

**U.S. Environmental Protection Agency
Science Advisory Board**

Summary Minutes for the Public Teleconference held on:

January 17, 2020

January 21, 2020

January 22, 2020

January 24, 2020

Meeting Participants:

Chartered Science Advisory Board (SAB) Members*

Dr. Michael Honeycutt, Chair

Dr. Rodney Andrews

Dr. Hugh A. Barton

Dr. Barbara Beck

Dr. Deborah Hall Bennett

Dr. Frederick Bernthal

Dr. Bob Blanz

Dr. Todd Brewer

Dr. Joel G. Burken

Dr. Janice E. Chambers

Dr. John R. Christy

Dr. Samuel Cohen

Dr. Louis Anthony (Tony) Cox, Jr.

Dr. Alison C. Cullen

Dr. Otto C. Doering III

Dr. Susan P. Felter

Dr. Joseph A. Gardella

Dr. John D. Graham

Dr. John Guckenheimer

Dr. Margaret M. MacDonell

Dr. Robert E. Mace

Dr. Clyde F. Martin

Dr. Sue Marty

Mr. Robert W. Merritt,

Dr. Larry Monroe

Dr. Thomas F. Parkerton

Dr. Robert Phalen

Dr. Kenneth M. Portier

Dr. Robert Puls

Dr. Kenneth Ramos

Dr. Tara L. Sabo-Attwood

Dr. Mara Seeley

Dr. Anne Smith

Dr. Richard Smith
Dr. Jay Turner
Dr. Brant Ulsh
Dr. Donald van der Vaart
Ms. Carrie Vollmer-Sanders
Dr. Kimberly White
Dr. Mark Wiesner
Dr. Peter J. Wilcoxon
Dr. Richard A. Williams
Dr. S. Stanley Young
Dr. Matthew Zwiernik

*Attendance for each meeting is presented in Appendix A.

SAB Staff Office

Dr. Thomas Armitage, Designated Federal Officer (DFO) for the Chartered SAB

Other Attendees

See Attachment A.

Meeting Summary:

The Chartered Science Advisory Board (SAB) held four public teleconferences occurring on January 17, 21, 22 and 24. The four teleconferences were held as part of one meeting. Dr. Thomas Armitage, DFO for the SAB, convened each teleconference. On January 17th, Dr. Armitage, convened the meeting and noted that the SAB was meeting by teleconference to discuss four draft reportsⁱ prepared by the SAB to review the scientific and technical basis of four proposed EPA rules. Dr. Armitage provided introductory remarks in his capacity as DFO. He stated that the SAB is an independent Federal Advisory Committee chartered under the Federal Advisory Committee Act (FACA). He indicated that the SAB is empowered by law to provide scientific and technical advice to the EPA Administrator. Dr. Armitage noted that summary minutes of the teleconferences would be prepared and certified by the SAB Chair following the meetings and noted the SAB's compliance with ethics requirements.

Dr. Armitage indicated that all meeting materials were available on the SAB web site. These meeting materials included: the Federal Register Noticeⁱⁱ announcing the meeting, meeting agendaⁱⁱⁱ, and SAB roster^{iv}. Dr. Armitage noted that, as required by FACA, time had been included on the meeting agenda to hear public comments and that requests to speak had been received from 35 individuals^v. In addition, Dr. Armitage noted that written public comments had been received^{vi}, posted on the SAB website, and made available to SAB members. Dr. Armitage also indicated that public access to the meeting had been provided through a telephone line and an audio webcast.

January 17, 2020

Meeting convened:

Dr. Thomas Armitage convened the meeting at 1:00 pm (Eastern Time). Dr. Armitage proceeded with a roll call of the Board and then turned the meeting over to Dr. Michael Honeycutt, Chair of the SAB.

Purpose of the Teleconference and Review of the Agenda:

Dr. Honeycutt welcomed SAB members, EPA Staff, and others to the teleconference. He noted that several members of the SAB had completed their terms of service on the Board and indicated that three new members, Drs. Margaret MacDonell and Mara Seeley, and Ms. Carrie Vollmer-Sanders, had been appointed.

Dr. Honeycutt indicated the SAB was holding the teleconference, and three additional teleconferences on January 21, 22, and 24, as one meeting to discuss four draft reports that had been developed by workgroups of the Board. The draft reports provided SAB advice and comments on the scientific and technical basis of four proposed EPA rules: (1) Revised Definition of Waters of the United States (WOTUS Rule); (2) The proposed rule titled Strengthening Transparency in Regulatory Science (known as the Science and Transparency Rule); (3) The Safer Affordable Fuel-Efficient Vehicle Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (SAFE Vehicles Rule); and (4) National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating units – Reconsideration of Supplemental Finding and Residual risk and Technology Review (the Mercury and Air Toxic or MATS Rule).

Dr. Honeycutt noted that the SAB had reviewed the four proposed rules in accordance with the requirements of the Environmental Research, Development, and Demonstration Authorization Act (ERDDAA) which requires that proposed rules be made available to the SAB for review. He noted that SAB reviews focused on the scientific and technical basis of the proposed actions.

Dr. Honeycutt noted that, since 2013, the SAB had followed a process for reviewing major planned actions identified by EPA in the Unified Regulatory Agenda. Under that process, two steps were taken to decide whether to review the SAB would review proposed rules: (1) a workgroup of the SAB reviewed EPA's planned actions and identified those actions which would benefit from SAB review of the underlying science, and (2) the full SAB deliberated on the workgroup findings and decided whether further SAB review of planned actions was needed. Dr. Honeycutt noted that at a meeting held on June 5-6, 2019, the SAB had decided to review the four proposed rules. Subsequent to the June 5-6 meeting SAB workgroups had developed draft reports on the proposed rules. Dr. Honeycutt noted that the objective of this teleconference, and the ones to be held on January 21, 22, and 24, was to discuss and reach agreement on the SAB workgroup draft reports.

Dr. Honeycutt reviewed the agenda and noted that the draft reports would be discussed in the following order: (1) on January 17 the SAB would discuss the draft SAB commentary on the WOTUS Rule; (2) on January 21 the SAB would discuss the draft report on the Science and

Transparency Rule; (3) on January 22 the SAB would discuss the draft report on the SAFE Vehicles Rule; and (4) on January 24 the SAB would discuss the draft report on the MATS Rule.

Dr. Honeycutt indicated that the Board would hear public comments on the first teleconference but not the other calls, He indicated that he wanted to reach consensus on the reports but stated that if the Board could not reach agreement, a dissenting opinion could be included in the reports.

Public comments:

The SAB heard public comments from 33 speakers (two registered speakers did not provide comments).

Steve Milloy, affiliated with JunkScience.com, commented on four draft SAB reports. He expressed support for the he proposed rules that had been reviewed (revised definition of Waters of the U.S., SAFE Vehicles Rule, Science and Transparency Rule, and MATS Rule). He disagreed with many of the findings and recommendations in the draft SAB reports. He also noted that that the reports should represent the independent views of the SAB.

