

August 29, 2014

MEMORANDUM

SUBJECT: Transmittal of *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards* – Final Document

FROM: Erika N. Sasser, Director
Health and Environmental Impacts Division
Office of Air Quality Planning and Standards

TO: Holly Stallworth
Designated Federal Officer
Clean Air Scientific Advisory Committee
EPA Science Advisory Board Staff Office

During the March 25-27, 2014 public meeting and the May 28 and June 4, 2014 teleconference meetings, the Clean Air Scientific Advisory Committee (CASAC) Ozone Review Panel (the CASAC O₃ Review Panel) discussed their findings and recommendations on the *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards: Second External Review Draft*.¹ As part of the Environmental Protection Agency's (EPA's) ongoing review of the national ambient air quality standards (NAAQS) for ozone (O₃), staff from the EPA's Office of Air Quality Planning and Standards (OAQPS) addressed the CASAC O₃ Review Panel's recommendations and prepared the *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards* (PA, August 2014). I am requesting that you place this final document in the appropriate location on the Science Advisory Board website. Also, please notify the CASAC members about the availability of the final PA on the EPA Technology Transfer Network website: http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html.

The PA presents considerations and conclusions relevant for EPA's review of the current primary (health-based) standard and secondary (welfare-based) standard for O₃. This final document draws upon the evidence and information assessed and presented in the *Integrated Science Assessment for Ozone* (ISA) prepared by EPA's National Center for Environmental Assessment and two risk and exposure assessment documents (REAs) prepared by OAQPS, the *Health Risk and Exposure Assessment for Ozone* (HREA) and the *Welfare Risk and Exposure Assessment for Ozone* (WREA).² The final PA, as well as the ISA, HREA, and WREA documents reflect consideration of comments and advice from the Clean Air Scientific Advisory Committee (CASAC) O₃ Review Panel and the public on earlier drafts.

¹ The document can be found at <http://yosemite.epa.gov/sab/sabproduct.nsf/bf498bd32a1c7fdf85257242006dd6cb/84006d7423b29d9b85257b96004a8381!OpenDocument&Date=2014-03-25>.

² All documents related to the current ozone NAAQS review are available at: http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html

The final PA reflects consideration of comments from CASAC and the public on the second draft PA, and includes changes directly in response to those comments. The CASAC O₃ Review Panel presented its comments on the second draft PA in a letter to the Administrator dated June 26, 2014.³ A general summary of the important comments, and the changes made in the final PA in response to them, are summarized below. In addition, a summary of CASAC's advice in their June 26, 2014 letter, including quotation of key aspects for the Administrator's consideration, was added to the final PA.

Executive Summary

We have expanded and enhanced the Executive Summary as requested by CASAC at the March 2014 meeting to review the second draft PA.

Chapter 1 - Introduction

CASAC expressed the view that second draft PA was not clear as to how background estimates might impact decisions on the primary and secondary standards. In Chapter 1 of the final PA, we have added text clarifying how this information could be used in decisions by the Administrator on the primary and secondary standards.

Chapter 2 – Ozone Monitoring and Air Quality

CASAC provided four substantial technical comments designed to improve the discussion of air quality trends, response to emissions controls, and background O₃ (zero out and source apportionment modeling). Based on these comments, changes were made to Chapter 2 in the final PA to further clarify our description of monitoring, trends, emissions, and background levels of O₃ across the U.S. These changes include the following:

- Figure 2-8 was added to display the trends in May-September mean daily maximum 8-hour O₃ averages at select O₃ sites across the U.S., before and after adjusting for meteorological variability.
- EPA provided additional text in Section 2.2 further describing the expected response of low O₃ levels to additional emissions reductions.
- As recommended by the CASAC O₃ Review Panel, EPA noted in Section 2.4 that because O₃ chemistry can be non-linear, one should not assume that individual perturbations (e.g., results from zero-out modeling) can be used to determine relative contribution of background processes to total O₃. In addition, EPA revised the text and figures to reflect the concept that background O₃ characterizations from the zero-out modeling were informed by *ratios* of zero-out cases/base case, and do not necessarily reflect the percent contribution of background O₃ at any given location.
- EPA improved the description of the source apportionment modeling, as encouraged by several Panel members and public comments. A number of changes were made to the methodological descriptions in Section 2.4. EPA added a table to further describe the

³ Frey, C. (2014). Letter from Dr. H. Christopher Frey, Chair, Clean Air Scientific Advisory Committee to the Honorable Gina McCarthy, Administrator, US EPA. CASAC Review of the EPA's *Second Draft Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards* (June 2014). June 26, 2014. Available at: [http://yosemite.epa.gov/sab/sabproduct.nsf/264cb1227d55e02c85257402007446a4/5EFA320CCAD326E885257D030071531C/\\$File/EPA-CASAC-14-004+unsigned.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/264cb1227d55e02c85257402007446a4/5EFA320CCAD326E885257D030071531C/$File/EPA-CASAC-14-004+unsigned.pdf)

similarities and differences between the two modeling methodologies used to characterize background. For the source apportionment modeling, we added several paragraphs to Section 2.4 to bolster the technical description of this portion of the analysis.

