

**Summary Minutes of the  
U.S. Environmental Protection Agency Science Advisory Board  
Clean Air Scientific Advisory Committee (CASAC)  
Secondary NAAQS Review Panel for Oxides of Nitrogen and Sulfur  
Public Teleconference  
August 31, 2017**

**Date and Time:** Thursday, August 31, 2017, 1:00 – 5:00 p.m.

**Location:** By teleconference

**Purpose:** To discuss the CASAC draft review of *EPA's Integrated Science Assessment for Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter – Ecological Criteria (First External Review Draft – February 2017)*.

**Participants:**

Members of the U.S. Environmental Protection Agency Chartered Clean Air Scientific Advisory Committee (CASAC) and the Secondary NAAQS Review Panel for Oxides of Nitrogen and Sulfur

*Panel members:*

Dr. Ivan Fernandez  
Dr. Dr. Edith Allen  
Dr. Praveen Amar  
Dr. James Boyd  
Dr. Douglas Burns  
Ms. Lauraine Chestnut  
Dr. Charles Driscoll, Jr.  
Dr. Mark Fenn  
Dr. James Galloway  
Dr. Frank Gilliam  
Dr. Robert Howarth  
Dr. Donna Kenski  
Dr. William McDowell  
Dr. Erik Nelson  
Mr. Richard Poirot  
Dr. Armistead (Ted) Russell  
Dr. Stephen Schwartz  
Dr. Kathleen Weathers

*Chartered CASAC members:*

Dr. Ana Diez Roux  
Dr. Judith Chow  
Dr. Ivan Fernandez  
Dr. Jack Harkema  
Dr. Donna Kenski  
Dr. Elizabeth (Leanne) Sheppard  
Dr. Ronald Wyzga

*EPA Science Advisory Board (SAB) Staff:*

Thomas Armitage, Designated Federal Officer  
Aaron Yeow, Designated Federal Officer

*EPA Representatives:*

John Vandenberg  
Tara Greaver  
Jennifer Richmond-Bryant

*Other EPA Attendees:*

Elizabeth Chan  
Lou D'amico  
Steve Dutton  
Emmi Felter-Quinn  
Brian Heninger  
Jeff Herrick  
Cheryl Itkin  
James Kelly  
Meredith Lassiter  
Steve McDow  
Caroline Ridley  
Mary Ross  
Alan Talheim

*Other Attendees*

(List of others who requested access to the teleconference)

Jeff Burkett  
Mark deGarbolewski, W.L. Gore  
Marion Deerhake, RTI International  
John L. Jansen  
Eladio Knipping, Electric Power Research Institute  
Nathan Miller  
Brian Moore  
Georgia Murray, Appalachian Mountain Club  
Will Ollison, American Petroleum Institute  
Stuart Parker, IWP News  
Theresa Pugh, Theresa Pugh Consulting  
David Rostker, Small Business Administration  
Ted Steichen – API

## **Teleconference Summary:**

### **Convene the Teleconference**

Dr. Thomas Armitage, Designated Federal Officer (DFO) for the CASAC Panel, convened the teleconference at 1:00 p.m. Eastern Time. He identified Panel members and Chartered CASAC members who were on the call. He noted that the Panel and chartered CASAC were Federal Advisory Committees operating under the requirements of the Federal Advisory Committee Act (FACA). He stated that the CASAC was empowered by law, the Clean Air Act, to provide scientific and technical advice to the EPA Administrator on the technical bases for EPA's National Ambient Air Quality Standards. He noted the Panel's compliance with ethics requirements and stated that summary minutes of the teleconference would be prepared and posted on the CASAC website after they were certified by the Chair. Dr. Armitage indicated that teleconference materials were available on the CASAC web site. These materials included: the Federal Register Notice announcing the teleconference,<sup>1</sup> teleconference agenda,<sup>2</sup> Panel roster,<sup>3</sup> Chartered CASAC roster<sup>4</sup>, the Panel's draft (8-4-17) report to the EPA titled *CASAC Review of the EPA's Integrated Science Assessment for Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter – Ecological Criteria (First External Review Draft – February 2017)*,<sup>5</sup> a compilation of Panel member comments on the Panel's Draft (8-4-17) Report (as of 8-25-17),<sup>6</sup> and comments from Panel member Dr. Charles Driscoll on the Panel's draft report.<sup>7</sup> Dr. Armitage noted that time had been included on the agenda to hear oral public comments. He indicated that one person had requested time to speak but had withdrawn the request and would not be providing comments. Dr. Armitage also noted that no written public comments had been received. In addition, he indicated that public access to the teleconference had been provided through a conference line and live audio webcast. He asked members of the public listening to the webcast to send him an email at [armitage.thomas@epa.gov](mailto:armitage.thomas@epa.gov) to let him know that they were on-line.