One SAB member responded that the draft reports had been solely developed by members of the SAB.

John Dale Dunn, affiliated with the Heartland Institute and American Council on Science and Health, indicated that he did not agree with the draft SAB reports criticizing EPA's proposed rules. His comments focused on the proposed Science and Transparency Rule. He criticized some epidemiological studies that had previously been used to support EPA regulations and noted that some researchers conducting these studies had violated rules of epidemiology and toxicology. He commented that the Science and Transparency Rule would eliminate the use of bad studies by requiring that data be made publicly available. He also criticized studies that had previously been used in weight of evidence approaches to support regulation.

Joseph Aldy, affiliated with Harvard University, commented on the proposed MATS Rule. He commented that EPA's cost benefit analysis of the rule had not followed best practices for economic analysis because it omitted consideration of the co-benefits of reducing fine particulate matter. He also commented that EPA's analysis had underestimated the public health benefits of controlling mercury pollution.

Geena Reed, affiliated with the Union of Concerned Scientists, provided comments on the four SAB workgroup draft reports. She supported the workgroup report on the Science and Transparency Rule. She urged the SAB to recommend that EPA not finalize the proposed Science and Transparency Rule She expressed support for the SAB workgroup draft report on the SAFE Vehicles Rule, noting that there were significant weaknesses in EPA's scientific analysis of the Rule. She provided specific comments on the SAB draft report on the MATS Rule and noted that the cost benefit analysis should reflect long-standing best practice. She also criticized an EPA decision to change the process by which the SAB decides whether to review proposed regulatory actions.

Jeff Alson, affiliated with the Environmental Protection Network, commented on the proposed SAFE Vehicles Rule. He noted biases in EPA's analysis. He called for a re-proposal to allow public review before decisions on the final rule.

James Entstrom, affiliated with UCLA and the Scientific Integrity Institute commented on the proposed Science and Transparency Rule. He commented that the proposed rule was necessary to increase the scientific validity and transparency of research findings used to justify EPA regulations. He recommended modifications of the rule to encourage cooperation among scientists conducting studies and peer critics conducting analyses to resolve legitimate controversy about published findings.

Daren Bakst, affiliated with the Heritage Foundation, commented on the draft SAB reports on the WOTUS commentary and the proposed Science and Transparency Rule. He also noted that he had submitted written comments on the MATS Rule. He commented that the WOTUS report should focus only on scientific issues. He commented that the report on the Science and Transparency rule should elaborate on the point that strengthening transparency in regulatory science is a worthy goal. He noted that the report should highlight the problems that exist and comment on how these problems should be addressed.

Madison Condon, affiliated with the Institute for Policy Integrity, NYU Law School, commented on the SAB draft report on the Science and Transparency Rule. She noted that the costs of implementing the rule should be more thoroughly assessed. She commented that the draft report did not consider alternatives to a blanket exclusion policy for studies without publicly available data. She commented that the draft report observed that applying the proposed rule retroactively could exclude potentially valuable information from the regulatory process. She also commented that the draft report correctly noted that lack of clarity on how exceptions to the rule will be applied is a cause for concern.

Jon Devine, affiliated with the Natural Resources Defense Council, commented on the SAB draft commentary on the proposed WOTUS rule. He noted that the Board's commentary was in line with comments from many scientific societies. He expressed support for the draft commentary.

Laura Craig, affiliated with American Rivers, expressed support for the SAB draft commentary on the proposed WOTUS rule. She commented that the EPA's proposed WOTUS rule ignored scientific evidence, that it would have far reaching harmful effects and would result in inadequate protection of waterways.

Gretchen Goldman, affiliated with the Union of Concerned Scientists, commented on the proposed SAFE Vehicles Rule and the proposed MATS Rule. She commented that the EPA should use the best available science for analysis of these proposals. She commented that the MATS rule would have a negative effect on public health. She commented that the SAB should recommend that EPA consider the reduction of fine particulate matter to be a co-benefit. She commented that the SAB report should indicate whether statements concerning hormesis were a minority view.

Gary Ewart, affiliated with the American Thoracic Society, commented on the proposed Science and Transparency Rule. He commented that the SAB had identified a number of concerns about the proposed rule and noted that there were additional problems. He commented on the importance of meeting requirements of the Health Insurance Portability and Accountability Act and stated that even if data were de-identified, in some cases it was still possible to associate individuals with data.

Kevin Cromar, affiliated with the American Thoracic Society, commented on the MATS Rule. He commented on the importance of considering the benefits of reducing fine particulate matter.

Some SAB members commented on the importance of distinguishing between the estimated and measured levels of fine particulate matter. Members commented on statistical issues concerning modeling estimated concentrations and noted that it was important to consider error estimates. A member commented that some studies did not show an association between fine particulate matter emissions and increased mortality

Vijay Limaye, affiliated with the Natural Resources Defense Council, commented that the draft SAB report on the Science and Transparency Rule had identified deficiencies in the proposed rule. He commented on the deficiencies and indicated that the EPA had not demonstrated the need for the proposed rule.

Sumita Khatri, affiliated with the American Lung Association, commented on EPA's proposed Science and Transparency Rule. In particular, she commented on the importance of protecting confidential data and noted that the proposed rule would block the use of such data in rule making.

David Hill, affiliated with the American Lung Association, commented on the SAB draft report on the MATS Rule. He commented that EPA's analysis should consider the benefits of reduction in fine particulate matter. He disagreed with a reference in the SAB report to hormesis and urged that it be removed from the report.

One SAB member responded that a problem with the available information on the effects of fine particulates was that it had not distinguished between measured and estimated concentrations of fine particulate matter and therefore it was not possible to know the shape of the dose-response curve at low concentrations.

Albert Rizzo, affiliated with the American Lung Association, commented on the proposed SAFE Vehicles Rule. He expressed opposition to some provisions of the proposed rule and indicated that they would be harmful to public health.

Jennifer McPartland, affiliated with the Environmental Defense Fund, commented on the SAB draft report on the proposed Science and Transparency Rule. She commented that the report correctly identified significant problems with the premise, intent, and mechanics of the proposal. She commented that the EPA had failed to articulate why the proposed rule was needed and how it would improve transparency and scientific integrity of regulatory outcomes in an effective and efficient manner. She also provided some suggestions to improve the SAB draft report.

Craig Lewis, affiliated with the Aluminum Association's Transportation Group, commented on the SAFE Vehicles Rule. He expressed the view that the proposed rule was based on flawed assumptions. In particular, he commented that the rule assumed that automakers would reduce weight evenly across vehicle segments and noted that this was not an accurate representation of real world experience.

Nick Goldstein, affiliated with the American Road and Transportation Builders Association, commented on the SAB draft commentary on the proposed WOTUS Rule and the SAB draft report on the SAFE Vehicles Rule. He commented that the EPA had considered science in developing the proposed WOTUS rule but indicated that EPA was taking action under statutory and legal requirements to define Waters of the U.S. He noted that it was important to recognize the role of states in the protection of water bodies. He commented on the impact of the SAFE Vehicles Rule on transportation projects.