- Consistent with aggregate and individual comments from Panel members as well as public comments on the second draft, we also improved several figures and figure captions in the chapter to make them more easily interpretable. We also provided several clarifying paragraphs about the O₃ monitoring network design.

Chapter 3 - Adequacy of the Current Primary Standard

In Chapter 3, several changes were made in response to specific technical and editorial comments, including the following:

- Updated risk analyses in the HREA were incorporated into figures and text in sections 3.2.3.2 and 4.4.2.3 of the PA, including consideration of threshold models for respiratory mortality associated with long-term O₃ exposure. Compared with other exposure and risk estimates, the final PA places less emphasis on risk estimates for respiratory mortality. This is consistent with the HREA conclusion that lower confidence should be placed in the results of the assessment of respiratory mortality risks, primarily because that analysis is based on only one study (even though that study is well-designed) and because of the uncertainty in that study about the existence and level of a potential threshold in the concentration-response function (HREA, section 9.6).
- The discussion of mode-of-action is more clearly communicated and is now part of Chapter 3, rather than in the Appendix.

Chapter 4 - Consideration of Alternative Primary Standards

Suggestions for improving this chapter were relatively minor, including better labeling, annotation, and discussion of tables and figures, such as Figure 4-13, and adding sub-headings for the consideration of 70, 65, and 60 ppb standard levels. The suggested changes were made. As in Chapter 3, updated risk analyses in the HREA were incorporated into figures and text in section 4.4.2.3 of the PA.

Chapter 5 (Adequacy of the Secondary Standard)

Changes made to Chapter 5 since the second draft PA include the following:

- The phrase “Concentration-Response” was changed to “Exposure-Response” throughout the PA.
- The emphasis on the cottonwood growth response data was reduced based on CASAC comments on the study’s lack of control for O₃ and climate conditions.
- Additional county-level analyses were included for relative biomass loss to provide insight into the spatial extent and degree of impact of O₃ exposure to individual tree seedlings, as well as median tree seedling response, when meeting the current standard and several alternative W126 air quality scenarios.
- Further emphasized that the National Crop Loss Assessment Network (NCLAN) studies covered multiple locations in the U.S. and multiple crops, along with multiple O₃ exposure levels, using consistent methods.

- Additional information was added on W126 exposure levels and studied species in Class I areas during periods that meet the current standard to address potential growth effects potentially allowed by the current standard.

Chapter 6 (Consideration of the Potential Alternative Secondary Standards)

Changes made to Chapter 6 since the second draft PA include the following:

- Additional staff consideration and discussion of the quantitative relationship between the three-year average of the highest three-month summations in each year to the highest three-month summation in the highest year, including consideration of variation of this relationship with the magnitude of O₃ concentrations.
- Revisions to tables and discussion in the chapter to place less emphasis on the growth response data for the cottonwood.
- Provided additional discussion and comparisons of various W126 levels with regard to estimates of median relative biomass loss, based on the CASAC comment that a 6% median tree species relative biomass loss was unacceptably high. Consideration of this further analysis is reflected in staff conclusions regarding potential alternative standards appropriate for the Administrator to consider.
- Provided further discussion of the potential for improved public welfare protection for a W126-based secondary standard with a 3-year average form as compared to a single-year form.

Please accept my gratitude for the advice the CASAC O₃ Review Panel has provided throughout our review of the O₃ NAAQS. We greatly appreciate the Panel's time and dedicated effort, which have been instrumental in helping us improve the quality of the final PA. I look forward to continuing our productive relationship. Should you have any questions regarding the final PA, please contact please contact me (919-541-3889; email - sasser.erika@epa.gov) or Ms. Susan Lyon Stone (919-541-1146; email - stone.susan@epa.gov).

cc: Christopher Zarba, SAB, OA
 Holly Stallworth, SAB, OA
 Kimber Scavo, OAQPS/HEID
 Karen Wesson, OAQPS/HEID
 Bryan Hubbell, OAQPS/HEID
 Darcie Smith, OAQPS/HEID
 Susan Lyon Stone, OAQPS/HEID
 Chet Wayland, OAQPS/AQAD
 James Hemby, OAQPS/AQAD
 Tyler Fox, OAQPS/AQAD
 Liz Naess, OAQPS/AQAD
 John Vandenberg, ORD/NCEA-RTP
 Steven Dutton, ORD/NCEA-RTP