Summary Minutes of the United States Environmental Protection Agency (U.S. EPA)
Science Advisory Board (SAB) Quality Review Teleconference
September 7, 2011

Teleconference of the Chartered SAB and SAB Liaisons[1]

Date and Time: September 7, 2011, 12:00 a.m. – 3:00 p.m. Eastern Time

Location: By Teleconference

Purpose: to conduct a quality review of an August 5, 2011 draft SAB report entitled *Peer Review of EPA's Draft National-Scale Mercury Risk Assessment*."[2]

SAB Members and Liaison Participants:

SAB Members

Dr. Deborah Swackhamer, Chair
Dr. David Allen
Dr. Ingrid Burke
Dr. Terry Daniel
Dr. George Daston
Dr. David Dzombak
Dr. John Giesy
Dr. James Hammitt
Dr. Bernd Kahn
Dr. Nancy Kim
Dr. Cecil Lue-Hing
Dr. Judith Meyer
Dr. James Mihelcic
Dr. Jana Milford
Dr. Eileen Murphy
Dr. Stephen Roberts
Dr. Jonathan Samet
Dr. James Sanders
Dr. Jerald Schnoor
Dr. Paige Tolbert
Dr. John Vena

SAB Staff Office Participants

Dr. Angela Nugent, Designated Federal Officer (DFO)
Dr. Vanessa Vu, Director

Teleconference Summary:

The teleconference was announced in the Federal Register[3] and discussion generally followed the issues and timing as presented in the agenda.[4]

Convene the meeting

Dr. Angela Nugent, SAB DFO, convened the advisory meeting and welcomed the group. She noted that the meeting had been announced in the Federal Register, which provided an opportunity for public to provide oral and written comments. She noted that no individuals had requested to provide oral public comments and that one set of written comments had been

provided to SAB members and posted on the website.[5] She asked members of the public participating by teleconference to contact her so that their names could be listed in the minutes (Attachment A).

Purpose of meeting and review of the agenda

Dr. Deborah Swackhamer, the SAB Chair, welcomed SAB members, thanked them, and reviewed the purpose of the meeting, to conduct a quality review of a draft SAB report entitled *Peer Review of EPA's Draft National-Scale Mercury Risk Assessment (08/05/11 Draft),* prepared by an SAB *ad hoc* panel.

Overview of draft report

Dr. Stephen Roberts, Chair of the SAB Mercury Review Panel, provided an overview of the draft report, which peer reviewed EPA's March 2011 *Technical Support Document: National-Scale Mercury Risk Assessment Supporting the Appropriate and Necessary Finding for Coal and Oil-Fired Electric Generating Units*.[6] He noted the diverse panel that contributed to the draft report. Members had expertise in health hazard assessment, air quality modeling, water modeling and monitoring, fish tissue analysis, epidemiology, risk, statistics, and mercury. He acknowledged Drs. Jana Milford and David Allen as members of the panel. The panel addressed 14 charge questions that ranged from general questions about the overall design of the assessment to detailed questions about particular key analytical choices about components of the assessment. He noted that the panel had many questions for the Agency after they first reviewed EPA's draft *Technical Support Document*. The panel held extended dialogue with the principal Agency architects of the draft during the Panel's three-day meeting (June 15-17, 2011). It became clear that a significant amount of key information provided to the panel at the meeting was not included in the draft *Technical Support Document*. The panel concluded that the *Technical Support Document* needed to be revised to clarify many parts of the analysis and to provide more detail. The panel's draft report includes strong language that the *Technical Support Document* needs to be improved and provides detailed recommendations to improve it. Agency staff is aware of the detailed recommendations and has the Agency has communicated that its accelerated regulatory schedule for this activity prevents the SAB from reviewing the revised *Technical Support Document* before it is published.

Dr. Roberts explained that the panel decided to structure the Executive Summary of the report by topic, rather than charge question, because several of the charge questions overlapped. A topical organization, in the view of the panel, improved the flow of the report

Dr. Roberts summarized the major findings of the panel in the following way. The overall approach of the draft *Technical Support Document* is scientifically sound. The panel supported all the Agency's key decisions on technical issues and recommended that the EPA provide more explanation of its choices and more characterization of uncertainty. The panel tried to be careful to encourage Agency to articulate more fully and completely the uncertainties associated with different parts of the analysis without suggesting that the uncertainties undermined the risk assessment. The panel generally called for qualitative discussions of uncertainty unless

significant quantitative uncertainty analysis existed to be summarized. He noted that the panel reframed the second part of charge question 14 as a separate question (charge question 15) so that the panel could provide a succinct and clear statement concerning the adequacy of the analysis for its intended purpose.

Chartered SAB Discussion

Dr. Swackhamer asked lead reviewers to summarize their major points and not to read the details of their written comments,[7] which are posted on the SAB website.