### **Review of Agenda and Purpose of the Teleconference**

Dr. Ivan Fernandez, Chair of the CASAC Panel, reviewed the teleconference objectives. He noted that the purpose of the call was to discuss and reach agreement on any changes needed in the Panel's draft report. Dr. Fernandez indicated that, after the Panel discussed the draft report, the chartered CASAC would conduct a quality review to approve the report.

Dr. Fernandez noted that the Panel had held a meeting on May 24<sup>th</sup> and 25<sup>th</sup> to review EPA's draft Integrated Science Assessment and discuss responses to the Agency's 15 charge questions. Dr. Fernandez stated that, at the meeting, the Panel had identified key points to be included in the draft report; after the meeting, lead writers and subgroups assigned to each question had developed written responses that were incorporated into the draft report.

Dr. Fernandez indicated that on the call he wanted the Panel to discuss each section of the draft report. He asked Panel members to focus the discussion on points that may: (1) lack consensus, (2) be inaccurate or problematic, (3) need additional explanation or context, or (4) need to be added to the report.

Dr. Fernandez reviewed the teleconference agenda. He noted that members would first hear remarks from EPA. He indicated that, following EPA remarks, time had been reserved to hear oral public comments but no speakers had requested time to present comments (one request to speak had been received but withdrawn). Dr. Fernandez also indicated that, following oral public comments, the Panel would discuss its draft report. He noted that the draft report contained: (1) a letter to the EPA

Administrator summarizing key points. (2) consensus responses to the charge questions, (3) an appendix containing individual comments from Panel members, and (4) an additional short appendix containing some editorial comments and technical corrections. Dr. Fernandez said that on the call the panel would first discuss the consensus response to the charge questions and then the letter to the Administrator. He asked members to send any additional corrections needed in their individual comments to the Designated Federal Officer.

Dr. Fernandez stated that, following the Panel's discussion of the draft report, members would hear brief clarifying comments from EPA and the public and then Dr. Diez Roux, Chair of the chartered CASAC, and chartered CASAC members would conduct a quality review of the draft report. Dr. Fernandez noted that the quality review focused on four questions: (1) whether the charge questions were answered, (2) whether there were any technical errors or omissions in the report or issues that were inadequately addressed, (3) whether the report was clear and logical, and (4) whether the conclusions and recommendations of the Panel were supported. Dr. Fernandez asked Panel and chartered CASAC members if they had questions about the agenda. There were no questions so Dr. Fernandez asked Dr. John Vandenberg of EPA's Office of Research and Development to present EPA remarks.

### **Remarks from EPA**

Dr. John Vandenberg of EPA's Office of Research and Development presented EPA remarks. He noted that the draft ISA focused on the state of the science and, as such, was not intended to address some policy issues raised by the Panel. He noted that policy issues were to be addressed at a later point in the National Ambient Air Quality Standards review process. He also noted that the Panel's draft report discussed the need to address uncertainty, and he commented that an extensive quantitative uncertainty analysis was beyond the scope of the draft ISA. He commented that the Panel's draft report provided many recommendations. He remarked that it would be helpful if the Panel could indicate whether some of the work was suggested but not necessarily recommended. Dr. Vandenberg also commented on the Panel's recommendations concerning the need to address the effects of climate change. He noted that the EPA had included a chapter on climate change in the Draft ISA and commented on the complexity of addressing the effects of climate change in every chapter of the draft ISA. Dr. Vandenberg also commented on the Panel's recommendations concerning ecosystem services analysis (ESA). He noted ESA was a research endeavor beyond the scope of the draft ISA.

Dr. Fernandez thanked Dr. Vandenberg for his remarks. Panel members agreed to consider whether some of the recommendations in the draft report should be characterized as suggestions.

### **Discussion of the Panel's Draft Report**

Dr. Fernandez noted that the Panel's draft report (dated August 4, 2017) had been sent to panel members and posted on the CASAC website. He indicated that a compilation of Panel member comments had also been sent to members and posted. He asked members to refer to the page and line numbers in the PDF versions of the draft report and compilation of comments. Dr. Fernandez indicated that some of the suggestions in the compilation of comments were clarifications and edits that may not need discussion.

#### *General comments*

The Panel discussed members' general comments on the draft report. Dr. Fernandez remarked that the Panel had indicated the priority of various issues by including them in report sections titled "general comments," "highlights," and "other comments." He suggested that it might be useful to move the text

in the sections titled “other comments” into an appendix. He also asked members to consider whether recommendations should be identified as suggestions and vice versa. Members discussed this issue and agreed that the “other comments” could be moved into an appendix.

