

**Summary Minutes of the
U.S. Environmental Protection Agency Science Advisory Board
Environmental Economics Advisory Committee
Public Teleconference
June 16, 2016**

Date and Time: Thursday, June 16, 2016, 1:00 p.m. – 5:00 p.m.

Location: By teleconference

Purpose: To discuss the Science Advisory Board (SAB) Environmental Economics Advisory Committee’s draft report on the review of the EPA’s proposed methodology for updating mortality risk valuation estimates for policy analysis.

Participants:

Members of the U.S. Environmental Protection Agency Science Advisory Board Environmental Economics Advisory Committee

(Panel roster is provided in attachment A):

Dr. Madhu Khanna
Dr. Kevin Boyle
Dr. Richard Carson
Dr. Mary Evans
Dr. Reed Johnson
Dr. Matthew Kotchen
Dr. Matthew Neidell
Dr. James Opaluch
Dr. Andrew Plantinga
Dr. Richard Ready
Dr. Kerry Smith
Dr. Stephen Swallow
Dr. George Van Houtven
Dr. JunJie Wu

EPA Science Advisory Board (SAB) Staff:

Dr. Thomas Armitage, Designated Federal Officer

EPA Representatives:

Dr. Chris Dockins, EPA National Center for Environmental Economics
Dr. Al McGartland, EPA National Center for Environmental Economics
Dr. Kelly Maguire, EPA National Center for Environmental Economics
Dr. Steve Newbold, EPA National Center for Environmental Economics
Dr. Nathalie Simon, EPA National Center for Environmental Economics

Other Attendees:

Sandy Germann, U.S. EPA
Maria Hegstad, Risk Policy Report
Lindsey Jones, Texas Commission on Environmental Quality
John Norman, ExxonMobil Biomedical Sciences
Amanda Thomas, U.S. Office of Management and Budget

Teleconference Summary:

Convene the Teleconference

Dr. Thomas Armitage, Designated Federal Officer (DFO) for the EPA Science Advisory Board (SAB) Environmental Economics Advisory Committee, convened the teleconference at 1:00 p.m. Eastern Time. He identified Committee members who were on the call. He noted that the Committee operates as part of the EPA Science Advisory Board (SAB), which is a chartered Federal Advisory Committee under the Federal Advisory Committee Act (FACA) and is empowered by law to provide advice to the EPA Administrator. He stated that summary minutes of the teleconference would be prepared and certified by the Chair. He noted the Committee's compliance with ethics requirements. Dr. Armitage indicated that meeting materials were available on the SAB web site. These meeting materials included: the Federal Register Notice announcing the teleconference,¹ teleconference agenda,² Committee roster,³ the Committee's draft (5-5-16) report to the EPA,⁴ Information about the EPA White Paper, *Valuing Mortality Risk for Policy Assessment: A Meta-analytic Approach* provided by EPA at the request of the Committee,⁵ individual comments from Committee members on the draft (5-5-16) report,⁶ and a section-by-Section compilation of member comments on the (5-5-16) report.⁷ Dr. Armitage noted that time had been included on the agenda to hear oral public comments but no requests to speak had been received from members of the public and no written public comments had been received. He also 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 indicating that they were on-line.

Review of Agenda and Purpose of the Teleconference

Dr. Madhu Khanna, Chair of the SAB Committee, reviewed the teleconference objectives and agenda. She stated that the Committee was holding teleconferences on June 16 and 17 to discuss its draft report of findings and recommendations for the review of the EPA White Paper titled: *Valuing Mortality Risk for Policy Assessment: A Meta-analytic Approach*. Dr. Khanna noted that the Committee had held a meeting on March 7-8, 2016 to review the white paper and supporting documents and deliberate on responses to 17 charge questions. She noted that after that meeting, lead writers assigned to each of the questions developed written responses that were incorporated into the draft report to be discussed on the teleconferences. Dr. Khanna indicated that the Committee would discuss each section of its draft report, focusing on points that may lack consensus, be inaccurate or problematic, need to be added to the report, and need additional explanation. She indicated that she wanted the Committee to reach agreement on any changes to be made in the report.

Dr. Khanna noted that the Committee would first hear brief remarks from EPA. She stated that after EPA remarks there was time on the agenda for oral public comments but no requests to speak had been received. Dr. Khanna also noted that on the agenda for the June 17th call, additional time had been reserved to hear brief clarifying comments from EPA and the public.

Dr. Khanna noted that, as indicated on the agenda, the Committee planned to discuss Sections 3.1 through 3.4 of its draft report (these sections contained the Committee's responses to charge questions 1 through 12). She indicated that on the June 17th call, the Committee planned to discuss section 3.5 (containing the responses to charge questions 13 – 17), the executive summary, and the letter to the Administrator.

