

**Summary Minutes of the
U.S. Environmental Protection Agency (EPA)
Science Advisory Board (SAB) Ecological Processes and Effects Committee
Augmented for the Review of Nutrient Criteria Guidance
Teleconference, December 3, 2009**

Committee Members: See Committee Roster – Attachment A

Date and Time: Thursday, December 3rd (12:00 noon – 2:00 p.m. Eastern Time)

Location: Teleconference

Purpose: The purpose of this teleconference was to discuss the draft report, *SAB Review of Empirical Approaches for Nutrient Criteria Derivation*.

Attendees: Committee Chair: Dr. Judith Meyer

Committee Members: Dr. Richelle Allen-King
Dr. Fred Benfield
Dr. Victor Bierman
Dr. Elizabeth Boyer
Dr. Peter Chapman
Dr. Loveday Conquest
Dr. Mark David
Dr. Wayne Landis
Dr. Douglas McLaughlin
Dr. Patrick Mulholland
Dr. James Oris
Dr. Amanda Rodewald
Dr. James Sanders
Dr. Andrew Sharpley

EPA SAB Staff: Thomas Armitage, Designated Federal Officer
Anthony Maciorowski, Deputy Director, SAB
Staff Office

EPA Staff: Ifeyenwa Davis
Helen Drego
Linda Holst
Tina Laidlaw
Barbara Mazur
Edward Ohanian
John Paul
David Pfeifer

Dana Thomas
Brian Thompson
Gary Welker
Izabela Wojtenko

Others Present (call-in number requested):

Fredric P. Andes, Barnes & Thornburg, LLP
Alex M. Barron, Virginia Dept. of Environmental
Quality
Jim Baumann, Wisconsin Department of Natural
Resources
Mary Becker, Connecticut DEP
Kevin Bromberg, U.S. Small Business
Administration
Louis P. Brzuzy, Shell Oil Products
Kristy Bulleit, Hunton and Williams
Thomas J. Danielson, Maine Department of
Environmental Protection
James Dorsch, Metro Wastewater Reclamation
District
Albert Ettinger, Mississippi River Coalition
Elizabeth Foeller
Tad Foster
Adam Griggs, Interstate Commission for the
Potomac River
Tim Guilfoile, Sierra Club Water Sentinels
Steven Hann, Hamburg, Rubin, Mullin, Maxwell
& Lupin, PC
William T. Hall, Hall & Associates
Jason Heath, ORSANCO
Sylvia Heaton, Michigan DEQ
Steve Heiskary, Minnesota Pollution Control
Agency
Chris Hornback, National Association of Clean
Water Agencies
Ginny Johnson, Colorado Springs Utilities
Sarah Johnson, Colorado Water Quality Control
Division
Nancy Keller, City of Pueblo Wastewater
Department
John Kennedy, GBMSD
Lee Killinger, The WREN Group
Susannah King, New England Interstate Water
Pollution Control Commission
Steve List, NewPage Corporation

Others Present (continued):

Ross Mandel, Interstate Commission for the
Potomac River
Heidi McKenzie, Ford Environmental Quality
Office
Adrienne Nemura, Limno Tech
Chrisoph Pasch, Alan Plummer Associates, Inc
Ana J. Pena-Tijerina
Jim Pletl, Hampton Roads Sanitation District
Thomas W. Purcell, National Petroleum Institute
Adam Rettig, Maryland Department of the
Environment
Filipa Rio, Alliance of Automobile Manufacturers
Dale M. Robertson, U.S. Geological Survey
J. Bart Ruitter, DuPont Engineering Technology
Kevin Russeth, Environmental Services
Division of Public Works, Superior, WI
Shivi Selvaratnam, Indiana Department of
Environmental Management
Brooks Smith, Hunton & Williams, LLP
Paul Stacey, Connecticut DEP
David Taylor, Madison Metropolitan Sewerage
District
Paul J. Terrio, U.S. Geological Survey
Mark Tomasek, Minnesota Pollution Control
Agency
Marilyn Wall, Sierra Club
Paul Wiegand, NCASI
Craig Wolfe, GEI Consultants
Mark Wysalek, Macon Water Authority
Greg Youngstrom, ORSANCO
Chris Zell, MEC Water Resources, Inc.