Roy Gamse commented on the SAB draft report on the Science and Transparency Rule. He noted that the report identified a number of problems with the proposed regulation. He commented that the SAB report should provide some specific recommendations to address problems. These included, identifying ways to protect the confidentiality of participants in research studies, use of international studies, and analyzing costs and benefits of the proposal.

Hayden Hashimoto, affiliated with the Clean Air Task Force, provided comments on the MATS Rule. He commented on how the proposed MATS rule's characterization of benefits was contradicted by evidence before EPA.

Chester France commented on weaknesses in EPA's analysis of the proposed SAFE Vehicles Rule. He noted that there were widespread foundational flaws in the rule that had not been addressed by the SAB. He indicated that the proposed rule would have a large net cost and cause an increase in harmful emissions and health impacts.

Janet Keough, affiliated with Water Legacy, commented on EPA's proposed WOTUS Rule. She expressed scientific and technical concerns about EPA's proposed redefinition of Waters of the U.S.

Carl Richards commented on the proposed WOTUS rule and expressed support for points raised in the SAB draft commentary on the proposed rule.

Ken Teague criticized EPA's proposed WOTUS rule and expressed support for the SAB's draft commentary on the rule.

John Bachman commented on the SAB draft report on the proposed Science and Transparency rule. He commented that the process for release of the draft report did not provide adequate time for review and public comment. He noted that the SAB draft report correctly pointed out conceptual and practical deficiencies in the proposed rule as well as flaws in the assessment of costs and benefits. He noted that the EPA had not demonstrated the need for the proposed rule.

Dan Costa, affiliated with the Environmental Protection Network, commented on the SAB draft report on EPA's proposed Science and Transparency Rule. He commented that the EPA had not clearly identified the need for the rule. He noted that in its draft report the SAB had identified a number of deficiencies in the proposal and he recommended that these deficiencies be emphasized in the executive summary. He commented that the benefits of the proposal did not exceed the costs and also criticized some aspects of the provision of the rule that would give authority to the Administrator to decide whether to exclude studies from requirements.

Therese Langer, affiliated with the American Council for an Energy-Efficient Economy, commented on the SAFE Vehicles Rule. Her comments focused on weaknesses in the sales and scrappage models used by EPA to develop the rule. She recommended that the SAB urge EPA to release a revised analysis addressing problems associated with this modeling.

Steve Hamburg commented on the SAB draft reports. As a former member of the SAB who had worked on developing the draft reports, he commented that they were balanced and well-reasoned. He urged SAB members to vote to approve the reports.

Charles Driscoll, affiliated with Syracuse University, commented on the proposed MATS rule. His comments focused recommendations for conducting the mercury risk assessment. He indicated that there was no safe level of methylmercury and commented on the importance of consideration of levels of methylmercury in marine and freshwater fish. He commented on the consideration of non-neurodevelopmental effects.

Ted Steichen, affiliated with the American Petroleum Institute, commented on the SAB draft report on the Science and Transparency rule. He noted that the SAB report had recommended that the proposed regulation could best be implemented by application of requirements to studies going forward, not retroactively. He commented that clear requirements established at the start of a study would provide for the possibility of the highest level of transparency. He noted that the SAB report addressed the granting of exemptions when a study did not comply with transparency standards and commented that it was important to consider what could be done when an important study had been conducted in such a way that it was not feasible to ensure that data could be made available for independent validation. He also commented on the need to define dose-response data and models, the need for protection of privacy and confidentiality, and conducting the reanalysis of data.

Stephanie Digby commented on the importance of careful and thorough consideration of the scientific and technical basis of proposed actions.

SAB Discussion:

Dr. Honeycutt thanked members of the public for their comments and stated that the Board would next discuss its draft commentary on EPA's Revised Definition of Waters of the United States (WOTUS). He noted that an SAB workgroup had developed the draft commentary and asked the workgroup chair, Dr. Alison Cullen to summarize the document. Dr. Cullen thanked the workgroup members for their work to develop the draft commentary and presented a summary of the document. She noted that EPA had indicated that its proposed definition of waters of the U.S. was constrained by the Clean Water Act and case law. Dr. Cullen indicated

that the SAB was providing an opinion on the scientific and technical basis of EPA's proposed definition. She summarized following SAB findings in the draft commentary:

1. The proposed rule did not fully incorporate the findings of EPA's 2015 Connectivity report. The Agency did not provide a body of peer reviewed evidence to support or justify a departure from the science presented in the Connectivity report.
2. The proposed rule neglected science pertaining to the connectivity of ground water to wetlands and adjacent major bodies of water.
3. The proposed rule excluded irrigation canals from the definition of Waters of the U.S. However, the biological and chemical contamination of large-scale canals was an established and serious threat to public health and safety.
4. The definition of jurisdictional waters in the proposed rule departed from science in the exclusion of adjacent wetlands that do not abut or have a direct hydrologic surface connection to otherwise jurisdictional waters. The SAB review of the 2015 WOTUS rule found a sound scientific basis for the inclusion of these wetlands.

Dr. Cullen noted that the workgroup had found that proposed rule was not fully supported by science, failed to protect ephemeral streams and wetlands which connect to navigable waters below the surface, and threatened to weaken protection of the nation's waters.

SAB members discussed the findings in the commentary. A member commented that the meaning of the term "established science" was not clear. He suggested using the term "recent scientific findings." The Board discussed a range of other terms that might be used to provide greater clarity.

Members discussed a range of policy issues. One member argued that measures intended to protect certain waters were "takings." Other members commented that the SAB should focus its attention on science issues, not legal and policy issues. Some members commented that the commentary included statements concerning on legal or policy issues. They indicated that such statements should be removed from the document or rewritten. The workgroup chair indicated that members had tried to avoid making legal or policy statements but in some cases it was necessary to refer to such issues.

A member commented that he supported EPA's proposed rule because it adhered to existing legal requirements. He stated that he did not disagree with findings in the commentary but indicated that the Agency must meet the requirements of the law.

Members discussed whether the commentary should call for protection of ground water. Some members commented that ground water had never been included in the definition of waters of the U.S. A member commented on the difficulties of implementing a program that included ground water protection. One member recommended removing the findings concerning ground water from the commentary. Other members commented that subsurface connectivity should be was important. They noted it was important to include shallow ground water in the definition of Waters of the U.S. The Board discussed a number of possible changes in the text concerning ground water.

After members had discussed the draft report, the SAB Chair noted that it was time to recess the teleconference and it was apparent that members needed more time to reach agreement on changes needed in the draft WOTUS commentary. He suggested that the SAB WOTUS workgroup incorporate suggested changes into the document to address points that had been raised in the discussion, and that a revised draft of the commentary be circulated to members for further discussion at the teleconference to be held on Friday, January 24th.

Dr. Cullen agreed to incorporate additional changes, circulate the revised draft to the workgroup, and send it to the DFO for distribution to Board members before the teleconference on January 24th.

