, which has been linked to premature death, asthma exacerbations, and other respiratory symptoms that are most likely to affect children. Higher CO<sub>2</sub> concentrations cause ragweed to produce more pollen, and warmer temperatures allow these plants to bloom longer. The allergy season is longer now, especially in northern latitudes.. Seasonal allergies affect 10 percent of American children, and every spring and fall pediatric offices are filled with children suffering from severe allergies.<sup>xxiii xxiv xxv xxvi</sup> These climate change-related elevations in ozone and intensification of the aeroallergen season both disproportionately harm children with

asthma. African American and Hispanic children have higher rates of asthma and are more likely to suffer from these air pollution hazards that are exacerbated by climate change.

### *Changing Patterns of Infectious Diseases*

Climate influences the behavior, development, and mortality of a wide range of living organisms, some of which have the potential to carry or cause pediatric infection. Determining the effects of climate change on infectious diseases is complex because of confounding contributions of economic development and land use, changing ecosystems, international travel, and commerce. Climate change-related warming has been linked to the northern expansion of Lyme disease in North America and<sup>xxvii</sup> increase in mosquito-carried viruses,<sup>xxviii</sup> and has been projected to increase the burden of child diarrheal illness, particularly in Asia and sub-Saharan Africa. Concern has also been raised for climate links to emerging infections, including coccidioidomycosis and amoebic meningoencephalitis. Further investigation into climactic influence on infectious diseases and their impact on children is needed to ensure we understand the full extent of these connections and how best to address them.<sup>xxix</sup>

### *Reducing the Food Supply and Increasing its Costs*

Altered agricultural conditions, including extreme heat, expanded water demands, and increased severe weather events, will affect food availability and cost, particularly in vulnerable regions in which child undernutrition is already a major threat. The decreased protein, iron, and zinc content of certain staple crops like rice has been demonstrated for plants grown under increased CO<sub>2</sub> conditions, carrying significant implications for child nutrition.<sup>xxx</sup> These detrimental effects will exacerbate U.S. food insecurity and undermine ongoing efforts to promote high-quality nutrition for all children.

### *Young People are Speaking Out*

Given the ways that climate change is disproportionately harming children and adolescents, it is unsurprising and inspiring to see so many young people advocating for solutions to our ongoing climate crisis, including before this very Committee. Pediatricians have been honored to stand behind young people calling for action to address the ways climate change is already affecting them and will continue to harm their lifelong health. We were grateful to have the opportunity to file an *amicus curiae*<sup>xxxi</sup> brief supporting the plaintiffs in the *Juliana v. U.S.* case, in which youth filed suit against the federal government over its inaction to address the ways climate change is harming them. While we were disappointed to see the Ninth Circuit rule that the courts cannot redress those concerns, we continue to proudly stand in support of young people advocating for solutions to this public health problem that particularly affects them.

### *The Need for Federal Action*

Given these unique circumstances and vulnerabilities, Congress must act to address the child health threat of climate change. Children are already disproportionately bearing the burden of climate change and will continue to do so if we do not enact significant policy changes. Not only do we need to act, but we need to specifically address the ways climate change affects children in both our mitigation and adaptation efforts. We thank the Committee for its important work on these efforts and urge you to ensure that any comprehensive legislation to address climate change include specific considerations on addressing and mitigating its impact on children.

### **Federal Policy Opportunities to Address the Child Health Impact of Climate Change**

While the child health detriments of climate change are manifold and daunting, the encouraging news is that there are policy opportunities to address it that yield child health benefits. While the science underpinning novel responses grows and evolves daily, we already know much of what needs to be done, and simply need decisive bipartisan action to advance a comprehensive climate change and child health agenda. The following are our recommendations across several policy sectors.

#### *De-Carbonizing the Energy Sector*

Power plants are a significant contributor to climate change, generating over one-quarter of all U.S. greenhouse gas pollution. To decarbonize the energy sector, comprehensive climate legislation should promote energy efficiency and renewable energy production at the federal, state, and local levels while decreasing incentives for continued production and consumption of carbon-intensive fuels such as coal, oil, and gas.

The AAP supported the Clean Power Plan (CPP) in 2015, and in 2018 and 2019 opposed the U.S. Environmental Protection Agency's (EPA) proposed attempts to undermine its effectiveness. The CPP would have significantly limited carbon pollution from both new and existing sources of carbon pollution from fossil fuel-fired power plants. In addition to addressing climate change, this policy would have had the added benefit of also decreasing co-pollutants from power plants, such as particulate matter. Reducing these pollutants under the CPP would have prevented up to 6,600 premature deaths. In addition, it would have resulted in up to 150,000 fewer asthma exacerbations in children, and 180,000 fewer missed school days in the year 2030.<sup>xxxii</sup> EPA has clear authority to regulate carbon pollution from power plants, and we urge the reinstatement of this vital policy.