Meeting Summary

The discussion followed the issues and timing as presented in the meeting agenda (Attachment B).

Convene Meeting

Dr. Thomas Armitage, Designated Federal Officer (DFO) for the SAB Ecological Processes and Effects Committee convened the teleconference at 12:00 noon on December 3rd, 2009 and identified members of the Committee and EPA staff who were on the call. He noted that many public participants had called in and that several requests

had been received to provide public comments. He stated that time had been provided on the teleconference agenda to hear comments. He stated that the EPA Science Advisory Board (SAB) was a chartered federal advisory committee. He reviewed Federal Advisory Committee Act (FACA) requirements. He noted the Committee's compliance with ethics requirements. He stated that summary minutes of the meeting would be prepared and certified by the Chair.

Purpose of the Call and Review of the Agenda

Dr. Judith Meyer, Chair of the Ecological Processes and Effects Committee thanked the Committee members, EPA staff, and members of the public for joining the call. She stated that on the call the Committee would discuss its draft advisory report on the EPA guidance document, *Empirical Approaches for Nutrient Criteria Derivation*. Dr. Meyer reviewed the teleconference agenda. She stated that following its public meeting on September 9-11, 2009, the Committee had developed the draft advisory report. She noted that the report was available on the SAB website. She also noted that some written public comments on the draft report had been received, and that these comments were also available on the SAB website. She stated that on the teleconference the Committee would discuss and agree upon any additional changes needed in the report before it was sent to the chartered Science Advisory Board for final approval and transmittal to the EPA Administrator. Dr. Meyer then stated that the Committee would hear brief remarks from EPA and public comments before discussing the report.

Remarks from EPA

Remarks from Drs. Edward Ohanian and Dana Thomas (EPA Office of Water)

Dr. Edward Ohanian, Director of EPA's Health and Ecological Criteria Division (HECD) in EPA's Office of Water, and Dr. Dana Thomas of HECD provided EPA remarks. Dr. Ohanian thanked the Committee for developing its draft advisory report. He stated that EPA was seeking the Committee's advice to produce a scientifically sound guidance document. He stated that the Agency EPA wished to offer four comments on the Committee's draft advisory report and stated that Dr. Thomas would summarize the comments.

Dr. Dana Thomas, Chief of the Ecological and Health Protection Branch in EPA's Office of Water thanked the Committee for reviewing the Agency's draft guidance on empirical approaches for nutrient criteria derivation. She stated that the Office of Water was committed to providing tools to the EPA Regional Offices and States to develop numeric nutrient criteria. Dr. Thomas then offered the following four comments on the Committee's draft report:

1) Dr. Thomas noted that in several instances the Committee's draft report referred to use of a tiered weight of evidence approach for developing nutrient criteria. She stated that it would be helpful to provide some additional information in the report to describe such an approach. 2) Dr. Thomas stated that the Committee's report recommended collecting

additional data to support development of nutrient criteria. She agreed that it would be helpful to have additional data but noted that it was often difficult to obtain new data. 3) Dr. Thomas stated that in several places the Committee's report mentioned social and economic costs. She stated that such costs were not considered in developing water quality criteria under the Clean Water Act. 4) Dr. Thomas stated that the Committee's report recommended the use of specific software packages. She noted that EPA guidance could not endorse the use of specific commercially available software packages.

Dr. Meyer thanked Drs. Ohanian and Thomas for their comments and then called for public comments.

Public Comments

Dr. Meyer stated that requests to provide oral public comments had been received from the following individuals and that the Committee would hear their comments in the order in which the requests had been received by the SAB Staff Office: 1) Fred Andes, Barnes and Thornburg, LLP, 2) William T. Hall and John C. Hall, Hall & Associates, 3) Mary E. Becker and Paul Stacey, Connecticut Department of Environmental Protection, 4) Sarah Johnson, Colorado Department of Public Health and Environment, and Steven A. Hann, Hamburg, Rubin, Mullin, Maxwell & Lupin, PC. (see speaker list in Attachment C).

