



Children's
Environmental
Health
Network

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Environmental Protection Agency
EPA Docket Center (EPA/DC)
Mailcode 6102T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Submitted electronically via www.regulations.gov

Attention: Docket ID number EPA–HQ–OAR–2009–0171

RE: 40 CFR Chapter 1 Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act; Proposed Rule; *Federal Register*, Vol. 74, No. 78 / Friday, April 24, 2009

The Children's Environmental Health Network (the Network) appreciates this opportunity to submit written comments to the U.S. Environmental Protection Agency's (EPA) docket regarding the Agency's proposed finding that greenhouse gases in the atmosphere endanger the public health and welfare of current and future generations.

The Network is a national organization whose mission is to promote a healthy environment and to protect the fetus and the child from environmental health hazards. The Network's Board and committee members include internationally-recognized experts in children's environmental health science and policy who serve on key Federal advisory panels and scientific boards. We recognize that children, in our society, have unique moral standing. The Children's Environmental Health Network was created to promote the incorporation of basic pediatric facts such as these in policy and practice:

- Children's bodies and behaviors differ from adults. In general, they are more vulnerable than adults to toxic chemicals.
- Children are growing. Pound for pound, children eat more food, drink more water and breathe more air than adults. Thus, they are likely to be more exposed to substances in their environment than are adults. Children have higher metabolic rates than adults and are different from adults in how their bodies absorb, detoxify and excrete toxicants.

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- Children's systems, including their nervous, reproductive, digestive, respiratory and immune systems, are developing. This process of development creates periods of vulnerability when toxic exposures may result in irreversible damage when the same exposure to a mature system may result in little or no damage.
- Children behave differently than adults, leading to a different pattern of exposures to the world around them. For example, they exhibit hand-to-mouth behavior, ingesting whatever substances may be on their hands, toys, household items, and floors. Children play and live in a different space than do adults. For example, very young children spend hours close to the ground where there may be more exposure to toxicants in dust, soil, and carpets as well as low-lying vapors such as radon, mercury vapor or pesticides.
- Children have a longer life expectancy than adults; thus they have more time to develop diseases with long latency periods that may be triggered by early environmental exposures, such as cancer or Parkinson's disease.

Clear, sound science underlies these principles. A solid consensus in the scientific community supports these concepts.

The world in which today's children live has changed tremendously from that of previous generations. There has been a phenomenal increase in the substances to which children are exposed. According to the EPA, more than 83,000 industrial chemicals are currently produced or imported into the United States. Thousands of chemicals are ubiquitous in our environment worldwide. Traces of hundreds of chemicals are found in all humans and animals. Every day, children are exposed to a mix of chemicals, most of them untested for their effects on developing systems. Many of these chemicals are readily passed across the placenta to the fetus, to the infant via breast milk, or via toys and other children's products. Many of these chemicals are also ingested in food and water. Many also are absorbed by children through the lungs by respiration of contaminated air.

Proposed Rule:

We agree with the Agency's findings:

- "Concentrations of greenhouse gases are at unprecedented levels compared to the recent and distant past."
- "These high atmospheric levels are the unambiguous result of human emissions, and are very likely the cause of the observed increase in average temperatures and other climatic changes."
- "The effects of climate change observed to date and projected to occur in the future—including but not limited to the increased likelihood of more frequent and intense heat waves, more wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea level rise, more intense storms, harm to water resources,

harm to agriculture, and harm to wildlife and ecosystems—are effects on public health and welfare within the meaning of the Clean Air Act.”

The Network agrees with the broad scientific consensus that the Earth’s climate is warming rapidly and at an accelerating rate, due to human activities and other causes. Our comments focus primarily on climate change’s impacts on public health -- especially children’s health.

