

American Academy
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

June 4, 2015

Statement of
Jerome Paulson, MD, FAAP
Chair, AAP Council on Environmental Health Executive Committee

On behalf of the
American Academy of Pediatrics

Testimony before the
House Science, Space, and Technology Committee

“EPA Regulatory Overreach: Impacts on American Competitiveness”

Good Morning Chairman Smith, Ranking Member Johnson, and Committee Members:

My name is Dr. Jerome Paulson and I am here today on behalf of the American Academy of Pediatrics, which represents 64,000 pediatricians around the country. I currently chair the AAP's Council on Environmental Health Executive Committee. I also serve as the Medical Director for the Eastern region of the Pediatric Environmental Health Specialty Units (PEHSUs), as part of a contract the AAP shares with the American College of Medical Toxicology and which contract is funded by a grant from the Agency for Toxic Substances and Disease Registry. In addition to my role within the AAP, I am a professor emeritus of pediatrics and of environmental and occupational health at George Washington University. I am grateful for the opportunity to testify today about the U.S. Environmental Protection Agency's (EPA) important work in improving children's health.

The EPA's regulatory work is critically important to protecting and improving the health of our nation's children. As a pediatrician, my expertise is in child health. My experience and credentials equip me to speak to the child health benefits of the cleaning up our nation's air by reducing carbon and ozone pollution. We know that children are at particular risk from environmental contaminants, and the EPA's work to reduce the pollution to which they are exposed will generate significant economic benefits in the form of reductions in: premature deaths; avoidable hospital admissions and other medical expenditures; and missed school and work days. Other witnesses today may speak to the impact of environmental health regulatory improvements on the balance sheets of U.S. businesses. My comments today will focus on the AAP's support for the EPA's efforts on clean air issues, including the child health benefits of the Clean Power Plan and the EPA's proposed ozone rule.

Children Are Disproportionately Vulnerable to Environmental Pollutants

Every child needs a safe environment, and children are disproportionately at risk from environmental pollutants. All aspects of the environment have especially profound effects on children's health. Children have more exposure to air pollution than adults; they breathe at a faster rate than adults, have higher levels of physical activity, and spend more time outdoorsⁱ. Children's lungs also continue to grow until they reach their adult height. This increased exposure and ongoing lung development mean that children have different outcomes from these exposures than adults, with lifelong effectsⁱⁱ.

Outdoor air pollution is linked to respiratory problems in children, including decreased lung function, coughing, wheezing, more frequent respiratory illness, and asthma exacerbation.ⁱⁱⁱ Children bear the burden of negative health outcomes resulting from exposure to pollutants across their lifespan. For example, some of the increases in the prevalence of chronic obstructive lung disease in adults who live in more polluted areas could be the result of exposures that occurred during childhood. Particulate pollution has also been linked to low-birth weight, preterm birth, and infant mortality in children, and increased cardiovascular diseases in adults.^{iv} Such effects compound over time, contributing significant negative economic effects in the lives of children and their families, as well as to the national economy. The work of the EPA is essential to protecting children from pollutants and ensuring that children have an optimal environment in which to live, learn, and play. For these reasons, the AAP is a strong supporter of the Clean Air Act and the EPA's work under it to protect children from the negative health effects of carbon and ozone pollution.

Let me tell you about a phone call that I received from a physician about a little girl with asthma. The family and the physician were having difficulty keeping her asthma under control in spite of appropriate medical management. The astute mother reported that her daughter's asthma got worse when the smoke from the power plant that was located near her home changed from white to black. We were able to determine that the power plant usually burned natural gas, but was approved to burn coal under

certain circumstances. We believe that this little girl's asthma was exacerbated by the coal burning because of the increase in particulate and other air pollutants associated with that fuel.

I know that the distinguished members of this Committee have given many speeches over the course of your careers. And I am sure that each and every one of you would be horrified, as I was during one talk, to look out at the luncheon crowd that you were addressing to see a woman in the audience sobbing. I was talking about ozone as a cause of and exacerbating factor for asthma. "What had I said to make this woman so upset?" Clearly, I wanted members of the audience respond to what I was saying about the need to have cleaner air in the US, but I had not intended to make anyone cry. As soon as I got off the dais, I found the woman, apologized and asked her what I had done. She is the mom of a very athletic teenager whose sports practices took place outside. While in high school, doing what every parent would want; being a scholar-athlete, her son had developed asthma. She was using the information that I was presenting to blame herself for something over which she had no control. She was blaming herself for being a good mother and encouraging her son to be physically active and involved in a positive extracurricular activity, only to have him develop a chronic disease. As a country, we should not force our citizens to make such a fraught choice; we must be willing to require that the air be kept cleaner than we now do.