Fred Andes, speaking for the Federal Water Quality Coalition, summarized some of the points that had been included in the Committee's draft report. 1) He noted that in developing criteria it was important to establish on cause and effect, 2) He stated that it was important to link designated uses and impact on uses. 3) He stated that the stressor-response approach should not be used in isolation. 4) He stated that it was important to recognize uncertainty. He stated that he hoped EPA would address these points.

William Hall of Hall and Associates reviewed some of the findings of the Committee's report. He stated that the findings were indicative of problems in the draft guidance document that should be addressed before the methods were applied. He asked that language in the cover letter be clarified and provided suggested changes. He discussed the need for a clearer statement concerning conditional probability. He noted the statement in the Committee's report indicating that the guidance did not address downstream criteria and stated that the Total Maximum Daily Load process should address this issue.

Nancy Becker of the Connecticut Department of Environmental Protection expressed agreement with some of the findings in the Committee's draft report. She discussed the need to allow for human presence in developing nutrient criteria rather than setting unrealistic goals. She noted that slow state progress in developing nutrient criteria was a result of state reluctance to adopt nutrient criteria that could not be supported. Paul Stacy of the Connecticut Department of Environmental Protection expressed the need for EPA follow-up on the Committee's recommendations to ensure that good science was applied

Sarah Johnson of the Colorado Department of Public Health and Environment discussed the need for flexibility in developing water quality standards. She stated that the Committee's report appeared to be prescriptive, and discussed the need for a menu of options.

Steven Hann, speaking on behalf of the Pennsylvania Municipal Authorities Association, reviewed fundamental recommendations in the Committee's report and indicated that they were important. He noted that the committee had determined that improvements in the guidance were needed and discussed the importance of clarity in the guidance. He noted that it was important to address cause and effect in developing water quality criteria. He also discussed the importance of considering site specific conditions in developing criteria.

Discussion of the draft SAB EPEC Advisory Report

After public comment period the Chair called for discussion of the draft SAB EPEC advisory report. She stated that the Committee would first discuss the introduction and the responses to the charge questions and then discuss the executive summary and letter to the Administrator.

Introduction

Several minor editorial changes were suggested to clarify the introduction and these were agreed upon by the Committee. In addition, a member suggested that the report should recommend that EPA guidance be revised to address SAB recommendations prior to its release. Members agreed with this suggestion.

Response to Charge Question #1

The Committee discussed the draft report language concerning the use of mechanistic models to inform criteria development. The Chair noted that Committee member comments concerning mechanistic modeling had been incorporated into the 12/3/09 draft of the advisory report and she asked whether additional changes were needed. Members indicated that they were satisfied with the changes that had been incorporated.

The Committee discussed whether the tone of report language that called for revision of EPA's guidance was appropriate. A member stated that in the response to charge question #1, the report should indicate that substantial revision of the document was needed to facilitate identification of the most scientifically defensible approaches to deriving numeric nutrient criteria. Committee members agreed with this change.

The Committee discussed references for the nutrient criteria guidance documents mentioned in the advisory report. The Chair noted that members had not provided a reference for an Ohio guidance that had been mentioned in the advisory report. Members noted that it was not clear how this should be referenced and decided that the guidance would not be mentioned in the report.

The Committee discussed revising recommendation #10 in the response to charge question #1 to indicate that the current EPA guidance document was written for a user with considerable statistical expertise that may or may not be possessed by state water agencies. A member stated that it was important to be sensitive to the range of statistical expertise possessed by users of the EPA guidance. Other members agreed with this revision.

The Committee discussed whether the tone of the draft advisory report was too prescriptive. Several members stated that they did not think the report was too prescriptive. They noted that, as indicated in the draft advisory report, additional detail was needed in EPA's guidance to address the scope of the document and the limitations of the methods. Several minor editorial clarifications were discussed and agreed upon.

Response to Charge Question #2

Several editorial changes were suggested in the response to charge question #2 in the draft report. It was suggested that the report language may have overemphasized lack of examples of DO concentration. A member suggested that the draft advisory report should state that lack of a DO example was an important omission that should be corrected. It was suggested that the report indicate that conceptual model development should be required and incorporated early in the process (as indicated in Figure 1 of the advisory report). Members agreed with these suggestions.

