



MEMORANDUM

May 4, 2015

SUBJECT: CASAC Review of the document titled *Review of the Primary National Ambient Air Quality Standards for Nitrogen Dioxide: Risk and Exposure Assessment Planning Document*

FROM: Erika N. Sasser, Director
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TO: Aaron Yeow, Designated Federal Officer
Clean Air Scientific Advisory Committee
EPA Science Advisory Board Staff Office
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Attached is the document titled *Review of the Primary National Ambient Air Quality Standards for Nitrogen Dioxide: 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 primary (health-based) national ambient air quality standards (NAAQS) for NO₂. The REA Planning Document will be reviewed by the Clean Air Scientific Advisory Committee (CASAC) Oxides of Nitrogen Primary NAAQS Review Panel (the Panel) at a public meeting to be held in Raleigh, NC on June 2-3, 2015. I am requesting that you forward this document to the Panel to prepare for the June meeting.

The REA Planning Document is being made available to the Panel in the form of the attached electronic file. The document is also available from the EPA website at http://www.epa.gov/ttn/naaqs/standards/nox/s_nox_2012_pd.html. Printed copies of this document can be sent to the Panel members via US mail upon request. Suggested focus areas for the Panel's review 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 Dr. Scott Jenkins on my staff (919-541-1167; email jenkins.scott@epa.gov).

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Attachment:

Charge to the CASAC Oxides of Nitrogen Primary NAAQS Review Panel

Attachment

Charge to the CASAC Oxides of Nitrogen Primary NAAQS Review Panel

The REA Planning Document includes four substantive chapters, followed by a chapter that summarizes staff's preliminary conclusions and presents next steps in the current review. Charge questions for chapters 1 through 4 for the Panel's consideration are presented below.

Chapter 1 – Introduction

1. Chapter 1 provides introductory and background information to provide perspective on the role of the REA planning document within the broader context of the review of the primary NO₂ NAAQS. To what extent is the information in this chapter appropriate for this purpose and clearly communicated?
2. Section 1.3 outlines the approach to informing staff's preliminary conclusions on the extent to which updated quantitative analyses are supported in the current review. Key components of this approach include consideration of the available health evidence; consideration of the available technical information, tools, and methods; and judgments as to the likelihood for particular quantitative analyses to provide substantial insights into NO₂ exposures or health risks, beyond the insights gained from the analyses conducted in the last review. What are the Panel's views on this approach to considering support for updated quantitative analyses?

Chapter 2 – Air Quality and Health Benchmark Comparisons

1. Section 2.1 provides an overview of the NO₂ air quality characterization and health effect benchmark comparisons from the last review of the primary NO₂ NAAQS. To what extent is the information in this section clearly presented, and to what extent does it provide useful context for the subsequent discussions in Chapter 2?
2. Section 2.2 provides an overview of the information available in the current review that could inform updated analyses comparing NO₂ air quality and health effect benchmarks. Section 2.2.1 discusses the data available to inform the characterization of ambient NO₂ concentrations, including concentrations on and near roads. Section 2.2.2 provides an overview of the health information assessed in the 2nd draft ISA that could inform the identification of NO₂ health effect benchmarks in the current review.
 - a. To what extent does section 2.2.1 identify the most important and relevant information available to inform updated analyses of ambient NO₂ concentrations? What are the Panel's views on the extent to which this new information could reduce important uncertainties identified in the last review, particularly with regard to characterizing ambient NO₂ concentrations on or near roads?

