U.S. Environmental Protection Agency
Clean Air Scientific Advisory Committee (CASAC)
NO_x & SO_x Secondary NAAQS Review Panel

Public Meeting: October 1-2, 2008

Marriott at Research Triangle Park, 4700 Guardian Drive, Durham, NC, 27703

Purpose: To conduct a peer review of the *Integrated Science Assessment for Oxides of Nitrogen and Sulfur – Environmental Criteria (Second External Review Draft)) (EPA/600/R-08/082)* accessible at http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=198220 , and to peer review the *Risk and Exposure Assessment for Review of the Secondary National Ambient Air Quality Standards for Oxides of Nitrogen and Oxides of Sulfur: First Draft (EPA-452/P-08-005a)* accessible at *http://www.epa.gov/ttn/naaqs/standards/no2so2sec/cr_rea.html*.

Wednesday, 1 October 2008

8:30 a.m.	Convene the meeting	Ms. Kyndall Barry, EPA SAB Staff Office, Designated Federal Officer
	Welcome and remarks	Dr. Anthony Maciorowski, Deputy Director, EPA SAB Staff Office
8:40 a.m.	Introduction of Members, Review Agenda	Dr. Ted Russell, Chair
8:55 a.m.	Background and Schedule for Review	Dr. Dave Guinnup EPA's Office of Air Quality Planning and Standards
9:10 a.m.	Highlights of 2nd Draft ISA and Agency Charge Questions (Attachment A)	Dr. Jeff Arnold Dr. Ila Cote Dr. Tara Greaver Dr. Jeff Herrick Dr. Kris Novak Dr. Mary Ross EPA's National Center for Environmental Assessment
9:30 a.m.	Public Comment Period	To be announced
9:45 a.m.	Response to ISA Charge Question 1	Ms. Lauraine Chestnut Dr. Douglas Crawford-Brown (by phone) Dr. Paul Hanson (by phone)
10:15 a.m.	Break	

10:30 a.m.	Response to ISA Charge Question 2	Mr. Rich Poirot Dr. Dale Johnson (by phone) Mr. David Shaw
11:15 p.m.	Response to ISA Charge Question 3	Dr. Donna Kenski Dr. Praveen Amar Dr. Naresh Kumar (by phone)
12:00 p.m.	Lunch	
1:00 p.m.	Response to ISA Charge Question 4	Dr. Ellis Cowling Dr. Andrzej Bytnerowicz Dr. Charles Driscoll Dr. Myron Mitchell
2:00 p.m.	Response to ISA Charge Question 5	Dr. Dale Johnson (by phone) Dr. Rudolf Husar Dr. Kathleen Weathers (by phone)
2:45 p.m.	Summary of Major Review Comments for 2nd Draft ISA	Dr. Ted Russell
3:15 p.m.	Break	
3:30 p.m.	Highlights of 1st Draft REA and Agency Charge Questions (Attachment B)	Dr. Dave Guinnup Dr. Bryan Hubbell Dr. Anne Rea EPA's Office of Air Quality Planning and Standards
4:30 p.m.	Adjourn Meeting (Writing Session)	Ms. Kyndall Barry

Thursday, 2 October 2008

8:00 a.m.	Reconvene the Panel Meeting	Ms. Kyndall Barry
8:05 a.m.	Public Comment Period	To be announced
8:20 a.m.	Discussion of Draft Responses to ISA Charge Questions	Dr. Russell and Panel
9:05 a.m.	REA Discussion -- Scope of the Review	Dr. Douglas Crawford-Brown (by phone) Ms. Lauraine Chestnut Dr. Paul Hanson (by phone) Mr. David Shaw
9:35 a.m.	REA Discussion -- Air Quality Analyses	Mr. Rich Poirot Dr. Praveen Amar Dr. Naresh Kumar (by phone) Mr. David Shaw

10:20 a.m.	Break	
10:35 a.m.	REA Discussion -- Case Study Analyses	Dr. Donna Kenski Dr. Ellis Cowling Dr. Andrzej Bytnerowicz Dr. Charles Driscoll Dr. Dale Johnson (by phone) Dr. Myron Mitchell Dr. Kathleen Weathers (by phone)
11:30 a.m.	REA Discussion -- Additional Effects	Dr. Rudolf Husar Dr. Paul Hanson (by phone) Dr. Dale Johnson (by phone) Dr. Myron Mitchell
12:00 p.m.	Lunch	
1:00 p.m.	REA Discussion -- Synthesis and Integration and Structure of the Standard	Dr. Paul Hanson (by phone) Dr. Ellis Cowling Dr. Dale Johnson (by phone)
2:00 p.m.	Writing period	All
2:30 p.m.	Discussion of Draft Responses to REA Charge Questions	Dr. Ted Russell
3:00 p.m.	Adjournment	Ms. Kyndall Barry

Attachment A: Agency ISA Charge Questions

1. We have added an executive summary of the major findings and conclusions to the second draft ISA. We have also created a "key findings" section that is intended to provide highlights of these conclusions. We are seeking CASAC panel advice and comments on these additions to the ISA. To what extent do they provide an appropriate level of detail and convey the important scientific conclusions of the assessment?

2. Chapter 1 has been revised to clarify the scope or focus of this assessment on effects related to the deposition of nitrogen and sulfur compounds. In addition, we have added a discussion of the framework for evaluation of causality for assessing ecological effects. Do these revisions adequately characterize the scope of the assessment? Does the CASAC panel have recommendations for revisions to the causality framework? Is it appropriately applied in the draft ISA?