Dr. Honeycutt thanked Dr. Cullen and stated that the Board would continue the discussion of the draft commentary on January 24th.

Meeting recessed:

The meeting recessed at 5:15 p.m. (Eastern Time)

January 21, 2020

Meeting reconvened:

Dr. Thomas Armitage reconvened the meeting at approximately 1:03 pm (Eastern Time). He stated that this was the second of four planned public teleconferences scheduled for discussion of SAB draft reports. He briefly recapped meeting from Friday Jan 17, 2020, noting that the SAB had heard public comments on the draft reports. Dr. Armitage mentioned that the agenda and meeting materials were available on the SAB website. Dr. Armitage proceeded with a roll call of the Board and then turned the meeting over to Dr. Michael Honeycutt, Chair of the SAB.

SAB Discussion:

Dr. Honeycutt provided opening remarks. He explained the SAB's role in reviewing proposed regulatory actions. He stated that on the call, the SAB would discuss its draft report on EPA's proposed Science and Transparency Rule. Dr. Honeycutt, reiterated the goals of the meeting (i.e., reach agreement of the draft report, discuss areas where there may not be consensus, discuss inaccurate statements, discuss items that need to be added to the report). He then identified the workgroup that had developed the draft report on the Science and Transparency Rule: Dr. Joseph Gardella, co-chair; Dr. Richard Smith, co-chair; and Drs. Fred Bernthal, Janice Chambers, Tony Cox, Alison Cullen, Otto Doering, Susan Felter, Steve Hamburg (former SAB member), Sue Marty, Brant Ulsh, Kimberly White, and Matthew Zwiernik. Dr. Honeycutt then asked the co-chairs to lead the discussion of the draft report.

Dr. Gardella provided a summary of the workgroup's process to develop the draft report. He noted that he and Dr. Richard Smith had identified a list of issues for discussion focusing on Sections 3.1 – 3.7 of the draft report. He also provided a list of topics for discussion and clarification. These included: (1) the lack of clarity in the referring to "raw data" – he stated that it was not clear what "raw data" referred to in the draft report because this term was not defined in the proposed rule (he also noted that it was important to clarify how to treat historical data when some information was not available); (2) legal issues (he noted that it was important to

discuss issues related to compensation); (3) weight of evidence application (he noted that it was not clear which studies must meet the requirements of the proposed rule - all of the studies used in a weight of evidence assessment, or the ones used to regulate and make final Agency decisions; (4) lack of criteria for waiving the requirements of the rule; (5) multiple issues related to a subject's privacy and dose response, and (6) cost issues, specifically who will pay costs incurred to meet rule requirements (e.g., reanalysis of data, data recovery, data storage). Dr. Gardella also indicated that the Board should to review each bullet point in the letter to the Administrator to clarify and consolidate those points if necessary.

The Board then discussed the letter to the Administrator in the draft report. Members suggested including a statement to address the value of strengthening transparency (page 1, line 35-36). Members suggested revising line 41 to address the feasibility of the proposed rule.

Members suggested revising statements referring to “weight of evidence” and “regulatory endpoints” to provide greater clarity. Members discussed clarification of the second bullet but no specific text was agreed to.

Several members raised concerns regarding bullet point 2 and it was suggested that this section be rewritten. Members discussed deleting or revising the last sentence in bullet 3 in order to provide a recommendation. Members agreed to consolidate bullet points 4 and 8 and to incorporate additional text found in the body of the report (from page 16).

Members discussed changing the sentence starting on page 2 line 20 in bullet 4. It was suggested that this sentence be rewritten to state that the proposed rule should build on techniques and practices to protect human data. Members also suggested that in bullet 4, IRB rules be referenced instead of HIPAA. Members suggested that bullet 8 in the letter be clarified to differentiate federal agency and academic institution procedures for accessing data. In addition, members suggested that other sources of data that are not federally generated should be discussed. A member suggested that the report mention the issue of disposing of data. Members discussed deleting the word “negotiate” in line 4 on page 3.

Members commented that the text in bullet 5 in the letter to the Administrator should be reflected in the main body of the report. Members agreed to reverse the order of the two sentences that comprised bullet 6. Members suggested deleting the word “raw” from data references in bullet 7. Members also discussed removing the references to raw data throughout the report. The Board also discussed including historical data and international data as examples of data types in bullet 5.

The SAB agreed to delete last sentence (page 3, line 15-16) in bullet 9. Members agreed to delete the word “competition” in line 13. Members discussed how “raw” data are different from information in the analysis dataset. No changes were suggested for bullet 10.

Following the discussion of the letter to the Administrator, the Board discussed the sections of the main body of the report. Members discussed Section 3.1 (General Comments) and suggested that the report recommend EPA delineate the specific problem(s) addressed by the proposed rule.

Members also suggested that the Section include a note referencing an Office of Chemical Safety and Pollution Prevention rule.

The Board discussed Section 3.2 (Requirements to Identify all Studies and Regulatory Science Supporting Final Agency Actions), and noted that the Section should be consistent with the text presented in the letter to the Administrator. In particular, members suggested: deleting lines 33-34 (page 6) and revising lines 39-40 to reflect the availability of the data used, not the identification of studies. The Board also discussed the definition of pivotal regulatory science and the need for clarifications in report text.

Members suggested that on page 7, the text referring to data sharing agreements be clarified. Members noted that the phrase “available to the public” needed clarification. In addition, members suggested that lines 8-13 on page 8 be placed in a footnote and that the paragraph starting on line 24, be revised to mention data center protocols. Members suggested deleting lines 44-46 on page 8 (and from the Executive Summary). Members also suggested that lines 22-25 (page 9) be placed in a footnote. Dr. Honeycutt asked that any additional comments on the section be sent to the co-chairs for incorporation into the next draft of the report.

In Section 3.3 (Requirement to Ensure that Dose Response Data and Models Underlying Pivotal Regulatory Science are Publicly Available in a Manner Sufficient for Independent Validation), the Board noted that the text discussing “animal studies” versus “epidemiological studies” needed to be clarified throughout the document. Members suggested that lines 19-29 (page 11), be revised to reflect changes made to the summary bullets presented in the letter to the Administrator. Members also suggested that lines 19-23 be footnoted and reworded to remove the negative tone, and that lines 28-29 be revised to note that the SAB looks forward to seeing a revised rule. Members suggested that lines 30-32 be placed in a footnote.

Members discussed the text on page 12, lines 13-15 and suggested clarifying revisions. The Board agreed to revise the third point (lines 41-45) to more clearly state the SAB recommendation. Members suggested that text on page 13, lines 20-25 be presented before the numbered questions to provide context to the Agency. The Board agreed to reorder and revise lines 5-10 on page 14 to reflect the changes agreed upon in the letter to the Administrator.