In addition, the AAP supports terminating federal subsidies and tax incentives for the production and transport of coal, oil, and gas, and increasing federal subsidies for clean, renewable energy sources such as wind, solar, and hydropower. The AAP also supports the implementation of an effective carbon fee and dividend regime to accurately reflect the true societal of carbon pollution, including its health costs.

**It is critical that any such policy regime not undermine critical public health protections in the Clean Air Act, including the EPA’s authority to regulate carbon pollution under section 111(d).** EPA’s proven authority to regulate hazardous air pollutants under the Clean Air Act, twice affirmed by the U.S. Supreme Court, is a vital tool to address climate change and protect health, and no legislation should undermine, pause, or weaken that authority. Existing legislative proposals to institute a carbon fee also include provisions to halt certain vital EPA regulatory authorities, roll back climate safeguards, or immunize fossil fuel companies against any potential liability for damages caused by their contributions to climate change. Due to the urgency of addressing climate change with all available tools, comprehensive climate legislation must not weaken existing avenues of reducing carbon pollution, such as EPA’s Clean Air Act authority. The AAP would oppose decarbonization legislation that eliminates these essential public health protections.

#### *Reducing Carbon Pollution from Transportation*

To achieve net zero carbon pollution, it is essential to reduce the carbon footprint of transportation systems. Climate mitigation strategies focused on reforming the transportation sector have the potential to spur significant positive impacts on child health through improved safety and physical activity.<sup>xxxiii</sup> The best available science suggests that tailpipe emissions may be responsible for 1 in 5 children who develop asthma. Via reduced emissions alone, clean transportation is estimated to prevent 120,000 premature deaths by 2030 and 14,000 annually thereafter in the U.S.<sup>xxxv</sup> Other studies have shown that the health benefits of lower-emission motor vehicles are increased when combined with the promotion of active travel such as walking or biking, which reduces the prevalence of chronic diseases such as diabetes, dementia, ischemic heart disease, and cancer. The overall health benefits of such transportation strategies have been shown to save billions in public health spending. Comprehensive climate legislation should include expanding public transportation and increasing construction of safe bikeways and walkways, which both reduce greenhouse gas emissions and promote healthy childhood weight through active transportation.

#### *Modernizing the Food System to Reduce its Carbon Footprint*

Strategies aimed at shifting food systems to decrease greenhouse gas emissions offer further potential to address environmental concerns while dramatically promoting child health.<sup>xxxix</sup> The adoption of more plant-based diets in line with current dietary guidelines could reduce global mortality by 6–10% and food-related greenhouse gas emissions by 29–70% by 2050 with global net health benefits from diseases like diabetes, heart disease, stroke, and cancer valued between US\$1-31 trillion.<sup>xi</sup> In order to realize the full health benefits of such dietary change, evidence suggests that special attention must be given to reducing red meat consumption<sup>xli</sup> and controlling sugar levels in more sustainable diets.<sup>xlii</sup> In addition, it is important to support efforts to improve the adaptability and resilience of our food system, through research, development, and implementation of technologies and strategies that promote crop resilience and reduce the greenhouse gas contributions of animal agriculture.

### *Promoting Sustainable Community Development*

Climate change policies that preserve, create, and expand natural green environments directly impact the mental health of populations, with the strongest benefits occurring during childhood. An abundance of evidence suggests the relationship of public green spaces with greater mental wellbeing in a dose-dependent relationship.<sup>xliii xliiv</sup> Prolonged exposure to green space specifically during childhood has been shown to decrease independently the risk of a wide range of mental illness later in life.<sup>xliv xlv</sup> While the exact mechanisms are still being studied, research has shown that exposure to the natural environment decreases harmful thought patterns and can even impact brain structure and development. The importance of natural environments early in life has been substantiated with studies showing improved cognitive development and function with increased green space exposure.<sup>xlix</sup> Adopting urban planning designs that incorporate open green spaces, walkability, reduced dependence on automobile transit, and climate change resilience while minimizing sprawl will decrease emissions while promoting child health.

### *Prioritizing Health Care Sector Mitigation and Adaptation*

The U.S. health care sector is a major contributor to climate change, producing 10% of US greenhouse gas emissions.<sup>1</sup> At the same time, health care systems are contending with consequences of climate change on patients and communities, and health care institutions also play an important role in communities' resilience in the face of climate change related events.