The Living Legacy of the Clean Air Act is Improved Health

It has been more than 40 years since Congress first passed the Clean Air Act, which gave EPA the authority to regulate air pollution. Twenty-five years ago, a bipartisan Congress passed the Clean Air Act Amendments of 1990, which granted EPA new authority and responsibility to improve air quality and mandated that the agency reduce mercury and other toxic emissions from our nation's power plants. Since these laws were enacted, we have learned much about the relationship between air pollution and health through thousands of epidemiologic and controlled studies. In addition, we have learned a great deal about the health benefits that the Clean Air Act has already generated. A 1997 EPA report to Congress

found that the first 20 years of the Clean Air Act led to the prevention in 1990 of 205,000 premature deaths, 672,000 cases of chronic bronchitis, 21,000 cases of heart disease, 843,000 asthma attacks, 18 million childhood respiratory illnesses, and prevention of the loss of 10.4 million IQ points for children from lead exposure. Following the Clean Air Act Amendments of 1990, emissions of six common pollutants dropped by 41 percent through 2008.^v This law has a living legacy of health benefits of which we, our children, and grandchildren are all beneficiaries. But more remains to be done, as we now know from scientific evidence that current levels of air pollution are still making children sick. The Clean Power Plan and the proposed stronger ozone rules are needed improvements upon those prior efforts to address what we know based on the latest science and research are the standards we need to protect child health.

The AAP Supports the Clean Power Plan

The AAP supports the EPA's Clean Power Plan, and has expressed public support for the proposed rules on both new and existing power plants. There is broad scientific consensus that Earth's climate is warming rapidly and at an accelerated rate. Human activities, primarily the burning of fossil fuels, are very likely (>90% probability) to be the main cause of this warming^{vi}. Research by the National Climatic Data Center indicates that global surface temperatures increased by a rate of 1.1° Fahrenheit per century over the past century. This rate has been three times larger since 1976^{vii}. Conservative environmental estimates of the impact of climate changes that are already in process indicate that they will result in numerous health effects to children.

This rising rate of climate change is anticipated to contribute to significant negative health outcomes. According to the World Health Organization, over 80 percent of the current health burden from the changing climate is on children younger than five years old^{viii}. These outcomes include injury and death from natural disasters, increases in climate-sensitive infectious diseases, increases in air-pollution related illness and more heat-related, potentially fatal, illness. Additionally, global climate change will

contribute to reductions in food availability as land and ocean food productivity patterns shift and species diversity declines^{ix}. Water availability will also change, with increases in some regions that could result in flooding and decreases in others that could result in drought^x.

Power plants are the largest U.S. carbon pollution source, and they generate approximately one third of all U.S. greenhouse gas pollution. In 2009, EPA determined that greenhouse gas pollution threatens Americans' health and welfare by leading to climate change, causing negative health and environmental effects. Reducing the carbon emissions of existing fossil fuel-fired power plants represents a major step toward addressing a key component of climate change in the U.S and stemming the tide of climate change and its myriad attendant negative health effects.

In the near term, there are also compelling positive co-benefits to reducing carbon pollution that have an immediate impact on child health, such as reducing emission of other pollutants and the resulting creation of harmful ozone. When fully implemented in 2030, EPA's proposed rule for existing power plants will result in 6,600 fewer premature deaths, 150,000 fewer child asthma attacks, 180,000 fewer missed school days, and 3,700 fewer cases of child bronchitis. EPA's proposals would cut carbon emissions and generate public health benefits, while also allowing states the flexibility to use multiple tools and innovative options in their approaches to doing so.

The AAP Supports an Ozone NAAQS of 60 ppb

The AAP supports the EPA's ongoing efforts to address the child health impact of ozone pollution and supports an 8-hour average ozone National Ambient Air Quality Standard (NAAQS) of 60 parts per billion (ppb). There is clear and compelling scientific evidence that supports the need for a strong ozone standard of 60 ppb or even lower.^{xi,xii} The EPA's current proposal to bring down the allowable ozone pollution level below the current limit of 75 ppb to a range between 65 and 70 ppb will improve children's health. High levels of ozone in the air, including levels above 60 ppb, can lead to

decreased lung function in children, coughing, burning and shortness of breath, as well as inflammation and swelling of the airways.