Dr. Khanna noted that the Committee's draft report (dated May 5, 2016) had been sent to members and posted on the meeting webpage on the SAB website. She noted that a compilation of member comments on the draft report had also been sent to the Committee and posted on the website. She asked members to refer to the page and line numbers in the PDF version of the May 5th draft of the Committee's report. She indicated that the compilation of comments contained general overarching comments as well as specific comments referring to page and line numbers.

Dr. Khanna noted that after the teleconferences, the revisions discussed would be incorporated into another draft of the report. That draft would be sent to the Committee for review and concurrence before it was sent to the chartered SAB to for quality review. She indicated that if the Committee required additional time to discuss the draft report, another teleconference would be scheduled.

Dr. Khanna called for questions from members. A member commented that additional information was needed to fully respond to some parts of the EPA's charge questions. He asked whether the EPA would revise its review documents based on SAB comments and then resubmit the documents for further review. Dr. Khanna explained that the Committee was charged with reviewing the documents that had been provided by EPA. She indicated that the Committee must respond to the charge questions. She noted that the EPA could decide to revise the documents based on SAB comments and request another review, but that was entirely the agency's decision. She indicated that the SAB should develop its report on the basis of the material that had been submitted by EPA. The member commented that he did not agree with some of the findings in the Committee's draft report and would consider writing a minority opinion if the Committee did not want to change parts of the report to address his concerns. Other members commented that the Committee should further discuss and identify any additional concerns members had about the EPA's methodology and suggest actions that could be taken to address these concerns.

There were no additional questions from Committee members so Dr. Khanna called for remarks from EPA.

Remarks from EPA's National Center for Environmental Economics

Dr. Nathalie Simon and staff from EPA's National Center for Environmental Economics requested clarification of points in the Committee's draft report. EPA's remarks focused on specific recommendations concerning the following issues:

- Differences in risk measures used in hedonic wage studies;
- Application of a consistent hedonic wage model to available years of data;
- Value of a statistical life year;
- Broadening the scope of studies;
- Valuing reductions in cancer risk.

EPA responded to several specific questions from Panel members about clarifications requested. Dr. Khanna then thanked EPA staff for their comments and indicated that the Committee would take the comments into consideration. She then called for discussion of the Committee's report.

Discussion of the Committee's Draft Report

Dr. Khanna asked the Committee to discuss each section of the draft report. She first called for comments from the lead writer of each section and then asked for comments and discussion from other members of the Committee.

Section 3.1.1 – Response to Charge Question 1a

The Committee discussed the draft response to Charge Question 1a. Committee members commented that in the draft report, some of the recommendations concerning study validity needed clarification. A member also noted that some of the recommendations concerning construct validity appeared to be contradictory. Members discussed clarifying revisions to remove contradictions and make the definitions of validity more explicit. Members discussed how the report subsection that addressed evidence of study validity could be reorganized. Members indicated that the recommendations were not contradictory but could be clarified by reordering and explaining them.

Members discussed the importance of considering evidence of consequentiality in assessing study validity. Members commented that it was a challenge to retrospectively assess consequentiality. They noted that to evaluate consequentiality, it would be necessary to look at the individual surveys that were conducted. Some members indicated that the report should be revised to emphasize the importance of consequentiality. Other members commented that, in general, there was not a bright line of evidence showing whether or not to accept a study. They noted that the draft report should indicate that accepting a study was a weight of evidence decision.

Members discussed the need to include an appendix in the White Paper to clearly articulate how decisions were made to include or exclude studies from the meta-analysis. A member commented that the SAB report should recommend that the EPA include such an appendix in the White Paper. A member commented that, in the long term, the EPA should review the literature and decide what additional research was needed to provide the information necessary to derive the VSL. Members noted that the EPA's charge questions to the Committee were somewhat narrow and did not focus on some broad issues of importance. Members discussed the need for a separate section in the Committee's report to focus on overarching issues and recommendations. Members discussed some of the overarching issues to be addressed. One overarching issue was that the EPA's analysis applied various data transformations but they were not always clearly explained. A member suggested that this be pointed out in the overarching comments section of the Committee's report.

The Committee continued to discuss recommendations concerning study selection. A member suggested that the SAB report comment on the types of studies that were missing from the EPA's analysis. Another member reiterated the point that the EPA should clearly document the information that had been considered in study selection and also clearly indicate why studies were selected (or not selected). Another member commented that the Committee should provide guidance to the EPA on the process that should be used to select studies, but not necessarily recommend specific attributes of the studies to be selected. Members reiterated that it was important to review studies to determine whether they were consequential.