The Board discussed Section 3.4 (Requirement to Make the Raw Data Underlying any Proposed Rule Available for Public Inspection) and the co-chairs were asked to delete the word “raw” as it is used with regard to “data.” Members also suggested that the Section be revised to incorporate changes corresponding to those made in the letter to the Administrator. Members suggested that on page 16, in lines 20-21 a clarification be included to define current practice. Members suggested that an alternative could be to include the sentence in a footnote. Members suggested starting the Section with the paragraph at lines 23-30 and adding the paragraph at lines 23-30 to the letter to the Administrator. Members suggested that on page 16, line 25, the word “patient” be changed to “participant,” and on line 29 the word “validated” be changed to “verified.” Members suggested using the term “database” throughout the report instead of “spreadsheet.”

Members discussed Section 3.5 (Requirement to Describe and Document any Assumptions and Methods Pertaining to the use of Dose Response Data and Models Underlying Pivotal

Regulatory Science). Members suggested that lines 27-30 (page 20) be revised to incorporate language directly from the National Academy of Sciences report. Members also suggested that the paragraph starting on line 44 be removed and placed in a footnote.

Members discussed Section 3.6 (Protecting Sensitive Data and Copyrighted or Confidential Business Information). Members suggested that lines 34-38 on page 21 be revised to reflect changes in the letter to the Administrator. It was also suggested that points 1, 2, and 4 in Section 3.7 (Other SAB Comments on the Proposed Rule) be moved to other appropriate parts of the report, point 5 be deleted, and point 6 be rewritten and presented in a footnote.

After the discussion of the draft report, Dr. Honeycutt asked for a motion that the report be approved with the changes discussed. The motion was seconded and members agreed to revise the report according to the discussion. Several members noted that the tone of the report, as written, was too negative. They suggested that the report be revised to be more constructive and indicated that they wanted to review the final report. Members were asked to send edits and any additional comments to the DFO by February 12, 2020. The co-chairs indicated that they would work to incorporate changes. Dr. Honeycutt noted that after the report was revised, it would be sent back to the Board for final concurrence before sending it to the Administrator.

Meeting recessed:

The meeting was recessed at approximately 5:00 p.m. (Eastern Time)

January 22, 2020

Meeting convened:

Dr. Thomas Armitage reconvened the meeting at 1:00 pm (Eastern Time). Dr. Armitage noted that this was the third of four public teleconferences for the SAB meeting. He noted that the meeting agenda and public comments had been provided on the SAB website and that the meeting was available to the public via telephone and audio webcast. Dr. Armitage proceeded with a roll call of the Board and then turned the meeting over to Dr. Michael Honeycutt, Chair of the SAB.

SAB Discussion:

Dr. Honeycutt thanked members for their participation and reviewed the meeting agenda. He indicated that, on the teleconference the SAB would discuss the draft report on the proposed SAFE Vehicles Rule. He then asked Dr. Peter Wilcoxon, workgroup chair; to provide an overview of the draft report on the proposed rule. Dr. Wilcoxon identified the members of the workgroup, Drs. John Christy, Donald van der Vaart, Richard Smith, and John Graham, and thanked them for their work to develop the draft report. Dr. Wilcoxon then provided a point of clarification regarding public comments heard by the SAB on January 17th. Specifically, Dr. Wilcoxon stated that no EPA employee had input in drafting the report.

Dr. Wilcoxon indicated that, given limited time, the goal of the workgroup had been to review parts of the Agency's proposed rule "The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light 37 Trucks" released on August 24, 2018, that appeared to have significant weakness and parts of the rule where significant improvements

were feasible. He then provided a brief history of the Agency's proposed rule from 2012 through 2018. Dr. Wilcoxon indicated that the draft SAB report contained ten sections. He summarized the workgroup's consensus findings and recommendations in each of the sections. He then asked the workgroup members if they wanted to offer any opening comments.

Dr. van der Vaart asked that the SAB consider including stronger language in the draft report to reflect a lack of incentives for electric vehicles. Dr. Wilcoxon indicated that Dr. Christy had submitted comments requesting the inclusion of language to reflect that there would no impact on the climate system that would be measurable or attributable to the proposed rule.

The SAB began its discussion of the draft report with Section 2 (Introduction) and no changes were suggested. In the discussion of Section 3 (Modeling Approach), members noted that the timing of the SAB's report relative to the work completed by the Agency and its partners should be clarified. Members also noted that information regarding uncertainty should be included in the introduction of report to inform readers of the broader discussion of this topic in other parts of the document.

In the discussion of Section 4 (Estimated Cost of Compliance), SAB members agreed to include information in the introductory paragraph to explain why the EPA's preferred freeze is considered a deregulatory measure. Members suggested that Dr. Wilcoxon add information to explain the compliance cost or remove the reference to it in subsection 4.1. It was suggested that, in subsection 4.2, Dr. Wilcoxon add information to verify the payback time frames. Members suggested that the reference to the market share goal in subsection 4.4 be deleted. In the discussion of subsection 4.5, members suggested adding a statement to address the absence of analysis for electric vehicle benefits. No changes were suggested for sections 4.3 or 4.6.

Members suggested that in Section 5 (Fleet Size and Composition), subsection 5.1, the mean average that consumers are willing to pay be clarified for consistency. No changes were suggested for subsections 5.2 or 5.3.

No changes were proposed for Section 6 (Fleet Utilization) or Section 7 (Impacts and Valuation). Members suggested that in Section 8 (Withdrawal of the California Waiver), the word "affirmed" be changed to "concluded" in line 38.

Members agreed to restructure Section 9 (Handling of Uncertainty) to separate discussions of input parameter sensitivity, assumption sensitivity, input parameter uncertainty, and model uncertainty. Members also suggested adding an additional reference to address complex modeling. In addition, members agreed that the Section also should be revised to include recognition that multiple analyses can be done for the many drivers and ranges of values that are scientific unknowns.

Members discussed Section 10 (Conclusion) and suggested that the paragraph focusing on alternatives (page 34, lines 30-35) should be deleted. Members commented that the final paragraph of the Section should be moved to the front of the Section. Dr. Wilcoxon agreed to revise the appropriate parts of the report to incorporate the changes discussed.

The Board then discussed the letter to the Administrator and Section 1 (Executive Section) of the draft report. Members suggested that Section 1 (Executive Summary) be revised to include text indicating that the report reflected a partial review of the proposed rule (utilizing text from the conclusion). Members asked that the discussion of the uncertainty analysis be strengthened. Members suggested that text from the letter to the Administrator regarding analytic changes and their effect on the augural standards be incorporated into the Executive Summary. Members suggested that text addressing the weakness of the final analysis be deleted from the Executive Summary. Members suggested that the final paragraph regarding the California waiver be modified to include a note that the Board has concerns about the methods used for analysis of the waiver. Members also indicated that the report should include a suggestion that the Agency complete a lifecycle analysis for the physical impacts of electric vehicles incentives and a cost benefit analysis. Members suggested that, overall, the Executive Summary be restructured to improve the readability and highlight the major issues noted in the report. Members agreed that Dr. Wilcoxon would work with Dr. Christy to address the placement of his comment via footnote within the body of the report; if needed.

