Comments of Patricia Koman, PhD
September 25, 2018

Thank you for this opportunity to provide oral testimony. My name is Trish Koman, and I am an environmental epidemiologist. I am also the mother of two adult children from Ann Arbor, Michigan. I conduct scientific research on the health effects of air pollution and climate-related impacts on human health. Before joining the University of Michigan 6 years ago, I served at the U.S. Environmental Protection Agency (EPA) for 22 years under both Republican and Democratic administrations as a senior environmental scientist, most recently in the Office of Transportation and Air Quality.

I am currently a member of the Environmental Protection Network, an organization that includes former EPA career employees and political appointees working to preserve the nation's bipartisan progress toward clean air, water, land and climate protection. I am also a member of the Climate Reality Leaders of Washtenaw County, Michigan, Save EPA Ann Arbor, and the American Public Health Association. The views I express are my own.

I strongly urge the US Department of Transportation and the US EPA to withdraw this flawed proposal and implement the current standards as quickly as possible for the following reasons.

1) Following Clean Air Act and the endangerment finding, the US EPA has a legal obligation to reduce greenhouse gas emissions (such as carbon dioxide (CO_2)) and to take actions requisite to protect public health from the threats of climate change.[1] US EPA may not shirk its responsibility under the law or delegate to US Department of Transportation.[2]

2) Our climate system is our life support; thus, climate change threatens every being on our planet. The scientific community shares a rare consensus that we are at a critical juncture while it is still possible to reduce emissions and avert the worst outcomes. As documented in the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment report,[3] if we don't reduce greenhouse gas emissions from all sectors, people's health will suffer from excessive heat, worse air pollution, more frequent storms, droughts, fires, changes in vector-borne illnesses, and less nutritious grains. Importantly, vehicular emissions in the U.S. contribute to those negative health impacts and public endangerment. Thus, these negative health effects are preventable.

---

[1] US EPA has a mandatory duty to issue and enforce standards; per Clean Air Act section 202(a)(1) US EPA shall issue standards if US EPA finds that greenhouse gas air pollution endangers public health and welfare and vehicular greenhouse gas emissions contribute to that endangerment.

[2] EPA cannot lawfully delegate that responsibility to an outside entity such as US Department of Transportation National Highway Transportation Safety Agency (NHTSA) (U.S. Telecomm v. FCC, 359 F. 3d 554, 567-68 (D.C. Cir. 2004)). The administrative record shows from US EPA comments in the interagency review process that US EPA had little to no part in developing the NHTSA proposal and key EPA technical models and findings on which the current standards are based were consequently not carefully reviewed or refuted.

[3] Intergovernmental Panel on Climate Change IPCC, "IPCC Fifth Assessment Report: Climate Change 2013 (AR5)," 2013, http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml.

For example, increased temperatures and heat waves can have significant effects on health that can lead to a number of adverse health outcomes, resulting in illness, hospitalization of even death. A heat wave in Chicago killed over 700 people in Chicago in July 1995[4]; a heat wave killed more than 70,000 people in Europe in August 2003.[5] Areas like Michigan that are not well adapted to heat may be especially impacted. Individuals with pre-existing conditions including diabetes, chronic obstructive pulmonary disease (COPD), congestive heart failure, or heart disease are at increased risk of mortality during extreme heat events.[6] Increased hospitalization rates for respiratory and cardiovascular diseases can also occur as a consequence of extreme heat exposure.[7] Heat-related illness is expected to increase with increases in frequency and duration of hot days and nights (heat waves) and average temperatures due to climate change.[8] Without significant greenhouse gas reductions, average temperatures for North America are expected to rise resulting in a significant increase in extreme heat events and therefore an increase in heat-related illnesses and deaths.[9]

3) Because manmade CO_2 concentrations are persistent in the atmosphere, emissions today affect future generations.[10] Thus, it is imperative that emissions from mobile sources are reduced as quickly as possible to avert the worst predicted outcomes for climate change and human health. Unlike other types of air pollution with shorter atmospheric concentration residence times or where the proximity of emissions and to people is a factor, CO_2 reductions contribute towards the global solution. Delays in reductions from this misguided and flawed proposal have major implications for generations. This proposal did not adequately factor in the full impact of the physical properties of CO_2 concentrations on population health or equity.

4) The analysis for this proposed rulemaking did not adequately consider the health impact to vulnerable groups, and it relied on faulty assumptions about consumer behavior, vehicle miles traveled and safety implications of light-weighting. Regarding vulnerable groups, as part of a much larger body of scientific studies, my own research documents that susceptibilities and vulnerabilities can increase the impact on certain groups, such as pregnant women, children,

---

[4] J C Semenza et al., "Excess Hospital Admissions during the July 1995 Heat Wave in Chicago.," *American Journal of Preventive Medicine* 16, no. 4 (May 1, 1999): 269–77, http://www.ajpmonline.org/article/S0749-3797(99)00025-2/abstract.