3. Chapters 2 and 3 from the first draft have been combined. Substantially more information has been included on NH_3 emissions, NH_3 measurement techniques, NH_3 and NH_4^+ concentrations. Additionally, information on NOx and SOx including ambient concentrations, deposition levels and their spatial and temporal relationships has been added. Have these revisions to Chapter 2 improved its assessment of the currently available scientific knowledge on atmospheric sciences and its relevance to the evaluation of environmental effects presented in later chapters?

4. We removed or eliminated redundancy, added summary sections, added additional references and reorganized Chapter 3. Revisions to the ecological effects sections are given below. Have the revisions improved the characterization of the ecological effects?

    a. Consistent with CASAC comments, we expanded our characterization of the quantification of chemical effects of acidification in aquatic ecosystems, added new conceptual diagrams, and further discussed interactions between acidification and plant disease.

    b. We expanded the discussion of quantitative relationships between nitrogen deposition and ecological effects, including published critical loads in the U.S. and Europe. In addition, the nitrogen enrichment section was expanded to include new discussions on carbon budgeting, biogenic nitrous oxide and methane. Information on the linkages between effects and both reduced and oxidized forms of nitrogen was emphasized, to the extent data were available.

    c. The section on “other” welfare effects was updated to include information on the direct phytotoxic effects of nitric acid.

5. In revising the ISA, we have incorporated additional information on the indicators of exposure and ecological effects, including increased emphasis on quantified relationships in the presentation of information of results in tables and summary discussions in Chapter 4. What are the views of the CASAC panel on our revisions to focus on quantitative relationships between airborne nitrogen and sulfur compounds and ecological indicators?

Attachment B: Agency REA Charge Questions

Scope of the Review

1. Chapters 1 and 2 provide the background, history, and framework for this review, including a discussion of our focus on the four key ecological effect areas (aquatic acidification, terrestrial acidification, aquatic nutrient enrichment, terrestrial nutrient enrichment). Is this review appropriately focused in terms of characterizing the important atmospheric and ecologic variables that influence the deposition and, ultimately, the ecologic impacts of nitrogen and sulfur? Does the Panel have any further suggested refinements at this time?

Air Quality Analyses

1. To what extent are air quality characterizations and analyses presented in Chapter 3 technically sound, clearly communicated, appropriately characterized, and relevant to the review of the secondary NAAQS for NOx and SOx?

2. Section 3.2.1 describes an approach for evaluating the spatial and temporal patterns for nitrogen and sulfur deposition and associated ambient concentrations in the case study locations. This draft document includes the analysis for the Adirondacks case study. Does the Panel agree with this approach and should it be applied to the other Case Study Areas?

3. Section 3.2.2 describes the relative contributions of ambient emissions of nitrogen and ammonia to nitrogen deposition for the case study areas. To what extent is the approach taken technically sound, clearly communicated, and appropriately characterized?

Case Study Analyses

1. Attachment 2 presents a GIS analysis to define geographical areas that are sensitive to acidification and nutrient enrichment. Are the national geospatial data sets chosen adequate to identify sensitive areas? Are there other data sets that have not identified by this analysis that we should consider? Does the Panel agree with approach or can they suggest alternatives?

2. Attachment 3 presents our current progress on evaluating the effect of aquatic acidification in the Adirondacks. It describes the use of the MAGIC model to evaluate ANC levels in selected lakes and streams in the Adirondacks and Shenandoahs. To what extent is the approach taken technically sound, clearly communicated, and appropriately characterized?

3. Attachment 4 presents our current progress on evaluating the effect of terrestrial acidification. It outlines a plan to use the Simple Mass Balance Model to evaluate current deposition levels on forest soil ANC for sugar maple in the Kane Experimental Forest and red spruce in the Hubbard Brook Experimental Forest. To what extent is the approach taken technically sound, clearly communicated, and appropriately characterized?

4. Attachment 5 presents our current progress on evaluating the effect of aquatic nutrient enrichment. It outlines a plan to evaluate how changes in nitrogen deposition affect the eutrophication index in two estuaries: the Chesapeake Bay and Pamlico Sound. The analysis will model one stream reach (Potomac River and Neuse River) to determine the impact on the eutrophication index for the estuary. To what extent is the approach taken technically sound, clearly communicated, and appropriately characterized?

5. Attachment 6 presents our current progress on evaluating the effects of terrestrial nutrient enrichment. It describes an approach to evaluate the effects of nitrogen deposition on the Coast Sage Scrub community in California and in mixed conifer forests in the San Bernardino and Sierra Nevada Mountains. To what extent is the approach taken technically sound, clearly communicated, and appropriately characterized?

Additional Effects

1. In this chapter, we have presented results from some initial qualitative analyses for additional effects including the impact of sulfur deposition no mercury methylation, the impact of nitrous oxide on climate change, and the impact of nitrogen deposition on carbon sequestration. Are these effects sufficiently addressed in light of the focus of this review on the other targeted effects in terms of available date to analyze them?

Synthesis and Integration of the Case Study Results into the Standard Setting Process

1. The purpose of Chapter 7 is to summarize the Case Study results and characterize the relationship between levels of an ecological indicator and the associated degree of ecologically adverse effects. To what extent is this approach characterized at this point of the review? Does the Panel have any further suggested refinements at this time?

Considerations in the Structure of the NOx/SOx Secondary Standard

1. Chapter 8 begins to explore how a secondary NAAQS might be structured to address the targeted ecological effects discussed in the risk assessment. The next draft of this document will include one or more examples of how this structure might be used to relate specific levels of air quality indicators with a corresponding ecological indicator for a given location and/or scenario. To what extent is the described approach technically sound, clearly communicated and appropriately characterized at this point of the review? Does the Panel have any further suggested refinements at this time?