

**Summary Minutes of the Clean Air Scientific Advisory Committee (CASAC)
NO_x and SO_x Secondary NAAQS Review Panel
Public Meeting on April 1-2, 2010
Marriott at Research Triangle Park, NC**

Panel Members:

Dr. Armistead (Ted) Russell, Chair
Dr. Praveen Amar
Dr. Andrzej Bytnerowicz (by phone)
Ms. Lauraine Chestnut
Dr. Ellis B. Cowling
Dr. Charles T. Driscoll, Jr.
Dr. Paul J. Hanson
Dr. Rudolf Husar
Dr. Dale Johnson (by phone)
Dr. Naresh Kumar
Dr. Myron Mitchell
Mr. Richard L. Poirot
Dr. Kathleen Weathers (by phone)

Unable to Attend:

Dr. H. Christopher Frey
Dr. Donna Kenski
Mr. David J. Shaw

SAB Staff:

Ms. Kyndall Barry
Dr. Vanessa Vu

EPA Staff:

Jeffrey Arnold, Tara Greaver Brooke Gray, Dave Guinnup, James Hemby, Jeffrey Herrick, Bryan Hubbell, Amy Lamson, Meredith Lassiter, Lingli Liu, Jason Lynch, Karen Martin, Sarah Mazur, Connie Meacham, Kristopher Novak, Norm Possiel, Elyse Procopio, Anne Rea, Adam Reff, Mary Ross, Rich Scheffe, Steve Silverman, Ginger Tennant, Randy Waite, Lydia Wegman

Public Participants:

Pat Brewer, NPS ; Jamie Cajka, RTI; William Cooter, RTI; Michele Cutrofello, RTI; Marion Deerpake, RTI; John Jamson, Southern Company; Cindy Langworthy, Hunton & Williams; Ona Papageorgiou, NYSDEC; Jennifer Phelan, RTI ; Emily Simone, RTI

Purpose:

To conduct a peer review of EPA's *Policy Assessment (PA) for Review of the Secondary NAAQS for NO_x & SO_x: Second Draft (EPA-452/P-10-006)*.

Attachments:

The meeting agenda, charge questions, presentations, public comments and preliminary review comments from the panel members may be found on the meeting website:

<http://yosemite.epa.gov/sab/sabproduct.nsf/MeetingCal/F21CC614CA2AA048852576CF00534B0E?OpenDocument>.

Meeting Summary

The discussion followed the issues and general timing as presented in the agenda posted at the above-stated URL.

Thursday, April 1, 2010

Ms. Kyndall Barry convened the meeting and explained that the CASAC NO_x & SO_x Secondary Review Panel will operate under the Federal Advisory Committee Act (FACA). She also announced that there would be a conference call on May 3, 2010, for the CASAC to review and approve the Panel's letter to the EPA Administrator concerning the PA document. Dr. Vanessa Vu thanked the Panel for their hard work and EPA staff and members of the public for attending the meeting. She also thanked members of the Science Advisory Board's Integrated Nitrogen Committee (INC) for their participation and forthcoming presentation of draft recommendations for an integrated strategy to address total reactive nitrogen. Dr. Armistead (Ted) Russell commended EPA staff on the preparation of a PA, which targets ecological effects across media due to NH_x, NO_x and SO_x deposition. Dr. Russell then reviewed the agenda, stated the purpose of the Panel's meeting was to develop a consensus report of advice and recommendations to the Agency, and the Panel was introduced.

Ms. Lydia Wegman of EPA's Office of Air and Radiation (OAR) introduced the EPA team and thanked the CASAC Panel for their service to the Agency. She further explained that following the Panel's July 2009 meeting, settlement negotiations with the Citizens for Biodiversity resumed and agreement was reached to allow the Agency more time to complete the review of the secondary NAAQS for NO_x and SO_x. Ms. Wegman thanked CASAC for their role in supporting the Agency's need for additional time to complete the analyses necessary to support the development of an ecologically-relevant, multi-pollutant standard. In her portion of the presentation entitled, "Updated Schedule and Overview of the first Draft Policy Assessment," Ms. Wegman pointed out the key dates in the timetable for the NO_x/SO_x secondary NAAQS review per the court order: the second draft PA will be published late July 2010, with a CASAC review in mid-September; 12 July 2011 for the signing of the proposed rule; and a final rule on 20 March 2012.

Drs. Bryan Hubbell, Tara Greaver and Rich Sheffe then walked the Panel through portions of the conceptual model of proposed secondary standard, focusing on the variables in EPA's Atmospheric Acidification Potential Index (AAPI) and an aquatic acidification example in the Adirondacks. The atmospheric indicators in the AAPI are total reactive oxidize nitrogen, NO_y, and the sulfur components, SO₂ and particulate sulfate. Dr. Hubbell concluded the presentation by discussing the Agency's plans to improve upon the current PA, which included: expanded discussion of uncertainty; expansion to other endpoints, terrestrial acidification and as time permits nutrient enrichment; inclusion of a Western U.S. case study; and the incorporating NH_x into the AAPI.

The Panel engaged EPA staff in discussions of the size and designation of acid sensitive ecosystem areas, clarity in depiction of protection and levels of protection in lakes; the impact of using steady-state models; and time scale of the proposed standard. Some Panelists expressed concern at the exclusion of organic acids in the G term, which influence background ANC. Two points were raised that the current PA doesn't at all begin to explore the inherent assumptions made by using steady-state models to represent ecosystems, which are in reality dynamic systems, and potential bias in the sensitivity analysis of terrestrial versus aquatic systems. One panelist suggested the Agency undertake a parallel effort to evaluate the dynamic models to help identify (and quantify) the steady-state assumptions of the AAPI.