With long-term exposure to ozone pollution, children can experience permanent scarring of their lungs. For children who already have asthma, the health consequences of ozone pollution are even more pronounced than in children without asthma, often requiring trips to the emergency room or intensive care unit for treatment. On high ozone days, many of these children are forced to stay home or to see their pediatrician, missing school or other recreational activities. Their parents are also forced to miss work, which puts a significant economic strain on low- and middle-income families and on the economy as a whole. In their research, Drs. Trasande and Liu concluded that the best estimate of childhood asthma costs in 2008 that could be associated with environmental factors was \$2.2 billion (sensitivity analysis: \$728 million– \$2.5 billion).^{xiii} Simply put, continuing to pollute the air as we are now is not without costs to American families, in the form of diminished health, lost productivity for parents, and lost education time for children. By preventing worse air pollution in the future, we will reap dividends in our children’s future.

In 2007, 2010, and now again in 2015, the medical community has recommended that the EPA adopt an 8-hour ozone NAAQS of 60 ppb in order to adequately protect public health^{xiv,xv}. While the recommended standard endorsed by the physician community has not changed during this time, the scientific evidence supporting this recommendation has only gotten stronger. The scientific evidence available eight years ago justifying this recommendation has been supplemented by an even greater understanding of health effects of ozone exposures, including infant respiratory problems, worse childhood asthma control, reduced lung function, and increased mortality in adults.

The current review of the ozone standard is the first to consider new scientific evidence since 2006. Since 2006, much more evidence has accumulated that ozone exposures in the range of 60 to 75 ppb have adverse physiologic effects across the entire age spectrum—from infants to older adults.

Highlights of this new body of evidence include a study of emergency department visits among children aged 0 to 4 in Atlanta, which found that each 30 ppb increase in the 3-day average of ozone was associated with an 8% higher risk of pneumonia and a 4% higher risk for upper respiratory infection.^{xvi} Several studies have demonstrated dose-response relationships between ozone exposure and childhood asthma admissions at exposure levels in the 60 to 80 ppb range.^{xvii,xviii,xix, xx}

EPA’s own analysis demonstrates the child health benefit of acting to reduce ozone pollution.^{xxi}

The table below illustrates some of these benefits:

<u>Ozone Pollution Limit</u>	<u>Premature Deaths Prevented in 2025</u>	<u>Child Asthma Attacks Prevented in 2025</u>	<u>Missed School Days Prevented in 2025</u>
<i>70 ppb</i>	1,440	320,000	330,000
<i>60 ppb</i>	7,900	1.8 million	1.9 million

The Clean Air Act directs the Administrator to set standards that are “requisite to protect public health” with “an adequate margin of safety” (42 U.S.C. § 7409 (b) (1)). The weight of overwhelming scientific evidence that EPA’s independent experts have extensively reviewed indicates that the current ozone pollution standard does not meet that statutory requirement. The AAP, along with many partners in the medical and public health community, strongly supports a 60 ppb ozone standard as an essential public health policy to protect children. EPA has the authority and obligation to set a standard that protects children from the adverse health effects of ozone. Every child deserves the opportunity to play outside without the risk of breathing in harmful air, and EPA’s proposed rule to strengthen the ozone standard is an important step toward that goal. These are public health benefits with a significant economic impact.

Conclusion

The EPA has a fundamental role in assuring that the environment in which children live, learn, and play is safe and facilitative of healthy activity, satisfactory growth and development, and allows children to enter adulthood free from environmentally-related health problems. The Clean Power Plan and stronger ozone NAAQS are critical child health policies that the AAP strongly supports. Healthier air will reduce the health burden of diseases such as asthma on children, and lead to fewer related chronic conditions that begin in childhood. This in turn ensures that children can spend their time in school and their parents can work, both of which benefit the economy as a whole. Families will not face the burden of debt from preventable health care costs that they cannot afford. EPA's work generates important health benefits that we need to support the growth and development of the workforce of tomorrow. Thank you for the opportunity to comment here today, and I would be happy to answer any questions you may have.