Climate change will alter the global environment and present major challenges to the health and welfare of children. Children, as a vulnerable subpopulation, are among those at greatest risk of harm. Children in communities that are already disadvantaged will be the most harmed. Recent studies have detailed how a child’s physical and social health may be harmed. Some examples include:

- Atmospheric changes associated with greenhouse gases can lead to:
 - respiratory diseases
 - sunburn and melanoma; and
 - immunosuppression.
- Climate change may directly cause:
 - heat stroke
 - injury and death from extreme weather events and natural disasters
 - gastrointestinal diseases (such as through increased water contamination); and
 - psychosocial maldevelopment.
- Ecologic alterations triggered by climate change (such as severe drought and severe precipitation) can lead to:
 - increased rates of malnutrition
 - increased rates of allergies
 - increased exposure to mycotoxins
 - increased exposure to certain toxicants
 - increased range of some vector-borne diseases (malaria, dengue, encephalitides, Lyme disease); and
 - emerging infectious diseases.
- The displacement, water and food insecurity, and forced migration caused by drought, increased rain and severe storms, and rising sea levels can lead to:
 - international conflict and political unrest
 - increased stress on families, leading to neglect or abuse of children; and
 - interruption in a child’s education due to forced migration or the need to work to help support the family.

The sources for the above statements are drawn from a wide range of statements and peer-reviewed studies, including but not limited to:

- American Academy of Pediatrics Policy Statement, Global climate change and Children’s Health. *Pediatrics* Vol. 120 No. 5 November 2007, pp. 1149-1152 (doi:10.1542/peds.2007-2645).

- “Climate Change and Public Health,” testimony to the U.S. House Select Committee on Energy Independence and Global Warming given by Howard Frumkin, MD, DrPH, CDC National Center for Environmental Health Director, April 9, 2008
- Climate Change and Urban Children: Impacts and Implications for Adaptation in Low and Middle-Income Countries. Sheridan Bartlett. Human Settlements Discussion Paper Series, International Institute for Environment and Development. August 2008
- The Impact of Climate Change on Child Health. Bunyavanich, S, Landrigan, P., McMichael, AJ, and Epstein, PR, [Ambul Pediatr](#). 2003 Jan-Feb;3(1):44-52.
- Global Climate Change and Children’s Health. Shea, K.M., and the AAP Committee on Environmental, Health. Pediatrics, Vol. 120 No. 5, November 2007
- The toxicology of climate change: Environmental contaminants in a warming world. Noyes PD, et al, Environ Int (2009), doi:10.1016/j.envint.2009.02.006

Thus, the Network also strongly supports the Agency’s subsequent findings:

“. . . that atmospheric concentrations of greenhouse gases endanger public health and welfare within the meaning of Section 202(a) of the Clean Air Act. Six greenhouse gases -- carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride -- are specifically listed as, together, constituting the root of the climate change problem. The Agency includes in its proposal the finding that the combined emissions of carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons from new motor vehicles and new motor vehicle engines are contributing to air pollution which is endangering public health and welfare under section 202(a) of the Clean Air Act.”

The Network concurs with the Administrator’s decision that, in her judgment, the air pollution under consideration may be reasonably anticipated to endanger public health or welfare.

EPA is required to act to protect children before harm occurs: The Network also agrees that, as part of the EPA’s charge to protect public health and welfare, the Agency is not to wait until harm has occurred but instead take regulatory action to prevent harm before it occurs.

EPA is required to consider and protect vulnerable subpopulations: The Network strongly agrees that the Agency is required “to consider the risks to all parts of our population, including those who are at greater risk for reasons such as increased susceptibility to adverse health effects.”

The Network believes that, “If vulnerable subpopulations are especially at risk,” the Administrator is not “entitled” to take that point into account, as the *Federal Register* states, but in fact is **required** to consider the risks to vulnerable subpopulations in deciding the question of endangerment.

The Network agrees that vulnerable subpopulations face serious health risks as a result of climate change, as illustrated by the list enumerated earlier detailing how children's physical and social health may be harmed.

Impacts on Public Health

The Network supports the public health impacts presented in the *Federal Register* notice and agrees that there are current adverse effects. The Network believes that the current science supports the consideration of other health impacts as well.

