United States House of Representatives
Select Committee on the Climate Crisis

Hearing on February 5, 2020
"Creating a Climate Resilient America:
Overcoming the Health Risks of the Climate Crisis"

Questions for the Record

Aparna Bole, MD, FAAP
Chair, Council on Environmental Health Executive Committee
American Academy of Pediatrics

The Honorable Kathy Castor

1. **Could you please elaborate on how climate change contributes to the exacerbation of asthma, including both the direct contributions of fossil fuel-related emissions as well as the changing climate itself?**

Climate change contributes to asthma exacerbation by multiple mechanisms. Higher concentrations of carbon dioxide and warmer temperatures lead to increased pollen counts, longer allergy seasons, and elevated ground-level ozone that makes it harder to breathe, especially for those with underlying lung disease.[i] In some areas of the United States, increased temperatures and changing precipitation patterns are contributing to longer and more intense wildfire seasons, which produces harmful particulate pollution that has been associated with increased severity of asthma exacerbations for children.[ii] All of these factors exacerbate respiratory disease and asthma, leading to higher rates of asthma exacerbations.[iii,iv] In general, children have increased exposure to many air pollutants compared with adults because of higher minute ventilation and relative time spent outdoors and thus are at increased risk of poor outcomes related to air pollution.[v,vi] In addition, because children's lungs are still developing, they are at increased risk of long-term harm from exposure to air pollution.

Fossil fuel combustion also directly contributes to worsening air quality through the release of harmful pollutants such as nitrogen dioxide, sulfur dioxide, ozone, and particulate matter, which have been linked to premature death, asthma exacerbations, and other respiratory symptoms that are most likely to affect children. In addition to contributing to climate change, these emissions have a direct influence on child health and have been associated with increased health care utilization and missed school days.[vii] The interaction of emissions from fossil fuel combustion and climate change-related temperature elevations poses an increased risk for anyone with underlying lung disease such as asthma. This presents difficult decisions for children, families, and physicians who must balance the importance of physical activity such as outdoor sports practice with the increasing risk of dangerous asthma exacerbations on high ozone days.

2. **Can you explain the ways in which reducing carbon pollution also generates additional health benefits through promoting reductions in other harmful pollutants impacting children?**

While climate change disproportionately impacts child health, reducing carbon pollution also presents 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. In addition to asthma exacerbations, child exposure to hazardous air pollutants can cause neurologic deficits, respiratory tract illness, and decreased lung function,[viii,ix] leading to downstream effects including increased school absences, emergency department visits, and hospitalizations.[x,xi,xii] Studies have also found associations between ambient air pollution and postneonatal infant mortality,[xiii,xiv] low birth weight,[xv,xvi,xvii,] and preterm birth.[xix,xx,xxi,xxii] 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.[xxiii] Reducing fossil fuel combustion can improve children's health and development over their entire life course.

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. It is crucial to transition from clean, renewable energy sources such as wind, solar, and hydropower while improving energy affordability for consumers. Utility insecurity is a patient health issue that can force families to make impossible decisions between heating their house, putting food on the table, and accessing health care. The families and communities most impacted by utility insecurity are also likely to bear a disproportionate burden of the health harms of fossil fuel combustion. The good news is, we know that we can effectively address climate change while also addressing utility insecurity. As the U.S. makes the necessary transition from energy sources that contribute to climate change and poor health outcomes, policymakers should consider ways to increase access to affordable energy to maximize the health benefits of reducing carbon pollution. Addressing utility insecurity should include improving home energy efficiency and supporting local renewable energy generation to support community health and sustainable energy security. Beyond the energy sector, reducing the carbon footprint of other sectors of the U.S. economy can yield important child health co-benefits, such as increased active transportation, healthier plant-based diets, and access to green spaces. Urban planning efforts that reduce sources of air pollution and create mitigation strategies like green spaces also have the co-benefit of community design that ensures safe places to walk and play, greater social cohesion, and the mental and physical health benefits of access to nature. These policies bring important child health co-benefits and present a tremendous opportunity to improve child health while reducing carbon pollution.

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