During the public comment period, Ms. Pat Brewer presented comments on behalf of the National Park Service. The NPS supports the Agency's efforts to develop ecologically relevant secondary standards and

recognizes the inherent complexity to define the relationship between concentration and deposition. She cautioned the Agency to be clear that the standard may not be protective of N-limited systems, like the alpine lakes in the western U.S. Ms. Brewer offered the following suggestions for revising the PA: inclusion of coastal estuaries; selection of the high end sensitivity for ANC, as it may be most protective; selection of an annual standard that would allow for episodic and seasonal variability; and inclusion of reduced nitrogen.

Drs. Otto Doering and Russell Dickerson provided a status update on the recommendations of the SAB Integrated Nitrogen Committee (INC). The INC has developed a broad range of recommendations for the Agency. INC has determined that NO₂ is only a small part of the total NO_x problem as it pertains to ecological effects. Dr. Dickerson noted that the monitors currently do not measure NO₂ specifically; positive interference is used to determine compliance with the NAAQS. He offered some specific, cost-effective ways to reconfigure the current NO_x monitors to detect NO_y. Dr. Doering and Dr. Dickerson discussed other, more general recommendations of the INC and noted that the INC report would be completed in the near future. There were also discussions of a future meeting of the Ambient Air Monitoring & Methods Subcommittee to address the monitoring issues of a proposed multi-pollutant welfare standard based on NO_x and NO_y rather than NO₂.

Following the status-update from the INC, the Panel turned to its charge to review the PA. Discussions followed the general timing of the agenda. Panelists voiced support for the Agency-derived AAPI equation for the integration of aquatic acidification effects due to NO_x and SO_x deposition. The unevenness of referencing and citations, erroneous use of significant figures, and the need for better labeling of figures were the focus of the Panel's discussions of the Executive Summary and Chapter 2. It was also noted that editorial work was needed throughout the PAD, as well as a close look at consistent use of terminology, specifically total reactive nitrogen, throughout the document. The Panel offered many suggestions to strengthen the characterization of adversity and the description of ecosystem services in Chapter 3. Specific recommendations included an improved description of critical loads, discussion on the beneficial aspects of N-deposition on N-limited ecosystems, and the positive impact of N-deposition on timber production.

In reference to the Agency's assessment of the adequacy of the current secondary standards, the Panel agreed that the Agency presented a good argument that none of aspects of the current standards are ecologically-relevant. Despite the fact that they have been attained, sensitive ecosystems continue to be adversely impacted at current rates of NO_x and SO_x deposition. There was a strong consensus voice of concern for the over-dependence on CMAQ model outputs throughout the PA. Panelists engaged EPA staff in discussions of ways to assess the vulnerabilities in the current approach and strengthen the supporting assessments in the next draft. Comparisons of CMAQ output with other measurements, like NADP wet deposition and CASTNET deposition, an attempt to capture the time-scale for ecosystem recovery in the AAPI, and preference for equivalence per m³ were all main points of the discussion.

Following the lunch break, the afternoon session focused on the remaining chapters in the PA. Panelists reiterated the need to develop a true uncertainty assessment of the AAPI and CMAQ utilization in the next draft. The Panel noted that for the certain variables the discussion may be more qualitative than others, but certainly there were variables for which the magnitude and distribution could be quantified. There was agreement that the approach for terrestrial ecosystem acidification was good, very much in sync with the critical loads approach in the European Union. Panelists also commented that they had increased confidence that the AAPI accounted for the terrestrial system because the real-time atmospheric deposition likely would not measurably affect ANC. The paucity of biological monitoring data of soils and the subsequent constraints on the nutrient enrichment assessment reinforced the Panel's thoughts that additional monitoring will be needed to demonstrate compliance with the AAPI.

Friday, April 2, 2010

Ms. Barry reconvened the meeting of the CASAC NO_x and SO_x Secondary NAAQS Review Panel. The Panel devoted the second day to the discussion of draft responses to the charge questions. Panelists voiced support of the AAPI as a multi-pollutant standard to protect against adverse effects on sensitive ecosystems. Dr. Russell laid out the process by which the Panel's consensus report would be developed and the format of the report. The following issues recurred in the Panel's discussions of the consensus report: a strong endorsement for editing the PA to improve wording and clarity; improved definition of the variables in the AAPI equation; and the need for a more thorough evaluation of CMAQ's ability to model concentration and deposition fluxes. The Panel continued to have concerns with the Agency's over-reliance on steady-state models and strongly recommended the second draft include a separate chapter on uncertainty and model performance. Other points raised by the Panel called for balance in the presentation of deleterious and beneficial effects of N-deposition and the endorsement for the Agency to "get it done."

Respectfully Submitted:

/s/

Ms. Kyndall Barry
Designated Federal Officer

Certified as True:

/s/

Dr. Ted Russell, Chair
CASAC NO_x & SO_x Secondary
NAAQS Review Panel

NOTE AND DISCLAIMER: The minutes of this public meeting reflect diverse ideas and suggestions offered by committee members during the course of deliberations within the meeting. Such ideas, suggestions, and deliberations do not necessarily reflect definitive consensus advice from the 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.