

**Minutes of the
U.S. Environmental Protection Agency
Clean Air Scientific Advisory Committee
Sulfur Oxides Primary NAAQS Review Panel
Public Meeting
July 30-31, 2008**

Committee Members: Dr. Rogene Henderson, Chair

Date and Time: July 30-31, 2008

Purpose: To discuss the second draft *Integrated Science Assessment for Sulfur Oxides – Health Criteria* (May 2008) and to discuss the *Risk and Exposure Assessment to Support the Review of the SO₂ Primary National Ambient Air Quality Standards: First Draft* (July 2008). Both of these review documents may be found at http://www.epa.gov/ttn/naaqs/standards/so2/s_so2_index.html.

SAB Staff: Dr. Holly Stallworth, Designated Federal Officer (DFO)
Dr. Tony Maciorowski, Deputy Director, Science Advisory Board Staff Office

Other EPA Staff: Michael Stewart
Harvey Richmond
Stephen Graham
Karen Martin
Lydia Wegman
James Brown
Dennis Kotchner
Debra Walsh
James Hemby
Allen Basala
William Wilson
John Langstaff
Amy Lamson
Beth Osterling
Doug Johns
Jee Young Kim
Barbara Buckley
Tom Luben
Christal Bowman
Jeff Arnold
Mary Ross
Sarah Mazur

Ellen Lorang
Ellen Kirrane
Lindsey Stanek
Connie Mechan
Tom Long
Erin Hines

Other:

Cara Frankenfeld, Exponent
Deborah Shprentz, American Lung Association
Bryan Baldwin, Southern Company
Cindy Langworthy, Hunton & Williams
David Heinold, ENSR
Arlene Rosenbaum, ICF International
Ellen Post, Abt Associates
Jim Huang, Abt Associates
Tim Savage, CRA
Ted Steichen, American Petroleum Institute

Presentations: All presentations may be found posted at <http://yosemite.epa.gov/sab/sabproduct.nsf/bf498bd32a1c7fdf85257242006dd6cb/da44325f1d9f4cf4852573ca005ff9fe!OpenDocument&Date=2008-07-30> (hereinafter, the meeting URL)

- Background and Schedule for Review of the Primary Sulfur Dioxide NAAQS.
- Integrated Science Assessment for Sulfur Oxides – Health Criteria (2nd External Review Draft)
- Overview of the First Draft Risk and Exposure Assessment for the SO₂ Primary NAAQS Review

Public Comments: All public comments may be found posted at the meeting URL.

- Comment from the American Lung Association, D. Shprentz.
- Comments from Dr. Cara Frankenfeld, representing the American Chemistry Council.
- Comments on Risk and Exposure Assessment to Support the Review of the SO₂ Primary National Ambient Air Quality Standards: First Draft, Prepared on behalf of UARG, by Dr. Timothy H. Savage.
- Presentation from the American Petroleum Institute, David Heinold.
- Public Comments from Julie E. Goodman, PhD, DABT, Gradient Corporation, Appearing on Behalf of the American Petroleum Institute (Slide Presentation).
- Comment from the American Petroleum Institute on the Risk and Exposure Assessment, David Heinold.

Charge Questions: All charge questions may be found posted at the meeting URL.

- Charge Questions on Integrated Science Assessment for Sulfur Dioxide (Second External Review Draft)
- Charge Questions on SO_x Risk and Exposure Assessment (First Draft).

Meeting Summary (July 30, 2008)

The discussion followed the issues and general timing as presented in the meeting agenda. Dr. Stallworth convened the meeting on Wednesday, July 30, 2008 and explained the CASAC Sulfur Oxides Primary NAAQS Review Panel will operate under the Federal Advisory Committee Act. Dr. Henderson reviewed the agenda.