Dr. Eileen Murphy, the first lead reviewer, commended the report for being extremely clear and concise. She approved the consolidation of responses to charge questions by topic in the Executive Summary. She found the recommendations in the report appropriate and valuable for EPA. She agreed with the panel's responses to the technical issues concerning intelligence quotient and the use of the 75th percentile fish tissue methylmercury value as the basis for exposure and risk assessment.

Dr. Paige Tolbert, the second lead reviewer, agreed. The panel did excellent job answering charge questions; the responses were thorough and "on target" regarding the discussion of each issue. The report gives a clear message that the overall methodology for the assessment is sound and appropriate and the panel's issues and critiques are largely related to how the assessment is presented, not the assessment itself. She suggested that since the SAB will not review another draft of the *Technical Support Document*, the SAB report might provide a clarification of the changes the panel concluded "absolutely need to happen." She also noted that the panel provides useful observations indentifying where EPA's analysis leads to an underestimation of risk. She suggested that the response to the final charge question might be revised to communicate that pending incorporation of certain changes the document should provide "an objective, reasonable and credible" determination of the potential for a public health hazard from mercury emitted from U.S. EGUs. She noted that she provided editorial comments in her written comments.

Dr. Jerald Schnoor, the third lead reviewer commended the panel for an excellent report. He found that the charge questions adequately addressed. He agreed with the panel's recommendations that use of the IQ should be downplayed and supported the panel's view that it was appropriate for EPA to use the mercury hazard quotient. He emphasized his support for the panel's response to charge question 14 and the need for EPA to more clearly describe its conclusions regarding "the nature and magnitude of the potential risk to public health posed by current U.S. EGU mercury emissions" than text in the current draft *Technical Support Document*.

Dr. John Vena, the fourth lead reviewer, agreed with the other lead reviewers. He only found one point to add. He emphasized that recommendations related to the charge questions should be summarized in one place in the report, either at the end of the report or in the Executive Summary. If they don't appear in the Executive Summary, the location of the summary of recommendations should be identified there.\

Dr. Swackhamer summarized the written comments of Dr. Elaine Faustman, the first lead reviewer, who was unable to join the call. In addition to providing "kudos to the panel" for their thorough and targeted responses to charge questions, Dr. Faustman provided recommendations by charge questions to improve the clarity of the report. Among her recommendations, she suggested that the panel report more clearly identify the "updated figures" that should be included in the report; better explain what was meant by describing the reference dose as an "integrated metric of risk;" address in the response to question 8 whether subsistence fishers might use lakes far from their census tract and how that might bias the results of the risk assessment; and shorten the discussion of selenium in the response to question 11.

Dr. Swackhamer asked Dr. Roberts, the panel chair, to respond to lead reviewer comments. Dr. Robert agreed that the report can be revised to more clearly identify the changes the panel consider "most do's" in revising the *Technical Support Document*. Most of the changes suggested by lead reviewers can be easily accomplished. A revised panel report can, for example, more clearly describe the updated figures requested; include Dr. Faustman's suggested language defining an "integrated metric of risk;" highlight language on pages 16-17 addressing subsistence fishers using waterbodies outside their census track; and delete redundant text relating to selenium

After Dr. Roberts concluded his remarks, Dr. Swackhamer asked for questions and other comments from other members of the chartered SAB.

A panel member expressed the view that the letter to the Administrator should stand on its own and should provide some additional information about the charge questions and the panel responses, as well as communicate more strongly that the panel's support for the document should provide "an objective, reasonable and credible" determination of the potential for a public health hazard is contingent on the *Technical Support Document* being revised to address the recommendations of the panel. He also suggested that the Executive Summary be organized by charge question, rather than by topic. Dr. Roberts agreed that the letter to the Administrator should be revised along the lines suggested and restated his preference for an Executive Summary organized by topic, because many charge questions addressed similar topics. Dr. Swackhamer noted that some chartered SAB members expressed appreciation for the organization of the Executive Summary in the current draft. She mentioned that the Executive Summary might indicate the relevant charge questions by number within each topic.

Another panel member commented that the letter to the Administrator communicate more clearly the SAB's recommendation related to IQ. Several other members noted that the emphasis in the letter seemed different from the text in the Executive Summary and the body of the report. Dr. Roberts agreed to make this change.

Yet another member suggested that the report consistently communicate that the panel's conclusions are based not just on the draft *Technical Support Document* but also on the additional information presented by the Agency at the panel's June meeting and subsequent interactions with the Agency.

A chartered SAB member noted that the report be revised so that all the panel recommendations are clearly conveyed by the words "the panel recommends" and not include the phrase "the panel recommended." Dr. Roberts agreed to make this change.

