

Discussion Points for the CASAC Ozone Panel September 12-16, 2022, Meeting

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During the June 8-10, 2022, CASAC Ozone Panel Meeting, we agreed that a fuller discussion of the science contained in the *Integrated Science Assessment (ISA) for Ozone and Related Photochemical Oxidants (April 2020)* was needed before a Policy Assessment (PA) could be reviewed. We decided we would develop a set of discussion points for our September 12-16, 2022 meeting, which focus on policy-relevant scientific issues that will inform and impact our advice on a PA. The following discussion points are meant to structure our upcoming review and discussion. Our goal is not to do a thorough review of the science summarized in the 2020 Ozone ISA, but rather to focus on the scientific considerations that will have a direct impact on our upcoming review of an ozone PA. As you develop your responses, please:

- Distinguish between 1) information from the existing scientific record reviewed in the 2020 ISA (together with the three technical memos¹) and 2) additional pertinent information that was not included in that review. The 2020 ISA only considers studies published through March 30, 2018. CASAC is free to consider any relevant scientific information. Ideally, first we will provide our advice about the existing scientific record reviewed in the 2020 ISA. Then we will separately consider how new scientific information strengthens or alters that advice.
- Focus your attention on considerations that will directly inform a PA and comment on the scientific evidence would be most informative for a PA. Comments about the scientific record that won't materially inform our upcoming review of a PA are not our priority.

Discussion Points

1. Atmospheric Source, Chemistry, Meteorology, Trends, and Background Ozone (Appendix 1)
 - a. What are the panel's views regarding the scientific evidence on wildfires, exceptional events, precursor emissions, chemistry, and background levels?
 - b. Please comment on how the evidence reviewed in the ISA should be brought forward into the PA.
2. Ozone and Photochemical oxidants (Appendix 1, 2)
 - a. What are the panel's views on evidence pertaining to the distinction between exposure to laboratory-generated ozone and ambient ozone? The panel should focus its attention on aspects of this evidence that will inform consideration of the weighting of health effect evidence from controlled human exposure studies and epidemiologic studies, including summer camp studies and studies of outdoor workers.
3. Health Effects – Respiratory (Appendix 3)
 - a. What are the panel's views regarding the causal determinations for short-term and long-term ozone exposure and respiratory health effects?

- b. Does the panel suggest consideration of any new scientific evidence that might strengthen or alter this characterization?
 - c. What are the panel's views regarding the weighting of controlled human exposure studies and epidemiological studies (i.e., population- and panel-based observational designs)?
- 4. Health Effects – Cardiovascular (Appendix 4)
 - a. What are the panel's views regarding the causal determination for short-term and long-term ozone exposure and cardiovascular effects?
 - b. What are the panel's views regarding the weighting of controlled human exposure studies and epidemiological studies (i.e., population- and panel-based observational designs)?
 - c. Does the panel suggest consideration of any new scientific evidence that might strengthen or alter any of these characterizations?
- 5. Health Effects – Mortality (Appendix 6)
 - a. What are the panel's views regarding the causal determinations for short-term and long-term ozone exposure and total mortality?
 - b. Does the panel suggest consideration of any new scientific evidence that might strengthen or alter any of these characterizations?
- 6. Health Effects – Developmental Effects (Appendices 3, 4, 7, particularly Section 7.1.4)
 - a. What are the panel's views regarding the review and characterization of the scientific evidence on developmental effects from ozone exposure?
 - b. Does the panel suggest consideration of any new scientific evidence that might strengthen or alter any of these characterizations?
- 7. At-Risk Communities
 - a. Based on the existing scientific record, what are the panel's views regarding the scientific evidence of effects of ozone exposures on at-risk communities?
 - b. What are the panel's views on how the evidence regarding disparities in exposure and health effects should be brought into the PA?
- 8. Ecological Effects (Appendix 8)
 - a. What are the panel's views regarding the summarization of the scientific evidence on effects on vegetation and ecosystems from ozone exposure? Is this summary adequate to inform a PA?
 - b. Does the evidence review provide adequate background for consideration of alternate forms of the secondary standard in the PA?

9. Climate Effects (Appendix 9)

- a. What are the panel's views regarding the causal determination for tropospheric ozone and radiative forcing and the causal determinations for tropospheric ozone and temperature, precipitation, and related climate variables?
- b. Have the effects of warming on ozone production been adequately characterized?

ⁱ Luben (2020a) - Short-Term Cardiovascular Morbidity and Mortality Studies Excluded from the Draft Ozone ISA Based on Location and Considered for Final Ozone ISA

Luben et al. (2020b) - List of Studies Identified by Public Commenters That Have Been Provisionally Considered in the Context of the Conclusions of the 2020 Integrated Science Assessment for Ozone and Related Photochemical Oxidants

Duffney et al. (2022) - Provisional Evaluation of Newly Identified Controlled Human Exposure Studies in the context of the 2020 Integrated Science Assessment for Ozone and Related Photochemical Oxidants