[5] Jean-Marie Robine et al., "Death Toll Exceeded 70,000 in Europe during the Summer of 2003," *Comptes Rendus Biologies* 331, no. 2 (February 2008): 171–78, https://doi.org/10.1016/j.crvi.2007.12.001.

[6] Antonella Zanobetti et al., "Summer Temperature Variability and Long-Term Survival among Elderly People with Chronic Disease.," *Proceedings of the National Academy of Sciences of the United States of America* 109, no. 17 (April 24, 2012): 6608–13, https://doi.org/10.1073/pnas.1113070109.

[7] Bart D. Ostro et al., "Estimating the Mortality Effect of the July 2006 California Heat Wave," *Environmental Research*, 2009, https://doi.org/10.1016/j.envres.2009.03.010.

[8] Intergovernmental Panel on Climate Change IPCC, "IPCC Fifth Assessment Report: Climate Change 2013 (AR5)."

[9] Peter Altman et al., "Killer Summer Heat : Projected Death Toll from Rising Temperatures in America Due to Climate Change," *New York*, no. MAy (2012): 10, https://doi.org/IB 12-05 C.

[10] David Archer et al., "Atmospheric Lifetime of Fossil Fuel Carbon Dioxide," 2009, https://doi.org/10.1146/annurev.earth.031208.100206; Intergovernmental Panel on Climate Change IPCC, "IPCC Fifth Assessment Report: Climate Change 2013 (AR5)."

outdoor workers, the elderly, those with pre-existing diseases, racial minorities, and people experiencing poverty.[11]

More specifically with respect to heat vulnerability, for example, young children, the elderly and people with respiratory or cardiovascular diseases, diabetes, obesity, or chronic mental health conditions are at greatest risk of being negatively affected by heat waves.[12] Some individuals have pre-existing conditions that reduce their ability to sense heat (e.g., diabetes),[13] the effectiveness of sweating to cool (e.g., obesity)[14] or may be unable or unwilling to drink fluids (e.g., children under 5,[15] the elderly or very frail,[16] and some with religious practices such as fasting/ abstaining from water which is important here in Dearborn). Furthermore, certain socially vulnerable populations (e.g., those experiencing poverty, having low education or living in substandard housing) are more at risk in heat events as they have fewer resources to mitigate the effects of heat.[17] These populations may be experiencing other environmental exposures such as from air pollution as documented in Southeast Michigan.[18]

---

[11] P.D. Koman et al., "Examining Joint Effects of Air Pollution Exposure and Social Determinants of Health in Defining 'At-Risk' Populations Under the Clean Air Act: Susceptibility of Pregnant Women to Hypertensive Disorders of Pregnancy," *World Medical and Health Policy* 10, no. 1 (2018), https://doi.org/10.1002/wmh3.257; Patricia D. Koman and Peter Mancuso, "Ozone Exposure, Cardiopulmonary Health, and Obesity: A Substantive Review," *Chemical Research in Toxicology* 30, no. 7 (July 17, 2017): 1384–95, https://doi.org/10.1021/acs.chemrestox.7b00077.

[12] R Sari Kovats and Shakoor Hajat, "Heat Stress and Public Health: A Critical Review.," *Annual Review of Public Health* 29 (January 1, 2008): 41–55, https://doi.org/10.1146/annurev.publhealth.29.020907.090843; Shen T.F., Howe H.L., Alo C., Moolenaar R.L., "Toward a Broader Definition of Heat-Related Death: Comparison of Mortality Estimates from Medical Examiners' Classification with Those from Total Death Differentials during the July 1995 Heat Wave in Chicago, Illinois," *Amer J Foren Med Path* 19 (1998): 113–18, https://doi.org/doi: 10.1097/00000433-199806000-00003.

[13] Zanobetti et al., "Summer Temperature Variability and Long-Term Survival among Elderly People with Chronic Disease."

[14] N K Chung and C H Pin, "Obesity and the Occurrence of Heat Disorders.," *Military Medicine* 161, no. 12 (December 1996): 739–42, http://www.ncbi.nlm.nih.gov/pubmed/8990832.

[15] Zhiwei Xu et al., "Impact of Ambient Temperature on Children's Health: A Systematic Review.," *Environmental Research* 117 (August 2012): 120–31, https://doi.org/10.1016/j.envres.2012.07.002.

[16] Carina J. Gronlund et al., "Vulnerability to Renal, Heat and Respiratory Hospitalizations during Extreme Heat among U.S. Elderly," *Climatic Change* 136, no. 3–4 (June 7, 2016): 631–45, https://doi.org/10.1007/s10584-016-1638-9; Zanobetti et al., "Summer Temperature Variability and Long-Term Survival among Elderly People with Chronic Disease."

