

**U.S. Environmental Protection Agency
Science Advisory Board
Ecological Processes and Effects Committee Augmented for Ballast Water Advisory**

Public Teleconference Call
March 15, 2011
Noon to 3:00 p.m. Eastern Time

Minutes of the Meeting

Attendees:

Ecological Processes and Effects Committee (EPEC) Augmented for Ballast Water Advisory: Judy Meyer, Fred Benfield, JoAnn Burkholder, Allen Burton, Peter Chapman, William Clements, Andrew Cohen, Loveday Conquest, Robert Diaz, Fred Dobbs, Lisa Drake, Charles Haas, Thomas W. La Point, Wayne Landis, David Lodge, Kevin Reynolds, James Sanders, Mario Tamburri (for full roster, see Attachment A).

SAB Staff Office: Iris Goodman (Designated Federal Officer)

EPA Staff: Ryan Albert, Office of Water

Other Attendees: Names of those who requested the teleconference call-in number are provided in Attachment B.

Purpose: to discuss the draft compiled responses to charge questions prepared by subgroups of the EPEC Ballast Water Advisory Panel and to assess the Panel's position on key conclusions presented in the draft compilation.

Meeting Materials:

All materials discussed at the meeting are available at the SAB website, <http://www.epa.gov/sab>, at the [March 15, 2011, Ballast Water Advisory Panel Meeting](#) page.

Summary of Discussions:

Opening remarks and roll call

This meeting was announced in the Federal Register¹ and proceeded according to the meeting agenda.² **Ms. Goodman**, Designated Federal Officer for the Panel, convened the meeting and noted that the Ballast Water Advisory Panel (herein, Panel) operates in accordance with the Federal Advisory Committee Act. This means that meetings are announced and open to the public, all materials prepared for or by the Panel are available to the public, and meeting minutes are prepared. She noted that discussions on the call would reference selected portions of the draft Final Ballast Water Advisory Report,³ as identified in the agenda, and three public comments.⁴ Ms. Goodman noted that these materials had been made available on the SAB website.

Review of agenda and process to be used

Dr. Meyer welcomed the group and summarized the topics on the agenda. To give the panel members context for today's discussion, she briefly described the process that would be used by the Chartered SAB to conduct a "quality review" of the final Ballast Water report, once it is submitted by this Advisory Panel. She summarized the four questions that guide the Chartered SAB in its quality review: (1) does the report answer the original charge questions? (2) Are there technical errors or omissions? (3) Is the report clear and logical? (4) Are the conclusions supported by the document?

She also described the decision options available to the Chartered SAB based on its review of the final document. These options include to approve the document as written, or to require minor revisions, that are reconciled at the discretion of the Panel Chair and approved by the SAB Chair. Dr. Meyer pointed out that a decision that required extensive revisions could trigger an entirely new quality review by the entire Chartered SAB.

Dr. Meyer said the goal of this call was to reach agreement on the content of selected sections of the draft final report, as identified in the agenda, and their related conclusions. She also reminded the panel that the Draft Final report to be discussed today was still regarded as draft and asked that it not be cited or quoted.

A. Remarks from EPA, Office of Water

Dr. Meyer then asked Dr. Ryan Albert, Office of Water, to give brief remarks about the settlement agreement reached March 8, 2011, between EPA and several conservation organizations. **Dr. Albert** began by thanking the panel for its work on the Ballast Water Advisory. Dr. Ryan said that EPA had requested two scientific reviews of ballast water issues as part of the negotiated settlement. Those two reviews are: (1) the National Academy of Sciences (NAS) review about risks of invasions by organisms carried in ballast water and (2) this SAB review of the effectiveness of technologies for treating ballast water. He said that the NAS report will help inform the development of numeric water quality standards for ballast water treatment and that the SAB report will help inform understanding of treatment options. Dr. Ryan also noted that the settlement agreement does not affect the timeline or EPA's ongoing process for proposing Vessel General Permit (VGP) standards.

B. Public Comments

Dr. Raymond Vaughn, Environmental Scientist the New York State Attorney General's Office and member of New York's ballast water management team, referred the Panel to his full written comments⁵ for detail. He said the report's section on statistics did not adequately discuss the relationships among the standard (or organism concentration limit), the sample volume, and statistical confidence. He also reiterated that a representative sample can be concentrated and tested without regard to whether the organisms are aggregated or randomly distributed.

Summary of Discussions

Dr. Meyer thanked Dr. Vaughn for his comments. She then turned to the next agenda item, discussion of the draft responses to Charge question 4 in Section 6: “Limitations of existing studies and reports,” and Appendix B, “Further analyses of onshore treatment processes.” Dr. Meyer began by summarizing the process used to develop the draft final text for review by the full panel. She said that Dr. Cohen, Dr. Burkholder, and Mr. Reynolds provided suggested revisions to Dr. Lodge, who then prepared the draft text, to which she made edits to create the final draft text posted for review by the full panel.