Members suggested that in the letter of the administrator, Dr. Wilcoxon add a sentence on the second page (lines 34-41) to include a stronger suggestion that the Agency complete a lifecycle analysis. Members also suggested that the letter be revised to refer to the augural program as the Agency's 2012 rule. Members agreed that the use of the terminology "augural" would be retained. Members suggested that lines 1-5 on page 3 be deleted from the letter and text regarding the California waiver as modified within the Executive Summary be added to the letter.

Dr. Honeycutt thanked members for their comments. He noted that Dr. Wilcoxon would take the lead in incorporating the changes into the report. Dr. Honeycutt asked members to develop the final revisions discussed by January 29, and to include Dr. Armitage, and Dr. Honeycutt on any correspondence regarding this SAB advisory activity. Dr. Armitage noted that after the changes to the report were incorporated, he would share the revised SAB report with members and seek their concurrence before it is finalized.

Dr. Honeycutt asked for a motion to approve the draft report with the revisions as discussed. It was so moved and then seconded. All members agreed and no dissenting votes were noted. Dr. Wilcoxon provided a final thank you to those who offered comments.

Meeting recessed:

The meeting recessed at 5:08 p.m. (Eastern Time).

January 24, 2020

Meeting reconvened:

Dr. Thomas Armitage, DFO for the SAB, opened the meeting at 1:05 pm (Eastern Time). He began by taking attendance and asking SAB members affirm their presence. He reminded the participants that the SAB was meeting by teleconference for the fourth time to complete its review of four draft reports, and that public comments had been heard on the first day of the teleconference meeting on Friday January 17, 2020. He also noted that written comments had

been submitted and all meeting materials were posted on the SAB webpage associated with this meeting. He then turned the meeting over to Dr. Michael Honeycutt, Chair of the SAB.

SAB Discussion:

Dr. Honeycutt thanked the SAB members for their participation. He indicated that, in accordance with the Environmental Research, Development, and Demonstration Authorization Act, the SAB had developed draft reports providing advice and comments on the scientific and technical basis of four proposed EPA rules. These included: (1) A Commentary on the Proposed Rule Defining the Scope of Waters Federally Regulated Under the Clean Water Act (the SAB WOTUS commentary); (2) SAB's Consideration of the Scientific and Technical Basis of EPA's Proposed Rule Titled Strengthening Transparency in Regulatory Science; (3) SAB's Consideration of the Scientific and Technical Basis of the EPA's Proposed Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, and; (4) SAB's Consideration of the Scientific and Technical Basis of EPA's Proposed Mercury and Air Toxics Standards (MATS) Rule.

Dr. Honeycutt indicated that on a teleconference held Friday, January 17th, the SAB had discussed the draft WOTUS commentary. He noted that following the teleconference, a revised draft of the commentary had been posted on the SAB meeting webpage and circulated to members for review. Dr. Allison Cullen, the Chair of the WOTUS Workgroup, was then asked to summarize the changes. She noted that the workgroup had revised the draft commentary to incorporate changes discussed on the previous teleconference. She explained that discussion of the legal aspects of the rule was removed and the commentary was modified to make the focus of the discussion scientific issues only.

A member noted that events had superseded the release of the SAB commentary, i.e., the WOTUS rule had been released. Nonetheless, members agreed that the commentary should be completed and transmitted to the Agency. A short discussion regarding the appropriateness of mentioning ground water in the commentary ensued. Members agreed to remove a sentence on page 3 line 5 but retain the sentence on page 2 line 37 which supported the notion that ground water is connected to surface water. With that change, there was a motion to approve the commentary which was seconded and agreed upon by a majority of SAB members. Dr. Donald van der Vaart, stated that he wanted to provide a dissenting opinion and would write a short summary of his concerns. Several other SAB members wanted an opportunity to see Dr. van der Vaart's submission before deciding whether they too would support it.

Dr. Honeycutt then invited the members to discuss the SAB report on the scientific and technical basis of EPA's proposed Mercury and Air Toxics Standards (MATS) Rule. Dr. Honeycutt noted that the draft report had been developed by a workgroup of SAB members including: Drs. Richard Williams, Deborah Bennett, Clyde Marten, Thomas Parkerton, Jay Turner, and Donald van der Vaart. Dr. Williams, the Chair of the MATS workgroup, began by providing a short overview of the draft report. Dr. Williams explained that, due to the short timeframe for preparing the report, it did not represent the consensus of the workgroup but rather his effort to gather the perspectives of the workgroup into a single document.

Dr. Williams summarized the issues of concern by noting that methylmercury is released from coal-fired power plants and accumulates in fish. Human exposure to methylmercury is through

ingestion of contaminated fish. Some fish contain higher levels of methylmercury than others. He commented on the benefit of reducing emissions, noting that studies appear to show that the levels of methylmercury in fish have remained unchanged for decades. He also noted that the benefits of eating fish may outweigh the effects of methylmercury exposure.

Other workgroup members were asked to provide their perspectives. They concurred that the draft report did not represent the group's consensus. They noted that they were concerned that all fish consumption was not included in the EPA's modeling of exposure. They were concerned that EPA had underestimated the total exposure because it was limited to fish consumed from small and medium-sized lakes and did not include marine fish.

Other SAB members suggested that the report be more clearly organized and revised to include an explanation of the document reviewed. A discussion of the analysis of co-benefits ensued. Members concluded that a discussion of the analysis of co-benefits should not be the focus of the SAB report since it was not part of the Agency's proposed rule. Other SAB members commented that analysis of the benefits of PM_{2.5} reduction was important and had been discussed in other EPA documents. Members agreed that the SAB report should provide a better introduction to clarify the scope of the report but should refrain from discussing the co-benefits of reducing mercury emissions. Members noted that this topic should be addressed when the SAB reviews EPA's guidelines for economic analysis.

Dr. Honeycutt then asked members to discuss pages 11 to 15 of the draft report before returning to other parts of the document. Members noted that several parts of the document that needed clarification, (e.g., the use of mercury instead of methylmercury, moving footnotes to appropriate locations). Members reiterated that text referring to reduction PM_{2.5} emissions should be removed.

Members discussed the report section beginning on page 8 titled "Uncertainties" and agreed to remove it, opting to move the information into other sections of the report where applicable. Members suggested other edits in the report, noting that the paragraph on page 3, lines 10-23 should be removed. Members suggested that on page 5, lines 9-14, the report should be modified to remove the reference to PM_{2.5} and on page 6, lines 6-7, the last sentence should be removed. Members supported including information on cardiovascular effects on pages 6-8, in the text beginning on line 16. Members then discussed several studies that monetized health benefits (mentioned on page 8, lines 16-29 of the draft report) and agreed that some of the studies were problematic. Members suggested that a study by Giang and Selin (2016) should be cited in the cardiovascular effects section because it contained useful information showing an association between mercury exposure and cardiovascular effects.

Several members agreed to provide edits that reflected the discussion. Dr. Honeycutt asked that these revisions be provided to Dr. Williams and Dr. Bennet who would revise the report. Dr. Honeycutt then called for a motion to approve the report pending the revisions that had been discussed. It was so moved and then seconded. All agreed and no dissenting votes were noted.