[17] Carina J. Gronlund, "Racial and Socioeconomic Disparities in Heat-Related Health Effects and Their Mechanisms: A Review," *Current Epidemiology Reports* 1, no. 3 (September 2014): 165–173, https://doi.org/10.1007/s40471-014-0014-4; Sharon L. Harlan et al., "Neighborhood Microclimates and Vulnerability to Heat Stress," *Social Science & Medicine* 63, no. 11 (December 2006): 2847–2863, https://doi.org/10.1016/j.socscimed.2006.07.030; Colleen E Reid et al., "Mapping Community Determinants of Heat Vulnerability.," *Environmental Health Perspectives* 117, no. 11 (November 2009): 1730–36, https://doi.org/10.1289/ehp.0900683.

[18] Amy J. Schulz et al., "RACE AND THE DISTRIBUTION OF SOCIAL AND PHYSICAL ENVIRONMENTAL RISK: A Case Example from the Detroit Metropolitan Area," *Du Bois Review: Social Science Research on Race* 13, no. 2 (2016): 285–304, https://doi.org/10.1017/S1742058X16000163.

5) Because of the significant health impacts, major health organizations such as the American Public Health Association, American Academy of Pediatrics, and other members of the Medical Society Consortium have called for immediate actions to reduce greenhouse gases.[19]

This rulemaking is important to me as a parent and my community for the following reasons.

I am very proud to be the mother of two young men who unfortunately will be negatively affected by this proposal. First, my older son is a teacher in an underserved elementary school in Chicago. After his first week of teaching in August, he described how hot it was in his school building – made worse by lack of air conditioning or adequate fans and the poverty of his district. His 8- and 9-year-old students have trouble paying attention because it is so hot in their apartments at night that they don't sleep well and thus aren't ready for the next day's lesson. They miss school due to asthma made worse from nearby freeways. This situation will only get worse for schools around the country with this flawed proposal. Our children deserve better.

My second son is training to be a US Army Officer. The US Armed Forces has long understood climate change to be a security threat.[20] As is the case for other service men and women in uniform, this proposal will make my son's service more hazardous – through stresses to his person such as increased heat, air pollution, fires, and storms or through increased global crises that occur as a result of the changing climate system. Because of impacts on people who work outdoors or are in the military, the existing standards should be maintained or strengthened.

Finally, despite these challenges from this flawed proposal, I want to thank the dedicated men and women at the US EPA Office of Transportation and Air Quality at the national lab in Ann Arbor whose engineering and policy competence crafted the current Clean Air Act standards in partnership with industry, affected communities, and health advocates. These existing standards are working and must be implemented in all due haste. The current standards achieve significant CO_2 reductions, save consumers money, and industry agreed they were achievable. Without these standards, the nearly 900 million metric tons of CO_2 reduction that this flawed proposal would forego must now be found from other sources. Accordingly, States like Michigan will be hard pressed to find more cost-effective approaches, but they must and

[19] Members of the Medical Society Consortium on Climate Change and Health include: American College of Physicians (ACP), American Academy of Family Physicians (AAFP), American Academy of Pediatrics (AAP), American College of Obstetrics and Gynecology (ACOG), the American Academy of Allergy Asthma & Immunology (AAAI), American College of Preventive Medicine (ACPM), American Podiatric Medical Association (APMA), American Geriatrics Society (AGS), Academy of Integrative Health and Medicine (AIHM), American Association of Community Psychiatrists (AACP), National Medical Association (NMA), Society of General Internal Medicine (SGIM), American Telemedicine Association (ATA), Society of Gynecologic Oncology (SGO), the California Chapter of American College of Emergency Physicians (ACEP-CA), American College of Osteopathic Internists (ACOI), American Medical Association (AMA), American Psychiatric Association (APA), American Medical Women's Association (AMWA), American Academy of Dermatology (AAD), American College of Lifestyle Medicine (ACLM).

[20] Caitlin E Werrell and Francesco Femia, "A Responsibility to Prepare: Why the U.S. National Security Community Takes Climate Risks Seriously," 2017, https://climateandsecurity.files.wordpress.com/2012/04/a-responsibility-to-prepare_why-the-u-s-national-security-community-takes-climate-risks-seriously_briefer-35.pdf.

they will. Under the Clean Air Act, States must update their State implementation plans (SIPs) and Governors will be obligated to find other local ways to reduce pollution to make up deficits in national emissions progress. It makes no sense to abandon a cost-effective, common sense program that is working to promote public health, with a roll back based on flawed analyses.

In conclusion, the US EPA has a duty under the Clean Air Act to reduce greenhouse gas emissions from mobile sources in order to protect public health. The decisions we make now have lasting impact on our future because of the physical properties of CO_2 concentrations, the magnitude of U.S. emissions, and the severity and distribution of the health impacts, especially for vulnerable populations. Therefore, **I urge the Administration to withdraw this flawed proposal and implement and enforce the current 2012 standards vigorously**.