One chartered SAB member raised a technical concern related to IQ. He asked that the report explain more clearly its concerns that IQ loss is not a critical health endpoint. Dr. Roberts responded and noted that the focus was on IQ loss across the population (and not an individual) and that the panel found that other neurobehavioral endpoints, as examined in the methylmercury reference dose, show more sensitivity to exposure to methyl mercury than an assessment for IQ. The panel did not endorse use of any one particular neurobehavioral test at this time. Instead it fully supported EPA's use of the reference dose and hazard quotient approach. Dr. David Allen added that the Agency's rationale for using the 1-2 IQ points as a health effect in the draft *Technical Support Document* was based on an analysis for the National Ambient Air Quality Standard for lead (Pb). This analysis was reviewed and supported by the Clean Air Scientific Advisory Committee, but the Mercury Review Panel found that the literature on health effects for mercury did not support extending the lead (Pb) conclusion about IQ to mercury. Dr. Roberts agreed that the draft panel report should be revised to describe more clearly how it interpreted the term "critical health endpoint," as articulated in the Agency's charge question 2 and more clearly explain what the panel meant by a "significant effect" (e.g., whether that term mean "important" or statistically significant). He noted that the panel did not delve deeply into the issue of whether 1-2 IQ points was a significant loss because the panel was not comfortable with EPA's using IQ in its primary analysis and suggested that EPA move it to an Appendix, where it could be discussed along with other possible neurobehavioral endpoints as part of a secondary analysis of impact. The SAB Chair asked that this discussion be presented more clearly in the text.

An SAB member also asked that the report address the issue of potential time lag between change in emissions and fish concentrations of methylmercury. He noted that it would take centuries to reach steady state in the marine environment. Dr. Roberts noted that the risk assessment addressed fresh water environments only that that information from the Mercury Experiment to Assess Atmospheric Loadings in Canada and the US (METAALICUS) study was presented to the panel in June and shows that levels of methylmercury in fish change quickly, within a few years, in response to changes in atmospheric deposition to a waterbody. Where deposition occurs over a watershed, the situation gets more complicated depending on the size of the watershed. He noted that the panel report can identify this issue as a topic for EPA to address in a revised *Technical Support Document*, even though the panel did not see this issue as a major confounder within the time scales considered by the report.

After discussion had concluded, Dr. Swackhamer asked for a motion to dispose of the report. Dr. James Hammitt moved that the panel Chair work with the SAB staff to make changes consistent with written comments and oral discussion during the teleconference and then provide the report to the SAB Chair for approval. Dr. Nancy Kim seconded this recommendation. Dr. Swackhamer invited discussion. One member asked whether the SAB should ask for a chance to review the revised report. The DFO stated the EPA Office of Air and Radiation had informed the panel that EPA's regulatory schedule would not allow time for an additional SAB review. The SAB Chair

underscored the importance of communicating clearly that the SAB supported the use of the *Technical Support Document* for its intended purpose only if certain changes would be made. The motion was approved unanimously with the panel chair and two panel members abstaining (Drs. Allen and Milford). Dr. Swackhamer concluded the teleconference by expressing appreciation for the panel's work, Dr. Robert's leadership, and the supporting DFO.

The Designated Federal Officer adjourned the meeting at 1:15 p.m.

Respectfully Submitted:

/Signed/

Dr. Angela Nugent
SAB DFO

Certified as True:

/Signed/

Dr. Deborah L. Swackhamer
SAB Chair

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.

Appendix A
Members of the Public Requesting Access

Katherine Anitole, EPA

Nancy Beck, OMB

Charlotte Bertrand, EPA

Iris Camacho, EPA

Sharan Campleman, Electric Power Research Institute

Victoria Finkle, Inside EPA

John Glunn, Florida Dept. of Environmental Protection

Jenny Hopkinson, Inside EPA

Allison Jenkins, Texas, CEQ

Katharine Kurtz, Navy and Marine Corps Public Health Center

Leonard Levin, Electric Power Research Institute

Mike Long

Robert Oliphant, Luminant

Sharon Oxendine, EPA

Resha M. Putzrath, Navy and Marine Corps Public Health Center

Linda M. Wilson, NYS Office of the Attorney General

Materials Cited

The following meeting materials are available on the SAB website, http://www.epa.gov/sab, at the following address: http://yosemite.epa.gov/sab/sabproduct.nsf/a84bfee16cc358ad85256ccd006b0b4b/3bbd0dcee3b70a2b852578e10057b9af!OpenDocument&Date=2011-09-07

[1] Roster, Chartered SAB Members and Liaisons
[2] Draft SAB panel report entitled *Peer Review of EPA's Draft National-Scale Mercury Risk Assessment (08/05/11 Draft).*
[3] Federal Register Notice Announcing the Meeting
[4] Agenda
[5] Written public comments from Jean Public:
[6] *Technical Support Document: National-Scale Mercury Risk Assessment Supporting the Appropriate and Necessary Finding for Coal and Oil-Fired Electric Generating Units* - March 2011 Draft
[7] Compilation of Comments from Chartered SAB Members as of September 6, 2011