The Committee discussed whether the EPA should use studies that had not been published in the peer-reviewed literature. A member commented that, in the long term, EPA should be open to using studies that had not been published in the peer-reviewed literature. He suggested that the agency develop a process to review these studies. Other members commented that there were a significant number of gray literature studies that could be used, but members indicated that the SAB should recommend that a process for reviewing those studies be developed and applied before the studies were used. Dr. Khanna asked the lead writer for Charge Question 1a to incorporate the points that had been discussed into the text.

Section 3.1.2 – Response to Charge Question 1b

Members discussed comments on the draft response to Charge Question 1b. The Committee discussed whether it was appropriate to select: 1) hedonic wage studies that used occupation by industry risk measures, and 2) studies that used occupation risk measures. Some members commented that “industry and one other characteristic” risk measures may not be appropriate for characteristics such as gender or age. Members commented that risks varied within an industry, and wage discrimination could affect the wage-risk differential across some groups. A member commented that using single characteristics did not make sense because they could pick up labor market effects. Another member commented that it was hard to see an argument against using hedonic wage studies that employed fatality risk measures differentiated by occupation. Some members suggested combining an industry and occupation risk measure from the U.S. Bureau of Labor Statistics Census of Fatal Occupational Injuries (CFOI) with the U.S. Bureau of Labor Statistics Current Population Survey Wage information.

The Committee next discussed how additional data could be made available for future analyses. Members commented that the CFOI data needed to create fatality risk measures differentiated by occupation and industry were available to researchers who had U.S. Bureau of Labor Statistics data agreements. Members suggested that the EPA compile, make available, and regularly update fatality risk measure data that would encourage future revealed preference VSL research. Dr. Khanna thanked the members for their comments and asked the lead writer for Charge Question 1b to revise the text as discussed.

Section 3.1.3 – Response to Charge Question 1c

The Committee discussed the draft response to Charge Question 1c. Members discussed whether the Viscusi, Huber, and Bell (2014) study should be included in the EPA’s analysis. Some members commented that the Committee had provided citations for additional studies that could be used by the EPA, but they did not want to provide a recommendation on including the Viscusi et al (2014) study in the analysis. A member commented that there was not clear evidence of validity for this study. The Committee discussed this point.

A member commented that the Committee’s draft report recommended broadening the scope of studies used to derive values for reducing mortality and morbidity risks. Members noted that it would be difficult to improved estimates if the EPA defined the literature to be used narrowly.

Members discussed whether the report should state that the value of statistical life-years lost was a more correct construct than the present value of a future statistical death. A member questioned whether the SAB could explicitly state that there was sufficient information available to estimate statistical life-years lost. Members agreed that a recommendation to use the value of statistical life years lost should be not included in the Committee’s draft report.

Members commented that the EPA analysis had not associated deaths with latency. Members noted that the VSL associated with latent risk was not the same as immediate risk. Members commented that deaths of policy interest occurred with latency and were preceded by a period of morbidity and disability. Therefore, members noted that it was important to distinguish values based on short term versus long term effects. Members also commented that simple discounting did not account for confounded morbidity values in converting future deaths to equivalent immediate death values. Dr. Khanna asked the lead writer for Charge Question 1c to revise the text in this section of the report to capture the points discussed.

Section 3.2.4 – Response to Charge Question 2

The Committee discussed the draft response to Charge Question 2. Some members commented that they were in favor of encouraging the EPA to expand the set of studies used in the analysis to include some that employed experimental or quasi-experimental methods. However, members expressed reservations about suggesting that the EPA use hedonic wage studies that applied data other than the CFOI data. Other members suggested that the report recommend that that data used in the analysis be of the same or better quality than the CFOI data. Members discussed this point and some expressed agreement.

A member questioned whether the report should state that there had been a lack of significant growth in the VSL literature since the last review of the VSL by the SAB. He indicated that it would be better to state that there had been a lack of growth in the number of studies used by the EPA. The Committee further discussed this point and members agreed with the suggestion. Dr. Khanna asked the lead writer for Charge Question 2 incorporate the points discussed into a revised draft of the response.

Summary

Dr. Khanna noted that it was time to recess the teleconference. She thanked Committee members for their comments, summarized some of the major points discussed, and noted that the Committee would continue discussing its draft report on a teleconference to be convened at 1:00 pm the following day.

Dr. Armitage then stated that the Panel would meet by teleconference the following day (June 17, 2016) at 1:00 p.m. Eastern Time to continue the discussion and he adjourned the teleconference.