Dr. Meyer then asked Dr. Lodge to lead the panel discussion of the draft final text for Charge question 4 and Appendix B. She reminded the panel to focus on revisions needed for the final document. The panel discussion led to agreement on the following points:

- a) Section 6.2, “Testing shipboard treatment systems,” will be revised to make the following clarifications: differences between U.S. and international regulations will be summarized; the term “surrogate species” will be replaced throughout the report with the term “standard test organisms;” a paragraph will be added to the section on challenge water that incorporates discussion points about need for augmentation, based on earlier comments provided by Dr. Tamburri.
- b) Section 6.3, “Approaches to compliance/ enforcement of ballast water regulations and potential application to technology testing,” will be revised to add a statement that acknowledges that compliance testing is under development, as noted in the recent EPA/Coast Guard Memorandum of Understanding (MOU).
- c) Section 6.4, “Reception facilities as an alternative to shipboard treatment,” will be revised to replace the more general term “facilities,” currently used as shorthand to describe onshore treatment facilities, with the more specific term “reception facilities” in order to avoid confusion with “testing facilities.”
- d) Section 6.4.2. “Comparison of onshore facilities to vessel-based BWMS,” will be revised by Mr. Reynolds to meet two objectives. The first objective is to succinctly describe issues that would need to be considered in order to “scale-up” estimates of treatment capacity that would be required for treatment of ballast water in onshore reception facilities. These revisions will draw from existing literature, identify data gaps. The second objective is to succinctly compare cost estimates, based primarily on citations from recent literature. Figure 6.3. “Cost estimates listed in U.S. Coast Guard,” will be deleted.
- d) Section 6.4.3. (B) “Potential impacts on vessel revenue.” This text will be revised by Mr. Reynolds, who will succinctly summarize the key cost issues that need to be considered. This will include drawing from more recent literature, where relevant, and will also point out data gaps. Alternatively, this section might simply be incorporated into Section 6.4.3 described in (d) above to avoid redundancy.
- e) Overall, the text of Section 6.4 will include description of what has been reported in the

literature about the efficacy of onshore treatment sufficient to support the report's conclusions. This can include drawing upon previously prepared text that describes treatment processes that have been employed in wastewater treatment. Dr. Meyer will prepare this revision.

f) Appendix B, "Further analysis of onshore treatment facilities," will be revised to present only a review of the findings from the literature. This decision was made due to concern by the panel that the literature review (presented in Appendix B, Part A, "Literature Review of Onshore Treatment Studies") included too much original analysis. Dr. Meyer will review the existing draft of Part A and will suggest changes to make Part A more of a literature review with less new analysis; she will send the suggested changes to the subgroup for consideration. The new work on "meta-analyses" for cost and capacity estimates that is currently in Part A will be deleted. Parts C, D, and E will be eliminated. The revised Appendix will be designated as a Committee product.

Dr. Meyer announced a small change to the order of discussion, noting that, in the interest of time, the next agenda item on the topic of the "Background and Glossary" would instead be discussed last. She then asked Dr. Landis to lead the discussion of section 6.6, "Risk management approaches to reduce invasion risk." This discussion led to agreement on the following points.

a) Section 6.6, "Risk management approaches" will be presented separately as new section 7.

b) Dr. Landis will add a sentence to the text on Hazard Assessment and Control Points (HAACP) to acknowledge that some of these steps are part of the current framework for managing ballast water, but noting that such steps should be more systematically applied. The revised text will emphasize the importance of holistic approaches as an alternative to relying on end-of-pipe testing. The text will refer back to the risk assessment section at the beginning of the document. Dr. Landis will also provide a bullet statement to serve as a conclusion for the HAACP section.

c) Section 2.2, *Charge to the Panel* will be revised to add a sentence at the beginning of this section that states the broader context of the charge to the panel as noted in the Federal Register Notice.

d) Section 2.3.1 *Ballast water regulations* will be revised add references to New York State's ballast water regulations will be added to Table 2.1A and B. A new paragraph will be added to the text on "Other Regulatory Frameworks" to briefly describe marine rules (e.g., related to safety, stability), in order to provide a sense of the broader regulatory context in which vessels operate

e) The section currently numbered as Section 2.3.2 *Risk Assessment* will be revised to provide introductory context and to include reference to the HAACP section that appears at the end of the document.

f) Section 2 will be reordered so that 2.3.2 becomes the *Glossary of Terms*. *Risk Assessment* will follow the glossary and will be given its own section, i.e., 2.4 *Risk Assessment*.