#### *Discussion of the responses to Charge Questions 1 and 2*

The Panel discussed editorial changes in the responses to Charge Questions 1 and 2. These included incorporating a change to indicate that parts of the report referred to uncertainties in the scientific literature and incorporating other edits suggested in the compilation of comments.

A Panel member noted that the Panel had recommended that EPA consider developing a National Ambient Air Quality Standard (NAAQS) for ammonia. He commented that the CASAC should not recommend a stand-alone NAAQS for ammonia, but should recommend that the EPA consider developing a NAAQS for total reactive nitrogen. Panel members discussed this issue and agreed that the EPA should consider the need for developing NAAQS that encompassed reduced forms of nitrogen.

A member noted that the Panel had called for reviewing scientific aspects of specific models and approaches that would be used in analyses to develop the risk and exposure assessment and policy assessment. The Panel discussed whether it would be worthwhile to more explicitly identify the aspects of specific models that should be reviewed. Members decided not to revise the report text.

A panelist noted that the report called for differentiating between what may be called a scientist’s critical load and a policy maker’s critical load. He suggested that definitions of these critical loads be included in the report. Other members agreed. A member commented that the scientist’s critical load was the level of exposure to pollutants below which significant harmful effects on specified sensitive elements of the environment did not occur. He noted that the policy-maker’s critical load was the acceptable pollution load agreed upon by policy makers or land managers. Dr. Fernandez asked a Panel member to develop revised text to clarify this point.

The Panel discussed and agreed to change a number of “recommendations” to “suggestions” in the responses to Charge Questions 1 and 2.

A Chartered CASAC member suggested that a recommendation concerning quantitative estimates of uncertainties be revised to recommend that the EPA provide quantitative estimates of the magnitude of uncertainties. Panel members did not object to the proposed change but a member noted that the text referencing the report of the Intergovernmental Panel on Climate Change should be retained in the report. The Chair of the Panel asked the Chartered CASAC member to provide the specific text incorporating the revision.

A member noted that the report referred to transportation sources of ammonia. The member commented that ammonia emissions from agriculture were larger than transportation sources of ammonia. Another member commented that he did not want to downplay the importance of ammonia emission from agriculture but he noted that ammonia emission from transportation was increasing. Dr. Fernandez indicated that he would work with the members who commented to develop revised text to addressing their comments.

Members commented that the report text calling for a more straightforward discussion of the inadequacy of the NO<sub>2</sub> federal reference method was not clear. Members discussed and agreed upon a clarifying revision.

Members discussed the need to clarify text concerning the limitations of current monitoring networks. Members agreed that the report should call for a discussion of the limitations of monitoring networks to support the current review of secondary effects, particularly for more polluted sites, and/or the evaluation of various secondary NAAQS that may be considered.

A member commented that the term “reactive nitrogen” had been used in the Panel’s draft report. He recommended that a definition of reactive nitrogen be included. Panel members agreed and the Chair asked the member who raised the issue to provide a definition.

#### *Discussion of responses to Charge Questions 3 - 12*

The panel agreed upon a number of editorial changes in the responses to Charge Questions 3-12 and also agreed to change some recommendations to suggestions and vice versa.

A member suggested that additional citations be included in the report to provide information on ammonia fumigation effects on plants. The member provided references to be included.

Members discussed the need to clarify the critique of using soil Ca:Al ratio as an indicator of vegetation effects. Dr. Fernandez indicated that he would incorporate a revision to clarify this text.

A member commented that some recommendations in the report were supported with references to unpublished literature. He suggested that references to unpublished literature be removed. Other panel members agreed and the Chair indicated that these references would be removed.

A member commented that the term  $\text{NH}_y$  was used in the report but had not been defined. Members agreed this term should be defined as total reduced nitrogen.

#### *Discussion of responses to Charge Questions 13*

The Panel discussed the response to Charge Question 13. A member observed that the report called for consideration of whether the discussion of climate change effects should be integrated into other chapters of the draft ISA or organized at the end of the document as a separate chapter. The member commented that the emerging literature on the effect of climate change on ecosystem effects was important and robust enough to recommend that EPA discuss climate effects in the body of each of the effects chapters. The member also suggested that the current climate effects chapter in the draft ISA be retained (with a focus on integrating/synthesizing the climate effects addressed in all of the previous chapters). The Panel discussed this suggestion and agreed that it should be incorporated into the report as a recommendation.

#### *Discussion of the responses to Charge Question 14*

The Panel discussed the response to Charge Question 14. A member suggested inclusion of revised text concerning the definition ecosystem services. Members discussed and agreed with the proposed change.