-
- ⁱ American Academy of Pediatrics, Committee on Environmental Health. Global climate change and children's health. *Pediatrics*. 2007;120(5). Available at: www.pediatrics.org/cgi/content/full/120/5/e1359
- ⁱⁱ American Academy of Pediatrics Council on Environmental Health. Air Pollutants, Outdoor.. In: Etzel, RA, ed. *Pediatric Environmental Health*, 3rd Edition Elk Grove Village, IL: American Academy of Pediatrics; 2012: 318
- ⁱⁱⁱ American Academy of Pediatrics Council on Environmental Health. Schools. In: Etzel, RA, ed. *Pediatric Environmental Health*, 3rd Edition Elk Grove Village, IL: American Academy of Pediatrics; 2012: 138
- ^{iv} American Academy of Pediatrics Council on Environmental Health. Air Pollutants, Outdoor.. In: Etzel, RA, ed. *Pediatric Environmental Health*, 3rd Edition Elk Grove Village, IL: American Academy of Pediatrics; 2012: 318
- ^v http://www.epa.gov/air/caa/40th_highlights.html
- ^{vi} Intergovernmental Panel on Climate Change. Climate change 2007: the physical science basis—summary for policy makers. Available at: www.ipcc.ch/SPM2feb07.pdf. Accessed April 18, 2007
- ^{vii} National Climatic Data Center. Climate of 2005 annual review: temperature trends. Available at: www.ncdc.noaa.gov/oa/climate/research/2005/ann/global.html#Ttrends. Accessed April 18, 2007
- ^{viii} World Health Organization: Global Health Risks. Available at: http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_part2.pdf
- ^{ix} Slingo JM, Challinor AJ, Hoskins BJ, Wheeler TR. Introduction: food crops in a changing climate. *Philos Trans R Soc Lond B Biol Sci*. 2005;360:1983–1989
- ^x United Nations Environment Programme. Potential impacts of climate change: fresh water stress—current population at risk. Available at: www.grida.no/climate/vital/38.htm. Accessed April 18, 2007
- ^{xi} Children living in a region with ozone 50-60 ppb had 4% higher prevalence of asthma than those living in a region with ozone less than 50 ppb. *Sousa et al. Allergy*. 2009.
- ^{xii} In children with moderate to severe asthma, 8-hour average ozone \geq 63 ppb caused children to have chest tightness, shortness of breath and increased asthma medication use. *Gent et al. JAMA* 2003
- ^{xiii} Trasande L and Liu Y. 2011. Reducing The Staggering Costs Of Environmental Disease In Children, Estimated At \$76.6 Billion In 2008. *Health Affairs*, 30:863-870
- ^{xiv} Dey R, Winkle L, Ewart G, Balmes J, Pinkerton K. A second chance. Setting a protective ozone standard. *Am J Respir Crit Care Med* 2010;181:297–9.

^{xv} Pinkerton KE, Balmes JR, Fanucchi M, Rom WN. Ozone, a malady for all ages. *Am J Respir Crit Care Med* 2007;176:107–8.

^{xvi} Darrow LA, Klein M, Flanders WD, Mulholland JA, Tolbert PE, Strickland MJ. Air Pollution and Acute Respiratory Infections Among Children 0-4 Years of Age: An 18-Year Time-Series Study. *Am J Epidemiol* 2014;doi:10.1093/aje/kwu234.

^{xvii} Strickland MJ, Klein M, Flanders WD, Chang HH, Mulholland JA, Tolbert PE, Darrow LA. Modification of the effect of ambient air pollution on pediatric asthma emergency visits: susceptible subpopulations. *Epidemiology* 2014;25:843–50.

^{xviii} *ibid*

^{xix} Gleason JA, Bielory L, Fagliano JA. Associations between ozone, PM_{2.5}, and four pollen types on emergency department pediatric asthma events during the warm season in New Jersey: a case-crossover study. *Environ Res* 2014;132:421–9.

^{xx} Silverman RA, Ito K. Age-related association of fine particles and ozone with severe acute asthma in New York City. *J Allergy Clin Immunol* 2010;125:367–373.e5.

^{xxi} Taken from Table ES -11 of the U.S. EPA, *Regulatory Impact Analysis of the Proposed Revision to the National Ambient Air Quality Standards for Ground-level Ozone, November 2014*. EPA -452/P-14-006. Estimates based on modeling and assumptions explained in detail in the document. California was excluded because it is not expected to meet these standards in 2025.