Dr. Meyer then asked Drs. Drake and Conquest to lead the discussion of the draft final text for section 3, "Statistics and Interpretation." They covered the following topics: selection of the Poisson distribution for assessing whether ballast waters standards can be met; theoretical

underpinnings of the Poisson distribution in relation to the Environmental Technology Verification (ETV) protocol and laboratory experiments; interactive effects, and certainty of conclusions with respect to the D-2/Phase 1 standards and more stringent standards, using statistically based sampling protocols. This discussion led to the following assignment that *Section 3 Statistics*: will be revised by Dr. Conquest, with input from input received from Drs. Tamburri, Drake, and Haas.

Dr. Meyer asked Ms. Goodman to give a brief overview of the glossary, which led to the decision that the Glossary will be presented alphabetically and will include a table of acronyms used in the report.

Wrap up:

Dr. Meyer thanked the Panel for its focused discussion and attention to detail. She asked panelists to send any remaining comments or revisions to Ms. Goodman by March 21, 2011. Dr. Meyer said she anticipated having the revised draft, including a draft Executive Summary and letter to the Administrator, posted by March 25, 2011. She also said the panel should anticipate that the report would receive a quality review by the Chartered SAB in mid-April, 2011.

Ms. Goodman adjourned the meeting at 5:00 pm.

Respectfully Submitted:

Certified as Accurate:

/Signed/

/Signed/

Iris Goodman,
Designated Federal Officer

Dr. Judith L Meyer, Chair
SAB Ecological Processes and
Effects 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
Ecological Processes and Effects Committee Augmented for the Ballast Water Advisory**

CHAIR

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

MEMBERS

Dr. E. Fred 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. William Clements, Professor, Department of Fish, Wildlife, and Conservation Biology, Colorado State University, Fort Collins, CO

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

Dr. Robert Diaz, Professor, Department of Biological Sciences, Virginia Institute of Marine Science, College of William and Mary, Gloucester Pt., VA

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. Thomas W. La Point, Professor, Department of Biological Sciences, University of North Texas, Denton, TX

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

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

CONSULTANTS

Dr. JoAnn Burkholder, Professor, Department of Plant Biology, Center for Applied Aquatic Ecology, North Carolina State University, Raleigh, NC

Dr. Andrew Cohen, Senior Scientist and Director, Biological Invasions Program, San Francisco Estuary Institute, Oakland, CA

Dr. Fred Dobbs, Professor and Graduate Program Director, Ocean, Earth and Atmospheric Sciences, College of Sciences, Old Dominion University, Norfolk, VA

Dr. Lisa Drake, Senior Scientist, Science Applications International Corporation, Key West, FL

Dr. Charles Haas, L.D. Betz Professor of Environmental Engineering, Civil, Architectural and Environmental Engineering, College of Engineering, Drexel University, Philadelphia, PA

Mr. Edward Lemieux, Director, Center for Corrosion Science Engineering, Naval Research Laboratory, Washington, DC

Dr. David Lodge, Professor, Biological Sciences, University of Notre Dame, Notre Dame, IN

Mr. Kevin Reynolds, Senior Marine Engineer, The Glosten Associates, Seattle, WA

Dr. Mario Tamburri, Associate Professor, Chesapeake Biological Laboratory, Maritime Environmental Resource Center, University of Maryland Center for Environmental Science, Solomons, MD, United States

Dr. Nicholas Welschmeyer, Professor of Oceanography, Moss Landing Marine Laboratories, San Jose State University, Moss Landing, CA

SCIENCE ADVISORY BOARD STAFF

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

Ms. Iris Goodman, Designated Federal Officer, U.S. Environmental Protection Agency, Washington, DC

Attachment B:

Members of the public who requested the call-in number for the meeting:

Raymond Vaughan, New York State Attorney General's Office

Ryan Albert, EPA Office of Water

Richard Everett, U.S. Coast Guard

Materials Cited

The following meeting materials are available on the SAB website, <http://www.epa.gov/sab>, at the March 15, 2011, Ecological Processes and Effects Committee meeting page:

<http://yosemite.epa.gov/sab/sabproduct.nsf/a84bfee16cc358ad85256ccd006b0b4b/1b3cefbed2758b5385257833006fd8f1!OpenDocument&Date=2011-03-15>

¹ Federal Register, Vol. 76, No. 40/Tuesday, March 1, 2011/Notices

² Meeting Agenda, March 15, 2011

³ Draft Final Ballast Water Advisory Report for Discussion March 15 and 17

⁴ Public Comments Submitted to the SAB Staff Office

Comments from M. Falkner, Marine Facilities Division, California State Lands Commission..

Comments from Raymond Vaughn, New York State Department of Environmental Conservation.

Comments from S. Crisafulli, New York State Department of Environmental Conservation.

⁵ Comments from Raymond Vaughn, New York State Department of Environmental Conservation.