A member provided additional references to be included in the response to the charge question.

The Panel discussed revising a recommendation concerning the discussion of ecosystem services analysis. A member commented that the report could call for a discussion of how ecosystem services

analysis can be used to help make the Clean Air Act public welfare determination. Dr. Fernandez asked a member to develop revised text to incorporate the change.

#### *Discussion of the response to Charge Question 15*

The Panel discussed the response to Charge Question 15. Several editorial comments were provided. A member suggested adding a reference.

#### *Letter to the EPA Administrator*

The Panel discussed the draft letter to the EPA Administrator. Members agreed to incorporate a number of editorial changes. A member suggested that the letter clearly indicate that recommendations in the letter were addressed in more detail in the main body of the report. Members discussed other changes in the letter to make it consistent with changes in parts of the report.

The Panel again discussed whether to recommend that EPA consider developing a NAAQS for total reactive nitrogen. Members agreed to recommend that the EPA consider the need for developing National Ambient Air Quality Standards that encompass reduced forms of nitrogen.

#### **Clarifying Comments from EPA Staff and Members of the Public**

Dr. Fernandez thanked Panel members for their comments and called for brief clarifying comments from EPA staff and members of the public. There were no clarifying comments offered.

#### *Discussion of the recommendations in the draft report*

A member commented that the Panel had not had thoroughly considered whether some “recommendations” in the report should instead be called “suggestions.” The Chair agreed that this should be discussed and asked Panel members to take a short break to individually consider whether any of the “recommendations” should be changed to “suggestions.” Following the break, the Panel reviewed each section of the draft report and agreed to change some of the “recommendations” to “suggestions” and vice versa.

Dr. Fernandez thanked Panel members for their work. He noted that the DFO, Dr. Armitage, would send an email to the Panel listing follow-up assignments that had been discussed. He asked members to send assigned revisions to the DFO by Thursday, September 7<sup>th</sup>. He then turned the call over to Dr. Ana Diez Roux, Chair of the Chartered CASAC to discuss disposition of the report.

#### **Disposition of the Draft ISA Report by the Chartered CASAC**

Dr. Diez Roux asked the Chartered CASAC members to state whether they would approve the report with the changes that had been discussed. All Chartered CASAC members approved the report with the changes discussed.

#### **Summary and Next Steps**

Dr. Fernandez thanked Dr. Diez Roux. He indicated that revisions would be incorporated into the report and it would be sent to Panel and Chartered CASAC members for final review to ensure that revisions reflected the discussion on the teleconference. He noted that the report would then be transmitted to the

EPA Administrator. Dr. Armitage thanked Panel and Chartered CASAC members for their work and adjourned the teleconference.

Respectfully Submitted:

Certified as Accurate:

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Dr. Thomas Armitage  
Designated Federal Officer

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Dr. Ana Diez Roux, Chair  
CASAC

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Dr. Ivan Fernandez, Chair  
CASAC Secondary NAAQS Review  
Panel for Oxides of Nitrogen and Sulfur

NOTE AND DISCLAIMER: The minutes of this public meeting reflect diverse ideas and suggestions offered by Panel members during the course of deliberations within the meeting. Such ideas, suggestions and deliberations do not necessarily reflect consensus advice from Panel members. The reader is cautioned to not rely on the minutes to represent final, approved, consensus advice and recommendations offered to the Agency. Such advice and recommendations may be found in the final advisories, commentaries, letters or reports prepared and transmitted to the EPA Administrator following the public meetings.

## Materials Cited

The following meeting materials are available on the CASAC website, [www.epa.gov/casac](http://www.epa.gov/casac), on the August 31, 2017 meeting page of the CASAC Secondary NAAQS Review Panel for Oxides of Nitrogen and Sulfur.

<https://yosemite.epa.gov/sab/sabproduct.nsf/MeetingCal/F4199EBFD3BE5EB48525815D0071BBCA?OpenDocument>

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<sup>1</sup> Federal Register Notice

<sup>2</sup> Agenda

<sup>3</sup> Panel Roster

<sup>4</sup> Chartered CASAC Roster

<sup>5</sup> CASAC Review of the EPA's Integrated Science Assessment for Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter – Ecological Criteria (First External Review Draft – February 2017)

<sup>6</sup> Compilation of Comments from Members of the CASAC Secondary NAAQS Review Panel for Oxides of Nitrogen and Sulfur on the Panel's Draft (8-4-17) Report (As of 8-25-17)

<sup>7</sup> Comments from Dr. Charles Driscoll on the Panel's Draft (8-4-17) Report