Members were instructed to provide their revisions to Drs. Williams and Bennett by February 12 and to include Dr. Armitage, DFO for the SAB, on any correspondence regarding this SAB

advisory activity. Dr. Armitage noted that after the changes to the report were incorporated, he would send the revised report to members for concurrence before it was finalized.

Meeting adjourned:

The meeting was adjourned at 4:15 p.m. (Eastern Time)

Respectfully Submitted and Certified as Accurate,

/s/

/s/

Dr. Thomas Armitage,
Designated Federal Officer for the
Chartered SAB

Dr. Michael Honeycutt
Chartered 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 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.

Appendix A: Meeting participation – SAB members and SAB liaisons

	January 17, 2020	January 21, 2020	January 22, 2020	January 24, 2020
<u>SAB Members</u>				
Dr. Rodney Andrews	x	x	x	x
Dr. Hugh A. Barton	x	x	x	x
Dr. Barbara Beck		x		
Dr. Deborah Hall Bennett	x	x	x	x
Dr. Frederick Bernthal		x	x	x
Dr. Bob Blanz	x	x	x	x
Dr. Todd Brewer	x			
Dr. Joel G. Burken	x	x	x	x
Dr. Janice E. Chambers	x	x	x	x
Dr. John R. Christy	x	x		x
Dr. Samuel Cohen	x	x	x	x
Dr. Louis Anthony (Tony) Cox, Jr.	x	x	x	x
Dr. Alison C. Cullen	x	x	x	x
Dr. Otto C. Doering III	x	x	x	x
Dr. Susan P. Felter	x	x	x	x
Dr. Joseph A. Gardella	x	x	x	x
Dr. John D. Graham		x	x	
Dr. John Guckenheimer	x	x	x	x
Dr. Michael Honeycutt	x	x	x	x
Dr. Margaret M. MacDonell				
Dr. Robert E. Mace	x		x	x
Dr. Clyde F. Martin	x	x	x	x
Dr. Sue Marty	x	x	x	x
Mr. Robert W. Merritt	x	x	x	x
Dr. Larry Monroe	x	x	x	x
Dr. Thomas F. Parkerton	x	x	x	x
Dr. Robert Phalen	x	x	x	x
Dr. Kenneth M. Portier	x	x	x	x
Dr. Robert Puls	x	x		x
Dr. Kenneth Ramos				
Dr. Tara L. Sabo-Attwood	x	x	x	x
Dr. Mara Seeley			x	
Dr. Anne Smith	x	x	x	x
Dr. Richard Smith	x	x	x	x
Dr. Jay Turner	x	x		x
Dr. Brant Ulsh	x	x	x	x
Dr. Donald van der Vaart	x	x	x	x
Ms. Carrie Vollmer-Sanders				
Dr. Kimberly White	x	x		x
Dr. Mark Wiesner	x	x	x	x

Dr. Peter J. Wilcoxon	x		x	x
Dr. Richard A. Williams			x	x
Dr. S. Stanley Young	x	x	x	x
Dr. Matthew Zwiernik				

SAB Liaisons

Dr. Deanna Scher (CHPAC)		x		x
Dr. Robert Chapin (FIFRA SAP)				
Dr. Paul Gilman (BOSC)	x	x		

Attachment A: Additional meeting participants who requested the teleconference call-in number or accessed the audio webcast.

Name	Affiliation
Joseph Aldy	Harvard University
George Allen	NESCAUM
Erika Amir-Lin	AECOM
Katelyn Amraen	U.S. EPA
Shimon Anisfeld	Yale University School of Forestry
Carrie Apfel	
John Bachman	
Taylor Bacon	
Tina Bahadori	U.S. EPA
Daren Bakst	The Heritage Foundation
Bill Bateman	
Lara Beaven	
Rebecca Beitsch	The Hill Newspaper
James Bentkowski	U.S. EPA
Terry Bequette	
Navis Bermudez	U.S. House of Representatives
Nick Bissonnette	
Lori Blair	
Bryan Bloomer	U.S. EPA
Julie Bolthouse	Piedmont Environmental Council
Denis Borum	U.S. EPA
Lorene Boudreau	
Richard C. Bozek	Edison Electric Institute
Kelsey Brugger	E&E News
Pete Bucher	
Angie Burckhalter	Continental Resources
Susan Burden	U.S. EPA
Leandra Cleveland	HDR Engineering Inc.
Brian Chalfant	
Celia Chen	Dartmouth College
Danielle Chesky	Embassy of Canada
Richard Chinn	Environmental Training Inc.
Benjamin Cohen	
Madison Condon	Institute for Policy Integrity, NYU Law School
Jan Conitz	
Brian Cook	Clean Water Services
Dan Costa	Environmental Protection Network
Laura Craig	American Rivers

Name	Affiliation
Kevin Cromar	American Thoracic Society
Kevin Culligan	U.S. EPA
Louis D'Amico	U.S. EPA
Steve Davies	Agri-Pulse
Kacee Deener	U.S. EPA
Carla DeMaria	Whitehead Institute
Jon Devine	Natural Resources Defense Council
Stephanie Digby	
Maria Doa	U.S. EPA
Chris Dockins	U.S. EPA
Pat Dolwick	U.S. EPA
Sean Donahue	Donohue, Goldberg, Weaver, and Littleton
Charles Driscoll Syracuse University	
Patrick Dube	
Marcella Dudek	
John Dale Dunn	Heartland Institute and American Council on Science and Health
Rebecca Dzubow	U.S. EPA
Juliet Eilperin	The Washington Post
James Enstrom	UCLA and Scientific Integrity Institute
Sally Entrekin	
David Evans	U.S. EPA
Karen Kagen Evans	ECI Communications
Mary Evans	Claremont Mckenna College
Gary Ewart	American Thoracic Society
Steinwand Fawkes	Minnesota Pollution Control Agency
P.A. Fenner-Crisp	
Jodi Field	NYS Office of Attorney General
Zaida Figueroa	U.S. EPA
Catherine Fitzsimmons	Iowa Department of Natural Resources
Lynn Flowers	U.S. EPA
Kelly Hunter Foster	Waterkeeper Alliance
Chester France	
Robert Frantz	
Timothy French	Truck and Engine Manufacturers Association
Rene Fuentes	U.S. EPA
Allison Futton	U.S. EPA OIG
Spencer Gall	
Roy Gamse	