Response to Charge Question #3

The Chair suggested that publications be referenced to support recommendation #7 (concerning use of a quantitatively based weight-of-evidence framework). Members discussed a number of publications and several members stated that they would provide references.

Response to Charge Question #4

The committee discussed editorial changes to clarify the discussion of experimental validation of criteria. Dr. Meyer indicated that she would provide references to support the statements in this part of the report.

Response to Charge Question #5

Several changes were discussed to clarify the response to charge question #5. Members noted that the report should not recommend use of specific software packages and several text changes were discussed and agreed upon.

A member stated that the report should indicate that relationships between nutrient stressors and responses were less certain in streams than lakes because streams were more heterogeneous than lakes. Members agreed with this revision.

Response to Charge Question #6

Members discussed and agreed upon clarifying editorial changes addressing choices of software and description of the weight of evidence approach.

Response to Charge Question #7

A member recommended incorporation of clarifying revisions into lines 16 – 18 on page 36 of the 12/3/09 draft. Members agreed upon the revisions.

The Committee discussed a clarification to define site specific conditions as “classification based on site types.” The Committee also discussed the need to provide more information to define a tiered weight-of-evidence approach. Dr. Chapman offered to provide additional text to clarify this part of the report.

Several other clarifications were discussed and agreed upon including: additional language to clarify application of the regression slope to individual data points, and a revision to clarify the use of ranges of values for stressor and response variables in empirical models.

Executive Summary

The Committee discussed a number of changes in the executive summary. Members discussed whether the text on page vii lines 11 – 12 of the 12/03/09 draft should be changed. The Committee agreed not to change the text. The Committee agreed upon several minor clarifying changes on page vii.

The Committee discussed Figure 1 and agreed upon clarifying changes in three of the boxes in the framework recommended by the SAB. The Committee also agreed upon adding a footnote to Figure 1 to further define how it could be decided whether the stressor-response approach was appropriate.

A member noted that the text recommending the use of statistical software should be revised.

Several clarifying editorial changes on pages xii – xv were discussed and agreed upon.

Letter to the Administrator

Members discussed and agreed upon clarifications in parts of the letter to the Administrator including: the statement noting that the stressor response approach should be used with other available methodologies in the context of a tiered a weight-of-evidence approach; and the statement that the methods in EPA’s guidance did not address downstream impacts of excess nutrients.

Summary and Next Steps

The Chair thanked the members for discussing the draft report and stated that it would be revised to incorporate changes that had been agreed upon. She stated that a revised draft of the report would be prepared and sent to Committee members for concurrence. She stated that following Committee concurrence the report would be sent to the chartered SAB for quality review on a public teleconference. The teleconference was then adjourned.

Respectfully Submitted:

Certified as True:

/Signed/

/Signed/

Dr. Thomas Armitage
Designated Federal Officer

Dr. Judith L. Meyer, Chair
SAB Ecological Processes and Effects
Committee

ATTACHMENTS

Attachment A: Committee Roster

Attachment B: Meeting Agenda

Attachment C: List of Speakers Providing Public Comments

Attachment A – Committee Roster

U.S. Environmental Protection Agency Science Advisory Board Ecological Processes and Effects Committee Augmented for Review of Nutrient Criteria Guidance

CHAIR

Dr. Judith L. Meyer, Distinguished Research Professor Emeritus, University of Georgia, Lopez Island, WA

MEMBERS

Dr. Richelle Allen-King, Professor and Chair, Department of Geology, University at Buffalo, Buffalo, NY

Dr. Ernest F Benfield, Professor of Ecology, Department of Biological Sciences, Virginia Tech, Blacksburg, VA

***Dr. Ingrid Burke**, Director, Haub School and Ruckelshaus Institute of Environment and Natural Resources, University of Wyoming, Laramie, WY

Dr. G. Allen Burton, Professor and Director, Cooperative Institute for Limnology and Ecosystems Research, School of Natural Resources and Environment, University of Michigan, Ann Arbor, MI