To address the broad array of negative child health effects from climate change, it is essential that federal policies promote energy efficiency and the adoption of clean energy in the health care sector, as well as the adaptation, preparedness, and resilience of hospitals and health systems. Energy efficiency and clean energy can be important components of reducing the cost of health care delivery. We also encourage the development of essential adaptation strategies, and assisting state and local governments, public health agencies, and health professionals in implementation of these strategies. Disaster preparedness and response efforts should include the specific needs of children. National and international policymaking efforts should include extensive input from stakeholders in the health sector, as today's hearing demonstrates. In addition, we must educate health care providers and vulnerable patients about climate-associated health risks, as well as climate-associated effects on clinical practice - such as management of chronic diseases during periods of extreme heat or poor air quality, and alterations in the safety and efficacy of prescription medications.

### *Pursuing Additional Adaptation Strategies*

In addition to mitigation efforts such as achieving net-zero carbon emissions by 2050, comprehensive climate legislation must include additional adaptation measures to protect children and their families



from the effects of climate change that inevitably will occur and are already occurring. These include developing and implementing effective early-warning systems for extreme weather events, and physical protection against those events. Federal policy should also support improved surveillance of climate-associated infectious diseases, including new and emerging pathogens. Finally, we encourage federal policy to promote enhanced community resilience, and an emphasis on redressing the environmental justice concerns climate change presents. Children’s safety from climate change should not depend on the color of their skin or the zip code in which they were born.

### *Making Global Progress through Effective International Diplomacy*

Another crucial tool is the use of diplomacy and international cooperation to support global action in response to the climate crisis. The AAP supported the Paris Agreement to engage the global community in emissions reduction targets and has supported the House-passed legislation (H.R. 9) to maintain the U.S. commitment to Paris Agreement’s emissions reduction targets. We encourage a focus on upholding U.S. commitments under that agreement as part of any comprehensive legislative response to climate change.

### *Promoting Response Strategies with Health Co-Benefits*

While climate change disproportionately impacts child health, decarbonization efforts also present an enormous opportunity to improve child health by maximizing the co-benefits of carbon pollution reduction. Reducing emissions of hazardous traditional air pollutants such as particulate matter, sulfur oxides, and air toxics along with carbon dioxide can yield greater health outcomes for children. Child exposure to hazardous air pollutants can cause direct health impacts such as neurologic deficits, respiratory tract illness, asthma exacerbations, and decreased lung function,<sup>li,liii</sup> leading to downstream effects including increased school absences, emergency department visits, and hospitalizations.<sup>liii,liiv,lv,lvii</sup> Studies have also found associations between ambient air pollution and post-neonatal infant mortality,<sup>lviii</sup> low birth weight,<sup>lix,lx,lxi,lxii</sup> and preterm birth.<sup>lxiv,lxv,lxvi</sup> Reducing these pollutants under the Clean Power Plan would have prevented up to 6,600 premature deaths. In addition, it would have resulted in 3,700 fewer cases of child bronchitis, up to 150,000 fewer asthma exacerbations in children, and 180,000 fewer missed school days in the year 2030.<sup>lxvii</sup> Future decarbonization efforts should prioritize this potential for drastic improvements in child health outcomes through leveraged reductions of multiple pollutants within efforts to reduce greenhouse gas emissions.

Reducing the carbon footprint of other sectors can also yield important child health co-benefits. For example, accessible public and active transportation, plant-based food availability, and green spaces can directly contribute to child health and wellbeing while at the same time reducing carbon pollution. Additional research into the health benefits of various decarbonization strategies could help policymakers choose the smartest investments to maximize co-benefits. The federal government currently provides no funding for such research, so directing funding for the research, surveillance,

reporting, and tracking of climate-associated health effects would strengthen future comprehensive climate legislation.

Every day, pediatricians confront the growing burden of chronic disease in children. Asthma, obesity, mental health, and long-term health effects related to premature birth are growing issues that we see in clinics across the nation. We have made tremendous progress in addressing these and other threats to children's health, and climate solutions are a way to further prevent some of these conditions or mitigate their severity. Plans for climate change mitigation present a tremendous opportunity to improve child health by maximizing the co-benefits of environmental policies. Policies to promote cleaner air, facilitate active transportation, encourage more sustainable diets, and develop more connected communities can lead to enormous child health gains while preserving a healthy, sustainable environment in which generations of children can thrive.

## **Conclusion**

We appreciate the Committee's efforts to protect children and future generations from the health impacts of climate change. We hope that child health will be a key consideration as you develop any comprehensive legislative response, and we would welcome opportunities to further support and contribute to your work. Thank you again for the chance to testify today, and I look forward to answering your questions.

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