Ms. Lydia Wegman of EPA's Office of Air Quality Planning and Standards (OAQPS) presented *Background and Schedule for Review of the Primary Sulfur Dioxide NAAQS*. Ms. Wegman walked panelists through the current National Ambient Air Quality Standards (NAAQS) review process via a flow chart and matrix of dates, both shown in the presentation, and summarized highlights from the previous assessment of sulfur dioxide (SO₂). Dr. Ila Cote of EPA's National Center for Environmental Assessment (NCEA) started off NCEA's presentation, *Integrated Science Assessment (ISA) for Sulfur Oxides – Health Criteria* (2nd External Review Draft). Dr. Cote was joined by Dr. Mary Ross, Dr. Jee-Young Kim, Dr. Douglas Johns, Dr. Jeffrey Arnold, all of NCEA and all of whom contributed to NCEA's presentation. These scientists from NCEA walked panelists through the organization of the May 2008 ISA and covered major points, including: ambient SO₂ concentrations around the U.S., personal exposure considerations, NCEA's methods for characterizing causal relationships, SO₂ dosimetry, clinical and epidemiological studies covered in the ISA. Panelists engaged the NCEA representatives on issues such as the location of SO₂ monitors, NCEA's new bibliographic database, the possible confounding influence of PM_{2.5}, publication bias and the lower bound chosen for SO₂ health effects.

The public comment period included Dr. Cara Frankenfeld, representing the American Chemistry Council, Ms. Deborah Shprentz of the American Lung Association, and Dr. Julie Goodman, representing the American Petroleum Institute. These comments are all posted at the meeting URL.

Following the public comment period, panelists addressed charge questions 1 – 3 until breaking for lunch. Panelists presented their various comments captured in the *Draft Individual Comments on the Integrated Science Assessment* (May 2008) posted at the URL for this meeting. Among the ideas discussed, panelists stressed the following ways to improve the ISA:

- improving the language expressing criteria for evidence evaluation; using Chapter 1 as a template for future ISAs;
- clarifying the relationship between 1 hour concentrations and 5 minute averages; determining the effects of monitor siting on ambient concentrations;
- emphasizing health effects at lower SO₂ levels;

- recognizing the effect of the absence of severe asthmatics from controlled studies (how that might bias the data to underestimate effects); and
- addressing the difference in response to SO₂ levels seen by the clinical studies as compared to the epidemiological studies.

Following a lunch break, panelists addressed the remaining charge questions, i.e. charge questions 5 – 8. The discussion centered around the issue of the lower bound SO₂ concentration chosen for assessing health effects and the need to integrate the epidemiological studies with the clinical data. Panelists commended NCEA for improvements since the Panel's review of the SO_x ISA in December 2007.

Following the afternoon break, Drs. Karen Martin, Michael Stewart, Stephen Graham and Harvey Richmond from OAQPS presented *Overview of the First Draft Risk and Exposure Assessment (REA) for the SO₂ Primary NAAQS Review*. Following the OAQPS presentation and some panel discussion of the REA, panelists were tasked with writing brief consensus paragraphs for the CASAC letter of advice to the Administrator on the second draft of the ISA, a letter that would be discussed the following morning.

Thursday, July 31, 2008

On Thursday, July 31, 2008, the Panel discussed the draft letter on the second draft ISA Overnight, the DFO had compiled each submission into a single draft letter to the Administrator. Panelists discussed the language of each paragraph and offered a few revisions recorded by the DFO. At the end of this session, the content of the draft letter to the Administrator, as projected on the overhead screen, was approved by the Panel, including the members of the chartered CASAC. Plans were made for a final editorial review of the ISA letter via e-mail to the Panel.

Public comments were given by Deborah Shprentz of the American Lung Association and David Heinold of the American Petroleum Institute. These comments are posted at the meeting URL.

Following the public comment period, panelists turned to discussion of the REA charge questions (also posted at the above link). As reflected in the agenda, Dr. Ted Russell led the discussion of charge question 1 on air quality. Dr. Lianne Sheppard led the discussion on exposure, and Dr. Jonathon Samet led the discussion of health effects. Among the issues discussed were the merits of the coefficient of variation (COV) model, the spatial representativeness of the monitoring network, the method of predicting exceedances, expanding the exposure distribution to a wider range, the logistic model for population response, the differences between vulnerability and susceptibility and the need to represent exposures in the Northeast and urban areas.

At the close of the meeting, panelists were reminded of the deadline of August 7, 2008 for final revisions to the draft ISA letter to the Administrator and individual comments on both the ISA. The REA draft letter was to be discussed on a teleconference on August 12, 2008.

On Behalf of the Panel,
Respectfully Submitted,

Holly Stallworth, Ph.D. /s/
Designated Federal Officer

Certified as True:

Rogene Henderson, Ph.D. /s/
Chair, Clean Air Scientific Advisory Committee
Sulfur Oxides Primary 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 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.