Name	Affiliation
Jonathan Gendzier	Southern Environmental Law Center
Patrick Gilbride	U.S. EPA
Nicole Gillett	Tucson Audubon Society
Shaun Goho	Emmett Environmental Law and Policy Clinic
Gretchen Goldman	Union of Concerned Scientists
Neil Goldstein	ARTBA
Kara Goodwin	U.S. EPA
Kyle Gordon	
Bo Gould	LSA Associates, Inc.
Laurence Gould	University of Hartford
Rick Greene	U.S. EPA
Andrew Grinberg	Clean Water Action
Shari Grossarth	U.S. EPA
Alex Guillen	
Jim Harrison	LSA
Steven Hamburg	EDF
Meredith Hankins	California DOJ
Tim Hanley	
Carolyn Hanson	ECOS
E. Hargett	Wyoming DEQ
Hayden Hashimoto	Clean Air Task Force
Ryan Haupt	
Cheryl Hawkins	U.S. EPA
Maria Hegstad	Inside EPA
Richard Henry	U.S. EPA
Rebecca Hersher	NPR
Kathryn Hess	U.S. EPA
Robert Hetes	U.S. EPA
David Hill	American Lung Association
Shaunta Hill	U.S. EPA
Jasper Hobbs	ACWA
Leif Hockstad	U.S. EPA
Kevin Hollerbach	U.S. EPA
Teresa Hollingsworth	U.S. EPA
Cody Hufstetler	Kennedy Engineering & Associates Group
Benjamin Hulac	CQ Roll Call
Nick Hutson	U.S. EPA
Colin Iarrick	Ute Mountain Ute Tribe
Liana James	Environmental Defense Fund
Anne Jaworski	Environmental Law and Policy Center
Jeff Alson	

Name	Affiliation
Amir Jina	University of Chicago
Laura Johnson	
Mary Johnson	U.S. EPA
Maxine Joselow	E&E News
Ben Kallen	
Erin Flannery Keith	U.S. EPA
Janet Keough	Water Legacy
Sumita Khatri	American Lung Association
Ellen Knickmeyer	The AP
Chris Knight	
Stefanie Kroll	Academy of Natural Sciences, Drexel University
Rose Kwok	U.S. EPA
Amy Lamson	U.S. EPA
Therese Langer	American Council for an Energy- Efficient Economy
Marianne Lavelle	Inside Climate News
Stephen Lee	Bloomberg Environment
Allen Lefohn	
Lepsic	Robert
Sharon Lerner	the Intercept
Craig Lewis	The Aluminum Association's Transportation Group
Timothy Lewis	
Vijay Limaye	NRDC
John Lowenthal	Society of Wetland Scientists
Audrey Lyke	
Becky Mansfield	
John Lee Marshall	
Alex Marten	U.S. EPA
Audra Martin	
Jeffrey Mason	Ecology and Environment Inc./WSP Global Inc.
Carl Mazza	U.S. EPA
Mike McCarthy	
Michael McDavit	U.S. EPA
John McDonald	Maserati
Caitlin McHale	National Mining Association
Christine McKay	U.S. EPA Region 4
Jennifer McKay	Tip of the Mitt Watershed Council
Jolie McLaughlin	Natural Resources Defense Council
Jennifer McPartland	Environmental Defense Fund
Kristy Meyer	
Steve Milloy	JunkScience.com

Name	Affiliation
Lori Miyasato	California Air Resources Board
Alison Mize	Ecological Society of America
Carolyn Moore	
Joseph Morgan	U.S. EPA
Kelly Moser	SELC
Omobola Mudasiru	API
Deborah Murray	Southern Environmental Law Center
Jim Myers	The Waterways Journal
Peter Nagelhout	U.S. EPA
Jamie Nestlerode	
Janice Nolen	American Lung Association
Ken Norton	National Tribal Water Council
Doug Obey	Inside EPA
Stuart Parker	IWP News
Allison Patton	HEI
Mel Peffers	U.S. EPA
Jennifer Peters	Clean Water Action
Rebecca Pierce	Colorado Department of Transportation
Steve Pierson	American Statistical Association
Kathleen Raffaele	U.S. EPA
Kelley Raymond	U.S. EPA
Genna Reed	Union of Concerned Scientists
Sean Reilly	E&E News
Carl Richards	
Albert Rizzo	American Lung Association
Mary Ross	U.S. EPA
Becky Rozumowicz	Area West Environmental Inc.
Ilana Rubin	National Wildlife Federation
Randall Rush	U.S. EPA Region 6
Amena Saiyid	Bloomberg Environment
Bill Sapp	
Kazuki Sato	Mitsubishi Motors R&D of America
Maggie Sauerhage	U.S. EPA
Greg Schaner	
Emily Scheller	American Chemistry Council
Bruce Schillo	U.S. EPA
David Schultz	
Marc Seelinger	The Swamp School
Rashid	Rashid
Sue Shallal	U.S. EPA
John Shaw	
Tracy Sheppard	U.S. EPA
John Shoaf	U.S. EPA

Name	Affiliation
Elizabeth Shogren	
Thomas Sinks	U.S. EPA
Pate Skene	Duke University
Joanna Slaney	Environmental Defense Fund
Annie Snider	
Jamie Song	MECA
Holly Stallworth	U.S. EPA
Ted Steichen	American Petroleum Institute
John Stephen	Negley Run Watershed Task Force
Denise Stranko	
Sally Stroupe	USACE
Lawrence Sullivan	The Citadel
Rayasam Swati	
Ashley Taylor	French & Associates
Kenneth Teague	
Kevin Teichman	U.S. EPA
Bennett Thompson	U.S. EPA
Janie Thompson	U.S. House of Representatives
Tom Tracy	U.S. EPA
Alyssa Tsuchiya	
Eugene Turner	Louisiana State University
Mary Uhl	WESTAR
Maria Valdez	Dow
Elizabeth Verdecchia	USIBWC
Dan Vergano	BuzzFeed News
John Walke	NRDC
Mary Walker	
Ben Watson	James River Association
Lynn Whitman	
Bill Wier	
Linton Wildrick	
L.M. Wilson	NYS OAG
Brenda Winn	
Ariel Wittenberg E&E News	
Stuart Woolley	Ford Motor Company
Michelle Wu	Natural Resources Defense Council
Mai Xiong	
Aaron Yeow	
Chris Zarba	
Elizabeth Zeitler	National Academy of Sciences
Nicole Zimmerman	Ecological Society of America
Ana Zivanovic- Nenadovic	North Carolina Coastal Federation

Materials Cited:

The following meeting materials are available on the SAB website (<http://www.epa.gov/sab>) at the page for the January 17, 2020 teleconference. The direct web link is:

<https://yosemite.epa.gov/sab/sabproduct.nsf/MeetingCalBOARD/D87AC6491A9811C1852584CD006F3CC6?OpenDocument>

ⁱ Commentary on the Proposed Rule Defining the Scope of Waters Federally Regulated Under the Clean Water Act; SAB Consideration of the Scientific and Technical Basis of EPA's Proposed Mercury and Air Toxics Standards Rule; SAB Consideration of the Scientific and Technical Basis of EPA's Proposed Rule Titled Strengthening Transparency in Regulatory Science; SAB Consideration of the Scientific and Technical Basis of the EPA's Proposed Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule.

ⁱⁱ Federal Register Notice Announcing the Meeting.

ⁱⁱⁱ Agenda.

^{iv} Roster.

^v List of Registered Public Speakers.

^{vi} Public Comments Submitted to the SAB Staff Office