Respectfully Submitted:

/signed/

Dr. Thomas Armitage
Designated Federal Officer

Certified as Accurate:

/signed/

Dr. Madhu Khanna, Chair
SAB Environmental Economics Advisory
Committee

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.

ATTACHMENT A: COMMITTEE ROSTER

U.S. Environmental Protection Agency Science Advisory Board Environmental Economics Advisory Committee

CHAIR

Dr. Madhu Khanna, ACES Distinguished Professor in Environmental Economics, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, Urbana, IL

MEMBERS

Dr. Kevin Boyle, Professor and Director, Program in Real Estate, Virginia Tech, Blacksburg, VA

Dr. Sylvia Brandt, Associate Professor, Department of Resource Economics, University of Massachusetts, Amherst, MA

Dr. Richard Carson, Professor, Economics, Department of Economics, University of California, San Diego, La Jolla, CA

Dr. J.R. DeShazo*, Associate Professor for Public Policy, School of Public Policy and Social Research, University of California at Los Angeles., Los Angeles, CA

Dr. Mary Evans, Associate Professor, Robert Day School of Economics and Finance, Claremont McKenna College, Claremont, CA

Dr. Wayne Gray, Professor, Department of Economics, Clark University, Worcester, MA

Dr. Timothy Haab*, Department Chair and Professor, Department of Agricultural, Environmental and Development Economics, Ohio State University, Columbus, OH

Dr. F. Reed Johnson, Senior Research Scholar, Center for Medical and Genetic Economics, Duke Clinical Research Institute, Duke University, Durham, NC

Dr. Matthew Kotchen, Associate Professor, School of Forestry and Environmental Studies, Yale University, New Haven, CT

Dr. Matthew Neidell, Associate Professor, Department of Health Policy and Management, Mailman School of Public Health, Columbia University, New York, NY

Dr. James Opaluch, Professor and Chair, Department of Environmental and Natural Resource Economics, College of the Environment and Life Sciences, University of Rhode Island, Kingston, RI

*Did not participate in the review of the EPA's proposed methodology for updating mortality risk valuation estimates for policy analysis.

Dr. Daniel Phaneuf, Associate Professor of Agricultural and Applied Economics, Department of Agricultural and Applied Economics, University of Wisconsin-Madison, Madison, WI

Dr. Andrew Plantinga, Professor, Bren School of Environmental Science and Management
University of California, Santa Barbara, Santa Barbara, CA

Dr. Richard Ready, Professor, Department of Agricultural Economics and Economics, Montana State University, Bozeman, MT

Dr. V. Kerry Smith, Emeritus Regents' Professor and Emeritus University Professor of Economics, Department of Economics, W.P Carey School of Business, Arizona State University, Tempe, AZ

Dr. Stephen Swallow, Professor, Department of Agricultural and Resource Economics, University of Connecticut, Storrs, CT

Dr. George Van Houtven, Senior Economist and Director, Ecosystem Services Research, RTI International, Research Triangle Park, NC

Dr. JunJie Wu, Emery N. Castle Professor of Resource and Rural Economics, Department of Agricultural and Resource Economics, Oregon State University, Corvallis, OR

Dr. Jinhua Zhao*, Professor, Department of Economics, Department of Agricultural, Food and Resource Economics, Michigan State University, East Lansing, MI

SCIENCE ADVISORY BOARD STAFF

Dr. Thomas Armitage, Designated Federal Officer, Science Advisory Board, U.S. Environmental Protection Agency, Washington, DC

*Did not participate in the review of the EPA's proposed methodology for updating mortality risk valuation estimates for policy analysis.

Materials Cited

The following meeting materials are available on the SAB website, www.epa.gov/SAB, on the June 16th meeting page of the Environmental Economics Advisory Committee.

<https://yosemite.epa.gov/sab/sabproduct.nsf/MeetingCal/8A0E320AC3DF905785257F8D00748AAF?OpenDocument>

¹ Federal Register Notice

² Agenda

³ Panel Roster

⁴ Draft (5-5-2016) SAB Review of EPA's Proposed Methodology for Updating Mortality Risk Valuation Estimates for Policy Analysis

⁵ Additional Information about the White Paper, Valuing Mortality Risk for Policy: a Meta-analytic Approach, provided by EPA (May 10, 2016) at the request of the Science Advisory Board Environmental Economics Advisory Committee

⁶ Individual Committee member comments on the 5-5-16 draft of the SAB review of EPA's proposed methodology for updating mortality risk valuation estimates for policy analysis (as of 6/2/16)

⁷ Section-by-Section Compilation of Environmental Economics Advisory Committee (EEAC) Member Comments on the Committee's Draft (5-5-16) VSL Report (As of 6/14/16)