- b. To what extent does section 2.2.2 appropriately characterize the health evidence from the 2nd draft ISA that could inform the identification of NO₂ health effect benchmarks in the current review?
3. Section 2.2.3 presents staff's preliminary conclusion that updated analyses comparing ambient NO₂ concentrations to health effect benchmarks are supported in the current review, with a particular focus on updating analyses of concentrations on and near roads. What are the Panel's views on this preliminary conclusion?
4. Section 2.3 describes the technical approach staff is proposing to use in the current review for updated analyses comparing NO₂ air quality to health effect benchmarks (section 2.3.1) and presents preliminary results for a single urban study area (section 2.3.2).
 - a. Section 2.3.1.1 identifies the NO₂ health effect benchmarks to be evaluated, based on the ISA's assessment of the evidence for NO₂-induced increases in airway responsiveness. What are the Panel's views on these benchmarks, and on the extent to which particular benchmarks should be emphasized?
 - b. Section 2.3.1.2 describes staff's planned approach for selecting urban study areas, based on consideration of diversity and availability of ambient monitoring data, representativeness of the highest measured daily maximum 1-hour concentrations, having large populations residing in the study area, and overall U.S. geographic coverage. What are the panel's views on these factors and their proposed use in selecting urban study areas?
 - c. Section 2.3.1.3.1 presents staff's planned approach to adjusting ambient NO₂ concentrations to just meet the existing primary NO₂ NAAQS, and any potential alternative standards judged appropriate. What are the Panel's views on this adjustment approach?
 - d. Section 2.3.1.3.2 presents staff's consideration of potential approaches to simulating NO₂ concentrations on roads in the selected study areas. To what extent does this section identify the most relevant evidence to inform our understanding of roadway NO₂ concentrations? What are the Panel's views on the various potential approaches to simulating NO₂ concentrations on roads?
 - e. Section 2.3.2 presents an illustrative example of the proposed approach for the air quality and health benchmark comparisons, using air quality data from the Philadelphia CBSA. To what extent does the Panel find the analyses and results to be clearly presented, informative, and appropriately characterized?

Chapter 3 – Exposure Assessment

1. Chapter 3 presents the proposed approach to reaching staff conclusions on support for an updated model-based assessment of human exposures in the current review. This proposed approach is based in large part on considering the implications of results from the air quality and health benchmark comparisons described in Chapter 2. What are the Panel's views on this proposed approach?
2. Chapter 3 also provides overviews of the exposure assessment conducted in the last review (section 3.1) and the new information that could potentially inform an updated exposure assessment in the current review, should one be judged appropriate (section 3.2). To what extent does the Panel find this information to be clearly presented and appropriately characterized? Is there additional new information that staff should consider?

Chapter 4 – Human Health Risk Assessment

1. Section 4.1 presents staff's preliminary conclusion that a quantitative risk assessment based on information from controlled human exposure studies is not supported by the evidence available in the current review. What are the Panel's views regarding this preliminary conclusion?
2. Section 4.2 discusses the extent to which the available evidence and information could support an updated quantitative risk assessment based on information from epidemiology studies. Section 4.2.1 provides an overview of the epidemiology-based risk assessment from the last review. Section 4.2.2 presents staff's consideration of the newly available evidence in the current review.
 - a. Section 4.2.2.1 presents the basis for staff's preliminary conclusions that (1) an updated epidemiology-based risk assessment estimating respiratory-related endpoints attributable to short-term NO₂ exposures would be subject to uncertainties that are essentially the same as those identified in the 2008 REA and (2) an updated epidemiology-based risk assessment in the current review would be unlikely to substantially improve our understanding of NO₂-attributable health risks, or increase our confidence in risk estimates, beyond the assessment from the last review. What are the Panel's views on these preliminary conclusions?
 - b. Section 4.2.2.2 presents staff's preliminary conclusions that (1) a risk assessment quantifying the development of asthma attributable to long-term NO₂ exposures would be subject to considerable uncertainty due to the inability to distinguish the contributions of NO₂ from the contributions of other highly correlated pollutants and (2) that such a risk assessment would be of limited value in informing decisions in the current review. What are the Panel's views on these preliminary conclusions?

Overarching: Does the Panel have additional views or advice regarding EPA's proposed approaches to considering and developing quantitative analyses in the current review of the primary NO₂ NAAQS?