

**Comments to EPA Clean Air Scientific Advisory Committee (CASAC) on
Draft Ozone Integrated Science Assessment and Policy Assessment**

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Hello, my name is Vijay Limaye, and I want to thank the CASAC members for their service and for the opportunity to provide comments on the ozone science and policy assessments. I'm trained as a PhD environmental epidemiologist and I'm also a former EPA scientist, focusing on better understanding the harmful effects of air pollution on human health. I now work as a scientist at the Natural Resources Defense Council.

With regards to the science and policy assessments, the shortened drafting period appears to have placed extreme pressure on the EPA staff responsible for writing the policy assessment and led to critical omissions. One of the most concerning examples of this is the failure of the policy assessment to consider the health effects of ozone on outdoor workers, a particularly vulnerable subgroup. EPA staff, during the December 2019 CASAC meeting, noted this omission was the result of inadequate time.¹

A footnote in the draft policy assessment states that “outdoor workers are not a population that has been explicitly simulated in the current analyses...” despite the fact that “target analyses of outdoor workers in the 2014 Risk/Exposure Assessment (single study area, single year) found an appreciably greater portion of this population as compared to the full population of adults to experience exposures at or above benchmark concentration...”²

Considering that nearly half of the jobs held by civilian workers require outdoor work³, failure to consider the greater ozone exposure experienced by this at-risk subpopulation severely decreases the likelihood that the ozone standard will be sufficiently protective of the health of millions of Americans.

¹ Comment made by EPA staff during the EPA Presentation - Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards, December 5, 2019 at the Clean Air Scientific Advisory Committee meeting

² U.S. Environmental Protection Agency, “Policy Assessment for the Ozone National Ambient Air Quality Standards, External Review Draft,” page 3-56. November 2019. Accessed at: <https://www.regulations.gov/document?D=EPA-HQ-OAR-2018-0279-0018>

³ “Over 90 percent of protective service and construction and extraction jobs require work outdoors.” January 06, 2017. TED: The Economics Daily. Accessed 12/13/19 at <https://www.bls.gov/opub/ted/2017/over-90-percent-of-protective-service-and-construction-andextraction-jobs-require-work-outdoors.htm>;

Traditionally, the science assessment is drafted and finalized with opportunity for CASAC and public review before the policy assessment is drafted. This allows for the most recent, relevant science to provide the basis for policy decisions. However, by drafting and reviewing the science assessment and the policy assessment concurrently, the necessary clarity in available science is not available for the policy assessment. This “risks commingling policy issues prematurely before the science issues are adequately vetted and settled, which in turn creates the potential for policy choices to be made irrespective of the science. Thus, the integrity of the process is harmed when policy issues are addressed before the science issues are adequately settled.”⁴

Epidemiologic studies have identified interactive effects between air pollution and elevated temperatures that confer heightened mortality risk. EPA should consider the potential for synergistic effects as further motivation for strengthening the current standard.

While the mechanism linking ambient temperature and ozone patterns is established, quantitative attribution analyses of the links between recent ozone levels and climate change-triggered temperature increases are not currently available for the US. This gap does not prevent the Agency from setting national ambient air quality standards that account for the temperature-pollution link. An analysis of regulatory 2016-18 monitor data conducted in 2019 indicates that high ozone levels are indeed occurring in parts of the United States that have experienced record-setting warmth. That analysis is consistent with the expectation that higher temperatures or drought caused by climate change will make it increasingly difficult to attain the ozone standard, and the need for strengthened control of anthropogenic precursors of ozone air pollution.

Because of this climate mechanism, U.S. emissions can affect the apparent background levels in the U.S. Because high ozone days present the greatest health risk, and this health risk is attributable to spikes due to anthropogenic ozone formed by precursor emissions, attainment is eminently controllable by controlling those emissions causing the increase. There is nothing in the draft science assessment or draft policy assessment that calls EPA’s 2015 findings on this issue into question.

Furthermore, the draft integrated science assessment indicates that the scientific literature has not established any safe level of ozone exposure. The consensus from the literature is that any threshold, if it exists at all, would occur at 8-hour maximum concentrations below 20-40 parts

⁴ Chris Frey et al, “Advice from the former U.S. EPA Clean Air Scientific Advisory Committee Ozone Review Panel on EPA’s Integrated Science Assessment for Ozone and Related Photochemical Oxidants (External Review Draft - September 2019), and EPA’s Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards (External Review Draft - October 2019),” December 2, 2019. Available at: [https://yosemite.epa.gov/sab/sabproduct.nsf//B2AF0B23ABE6A60E852584C4007312E3/\\$File/EPA+CA+SAC+O3+Review+ISA+PA+Letter+191202+Final.pdf](https://yosemite.epa.gov/sab/sabproduct.nsf//B2AF0B23ABE6A60E852584C4007312E3/$File/EPA+CA+SAC+O3+Review+ISA+PA+Letter+191202+Final.pdf)

per billion. For example, significant associations between short-term ozone exposure and hospital admission or emergency department visits were observed at concentrations as low as 31 parts per billion.

The draft integrated science assessment also notes that part of the reason that uncertainty remains about threshold effects is that there are few observations available at concentrations levels substantially below the current standard. This lack of information motivates a strengthened ozone standard, because of the likelihood of adverse health effects at levels substantially lower than current federal limits. The multicity epidemiologic studies that could better refine health effects at lower levels in the future will continue to be difficult to execute without further reductions in ambient ozone concentrations.

Overall, the evidence presented in the draft science assessment and draft policy assessment indicates that the current ozone standard is not requisite to protect public health with an adequate margin of safety. Robust epidemiologic studies indicate that adverse health responses are experienced even at levels below the current standard, and that adverse health responses identified in this draft science assessment (e.g., for metabolic disease endpoints) are, in fact, larger and more widespread than those detailed in the previous science assessment. With respect to this point, the draft policy assessment rightly prioritizes recent studies conducted in U.S. cities with 8-hour maximum ozone concentrations well below the current standard.

Collectively, these studies are compelling in demonstrating significant excess risk at exposure levels below the current standards. Such examinations are scientifically valid and policy relevant, and provide EPA with new and compelling evidence of effects at concentrations at and below the current primary ozone standards based on population studies of tens of millions of people. Our full written comments expanding on all of these points were submitted to the regulatory docket in December 2019.