



MEMORANDUM

August 6, 2018

SUBJECT: CASAC Review of the document titled *Review of the Secondary Standards for Ecological Effects of Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter: Risk and Exposure Assessment Planning Document*

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

TO: Thomas Armitage, Designated Federal Officer
Clean Air Scientific Advisory Committee
EPA Science Advisory Board Staff Office

Attached is the document titled *Review of the Secondary Standards for Ecological Effects of Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter: Risk and Exposure Assessment Planning Document* (REA Planning Document) prepared by the Environmental Protection Agency's (EPA) Office of Air Quality Planning and Standards (OAQPS) staff as part of EPA's ongoing review of the secondary (welfare-based) national ambient air quality standards (NAAQS) for oxides of nitrogen, oxides of sulfur and particulate matter. The REA Planning Document will be subject to a consultation with the Clean Air Scientific Advisory Committee (CASAC) Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter Secondary NAAQS Review Panel (the Panel) at a public meeting to be held in Durham, NC on September 5-6, 2018. I am requesting that you forward this document to the Panel to prepare for the September meeting.

The REA Planning Document is being made available to the Panel in the form of the attached electronic file. The document will also be available from the EPA website at <https://www.epa.gov/naaqs/nitrogen-dioxide-no2-and-sulfur-dioxide-so2-secondary-standards-planning-documents-current>. Printed copies of this document can be sent to the Panel members via US mail upon request. Suggested focus areas for the Panel's consideration of the REA Planning Document are identified in the attachment.

We look forward to discussing the REA Planning Document with the CASAC Panel at our upcoming meeting. Should you have any questions regarding the planning document, please contact me (919-541-3889; email sasser.erika@epa.gov) or Ms. Ginger Tennant on my staff (919-541-4072; email tennant.ginger@epa.gov).

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Attachment: Areas on which EPA requests the CASAC Review Panel focus their consultation of the *Review of the Secondary Standards for Ecological Effects of Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter: Risk and Exposure Assessment Planning Document*

Attachment

Areas on which EPA requests the CASAC Review Panel focus their consultation of the *Review of the Secondary Standards for Ecological Effects of Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter: Risk and Exposure Assessment Planning Document*

Overall Analytical Approach:

1. The introductory and background information and, in particular, the conceptual model and key technical issues. [Chapter 1]
2. As the context for the quantitative assessments described in Chapter 4, the identification of limitations and/or uncertainties related to ecological risk and exposure as assessed in the previous NAAQS reviews and the extent to which they may be addressed by currently available information, tools and methods, thus supporting a conclusion that new or updated assessments of risk and exposure may be warranted to provide estimates with appreciably reduced uncertainty to inform decisions in the current review regarding the adequacy of the existing standards in protecting public welfare from adverse effects, and, as appropriate, similar consideration of potential alternatives. [Chapters 2 and 3]
3. The overall analytical approach for the Risk and Exposure Assessment (REA) and its appropriateness for linking ambient concentrations, atmospheric deposition and ecological effects of interest. [Section 4.1]
4. The proposed criteria and approach for selecting case study areas to evaluate potential risks and exposures in freshwater and terrestrial ecosystems. [Section 4.4]

Ambient Air Quality Analyses:

1. The approach for the assessment of atmospheric deposition to rely on measurements of atmospheric concentration and deposition where available, and chemical transport model simulations to provide data for chemical species and locations where measurements are either not available or limited. [Section 4.2]
2. The approach described to develop a spatially complete set of annual average deposition across the continental US for 2014-2016, as well as the proposed method of analyzing potential error and uncertainty. [Sections 4.2.1 and 4.5.1]
3. The approach for using statistical models to estimate deposition response factors that relate a change in ambient concentration to a change in atmospheric deposition, to be used for adjusting air quality in study area locations, and for quantitatively assessing the uncertainty and variability in the adjusted air quality and deposition in various study locations. [Sections 4.2.2 and 4.5.1]

Ecological Risk Assessment:

1. The overall approach for quantitatively evaluating ecological effects of atmospheric deposition on acidification and nitrogen enrichment of freshwater and terrestrial ecosystems using critical loads and exposure-response curves. [Section 4.3]
2. The refinement of freshwater critical loads developed in the last review to include new scientific evidence on ANC levels and ecological effects. [Section 4.3.1]

3. The use of different base cation aluminum (Bc:Al) levels for purposes of deriving forest soil acidification critical loads, in particular, using Bc:Al ratios of 1, 10, or a range of values. [Section 4.3.2.1]
4. The use of the exposure-response functions to evaluate acidification and nitrogen enrichment effects on individual tree species and communities in case study areas. [Section 4.3.2.2]
5. The approach for assessing variability/co-variability and characterizing uncertainty in the assessment of ecological effects of atmospheric deposition on acidification and nitrogen enrichment of freshwater and terrestrial ecosystems using critical loads and exposure-response curves. [Sections 4.3, 4.5.2 and 4.5.3]