Dr. Peter Chapman, Principal and Senior Environmental Scientist, Environmental Sciences Group, Golder Associates Ltd, Burnaby, BC, Canada

Dr. Loveday Conquest, Professor, School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA

Dr. Wayne Landis, Professor and Director, Department of Environmental Toxicology, Institute of Environmental Toxicology, Huxley College of the Environment, Western Washington University, Bellingham, WA

Dr. James Oris, Professor, Department of Zoology, Miami University, Oxford, OH

***Dr. Charles Rabeni**, Research Professor, Department of Fisheries & Wildlife, University of Missouri, Columbia, MO

Dr. Amanda Rodewald, Associate Professor of Wildlife Ecology, School of Environment and Natural Resources, The Ohio State University, Columbus, OH

Dr. James Sanders, Director and Professor, Skidaway Institute of Oceanography, Savannah, GA

Mr. Timothy Thompson, Senior Environmental Scientist, Science and Engineering for the Environment, LLC, Seattle, WA

***Dr. Ivor van Heerden**, Director, Center for the Study of Public Health Impacts of Hurricanes, Louisiana State University, Baton Rouge, LA

CONSULTANTS

Dr. Victor Bierman, Senior Scientist, LimnoTech, Oak Ridge, NC

Dr. Elizabeth Boyer, Associate Professor, School of Forest Resources and Assistant Director, Pennsylvania State Institutes of Energy & the Environment, and Director, Pennsylvania Water Resources Research Center, Pennsylvania State University, University Park, PA

Dr. Mark David, Professor, Natural Resources & Environmental Sciences, University of Illinois, Urbana, IL

Dr. Douglas McLaughlin, Principal Research Scientist, National Council for Air and Stream Improvement, Inc., Western Michigan University, Kalamazoo, MI

Dr. Patrick J. Mulholland., Distinguished Research Staff Member, Carbon & Nutrient Biogeochemistry Group, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN

Dr. Andrew N. Sharpley, Research Soil Scientist, Department of Crop, Soil and Environmental Sciences, University of Arkansas, Fayetteville, AR

SCIENCE ADVISORY BOARD STAFF

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

* Did not participate in this advisory activity.

Attachment B – Meeting Agenda

U.S. ENVIRONMENTAL PROTECTION AGENCY SCIENCE ADVISORY BOARD

Ecological Processes and Effects Committee (EPEC) Augmented for the Review of
Nutrient Criteria Guidance

Public Teleconference
December 3, 2009, 12:00 noon – 2:00 p.m. (Eastern Time)

AGENDA

12:00 noon	Convene Meeting	Dr. Thomas Armitage Designated Federal Officer EPA Science Advisory Board
12:10 p.m.	Purpose of the Call and Review of Agenda	Dr. Judith Meyer, Chair
12:15 p.m.	EPA Remarks	Dr. Edward Ohanian, Director Health and Ecological Criteria Division EPA Office of Water Dr. Dana Thomas Health and Ecological Criteria Division EPA Office of Water
12:25 p.m.	Public Comments	
12:45 p.m.	Discussion of draft SAB EPEC Report - General comments - Responses to charge questions - Executive summary - Letter to the Administrator	Dr. Judith Meyer and Committee
1:55 p.m.	Summary and Next Steps	Dr. Judith Meyer

2:00 p.m. Adjourn

Attachment C – Speaker List

**U.S. ENVIRONMENTAL PROTECTION AGENCY
SCIENCE ADVISORY BOARD
Ecological Processes and Effects Committee Augmented for the
Review of Nutrient Criteria Guidance
Public Teleconference, December 3, 2009**

List of Speakers Providing Public Comments*

1. Fredric P. Andes, Barnes & Thornburg, LLP
2. William T. Hall, Hall & Associates
3. Mary E. Becker, Connecticut Department of Environmental Protection
4. Sarah Johnson, Colorado Department of Public Health and Environment
5. Steven A. Hann, Hamburg, Rubin, Mullin, Maxwell & Lupin, P.C.

* Speakers will present comments in the order in which the requests were received in the SAB Staff Office.