Whether or not "ambient concentrations of carbon dioxide and the other greenhouse gases, whether at current levels or at projected ambient levels under scenarios of high emissions growth over time, do not cause direct adverse health effects such as respiratory or toxic effects," as the Agency states, we believe that atmospheric changes associated with greenhouse gases can lead to increased sunburn, melanoma and respiratory diseases.

Climate change may directly cause increased rates of malnutrition and psychosocial maldevelopment. "Mental and emotional distress documented for children and adolescents after weather disasters include posttraumatic stress disorder and high rates of sleep disturbance, aggressive behavior, sadness, and substance use/abuse. (Ahern M, Kovats RS, Wilkinson P, Few R, Matthies F. Global health impacts of floods: epidemiologic evidence. *Epidemiol Rev.* 2005;27:36-46) Although more research is needed, "some studies have suggested that children have more persistent symptoms than adults who experience the same disaster" (Shaw JA, Applegate B, Schorr C. Twenty-one-month follow-up of school-age children exposed to Hurricane Andrew. *J Am Acad Child Adolesc Psychiatry.* 1996;35:359-364).

While further study is needed, evidence supports a link between contaminant exposures and suppressed immune system function (Abadin et al., 2007; Nagayama et al., 2007; Smialowicz et al., 2001). Immune system impairment linked to toxicant exposures may increase human vulnerability to climate-induced shifts in vector borne and infectious diseases.

The Network concurs that the nation's experiences with recent severe hurricanes, such as Hurricane Katrina, are cause for concern:

"These potential impacts of climate change have taken on added meaning in light of the risk that hurricanes are likely to become more severe with climate change, and in light of our heightened awareness about how vulnerable the U.S. Gulf Coast can be."

However, the *Federal Register* notice does not expand this concept to describe the possible outcomes of such continued severe weather events. The Network is concerned that global climate change, as a result of drought, increased rain and severe storms, and rising sea levels, will lead to displacement, increased water and food insecurity, and forced migration. The outcome of these stressors may lead to:

- international conflict and political unrest;
- increased stress on families, leading to neglect or abuse of children; and
- interruption in a child's education due to forced migration or the need to work to help support the family.

These outcomes are of even greater concern when one considers that those who are already disadvantaged will pay the highest price. The Network emphasizes the report by the U.S. Climate Change Science Program (CCSP) that "many of the expected health effects are likely to fall disproportionately on the poor, the elderly, the disabled, and the uninsured" and that, "(w)ithin settlements experiencing climate change stressors, certain parts of the population may be especially vulnerable based on their circumstances. These include the poor, the elderly, the very young, those already in poor health, the disabled, those living alone, those with limited rights and power (such as recent immigrants with limited English skills), and/or indigenous populations dependent on one or a few resources."

Thus, the Network believes that evidence exists indicating that potential harm to public health is even greater than that detailed by the Agency.

In summary, the Network agrees with the Agency's conclusions:

"The Administrator concludes that, in the circumstances presented here, the case for finding that greenhouse gases in the atmosphere endanger public health and welfare is compelling and, indeed, overwhelming."

"In both magnitude and probability, climate change is an enormous problem. The greenhouse gases that are responsible for it endanger public health and welfare within the meaning of the Clean Air Act."

As the Agency moves forward with developing proposed standards, pursuant to this proposed endangerment finding and a cause or contribute determination, the Network urges the Agency to move expeditiously, and to consider these concepts, as applicable, in the development of proposed standards:

- To promote the inclusion of children's specific vulnerabilities, needs, and social and health outcomes in international, national, state, and local climate change policies and plans for adaptation.
- To promote effective measures for children's protection, treatment and care.
- To encourage collaboration across disciplines and among government and non-governmental organizations to develop innovative and comprehensive approaches to mitigation and adaptation that address children's particular needs.

- To support additional research to determine the extent to which children's health may be affected by climate change and what additional domestic and international policies, structures, and systems need to be developed, implemented and sustained in order to protect all children; and
- To provide resources that assist all professionals serving families and children, including health care providers, in their efforts to minimize the harmful health effects global climate change may have on children.

Sincerely,

Nsedu O. Witherspoon, MPH
Executive Director