

**Summary Minutes of the  
U.S. Environmental Protection Agency Science Advisory Board  
Public Meeting  
June 5-6, 2019**

**Date and Time:** Wednesday, June 5, 2019, 8:45 a.m. – 5:00 p.m.  
Thursday, June 6, 2019, 9:00 a.m. – 12:30 p.m.

**Location:** Sphinx on K, 1315 K Street, N.W., Washington, D.C.

**Purpose:** To hear remarks from the EPA Administrator, receive briefings from EPA, and discuss: EPA’s proposed Science and Transparency Rule; planned actions on EPA’s 2018 Spring Regulatory Agenda; actions related to updating EPA guidelines for carcinogen and noncancer assessment; Science Advisory Board self-initiated project; and EPA’s Proposed Waters of the U.S. Rule.

**Participants:**

*Members of the EPA Science Advisory Board (SAB)*

Dr. Michael Honeycutt, Chair  
Dr. Rodney Andrews  
Dr. Hugh Barton  
Dr. Barbara Beck  
Dr Deborah Bennett  
Dr. Frederick Bernthal  
Dr. Bob Blanz  
Dr. Todd Brewer  
Dr. Joel Burken  
Dr. Janice Chambers  
Dr. John Christy  
Dr. Samuel Cohen  
Dr. Tony Cox  
Dr. Alison Cullen  
Dr. Otto Doering  
Dr. Susan Felter  
Dr. Joseph Gardella  
Dr. John Guckenheimer  
Dr. Steven Hamburg  
Dr. Clyde Martin  
Dr. Sue Marty  
Mr. Robert Merritt  
Dr. Thomas Parkerton  
Dr. Robert Phalen  
Mr. Richard Poirot  
Dr. Kenneth Portier  
Dr. Robert Puls  
Dr. Tara Sabo-Attwood  
Dr. Anne Smith

Dr. Richard Smith  
Dr. Jay Turner  
Dr. Brant Ulsh  
Dr. Donald van der Vaart  
Dr. Kimberly White  
Dr. Peter Wilcoxon  
Dr. Richard Williams  
Dr. Stanley Young  
Dr. Matthew Zwiernik

For a complete list of members of the SAB see Roster<sup>1</sup>

*Liaison members*

Dr. Paul Gilman, EPA Board of Scientific Counselors  
Dr. Barbara Morrissey, EPA Childrens Health Protection Advisory Committee

*EPA Science Advisory Board (SAB) Staff:*

Thomas Armitage, Designated Federal Officer  
Thomas Brennan, Acting Director, SAB Staff Office

*EPA Representatives:*

Andrew Wheeler, EPA Administrator  
David Bussard, EPA ORD  
Maria Doa, EPA, ORD  
Andrew Gillespie, EPA ORD  
John Goodin, EPA OW  
Lindsey Jones, EPA OP  
Jennifer McLain, EPA OW  
Owen McDonough, EPA OW  
Edward Ohanian, EPA OW

*Other Attendees (See Attachment A)*

**Meeting Summary:**

**Wednesday, June 5, 2019**

**Convene the Meeting**

Dr. Thomas Armitage, Designated Federal Officer (DFO) for the SAB convened the meeting at 8:45 a.m. on Wednesday, June 5, 2019 and provided introductory remarks in his capacity as DFO. He stated that the EPA Science Advisory Board (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. He stated that summary minutes of the meeting would be prepared and certified by the SAB Chair and he noted the SAB's compliance with ethics requirements. Dr. Armitage also indicated that all meeting materials were available on the SAB

web site. These meeting materials included: the Federal Register Notice announcing the meeting,<sup>2</sup> meeting agenda,<sup>3</sup> and SAB roster. 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 11 individuals. In addition, Dr. Armitage stated that written public comments had been received, 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 conference line and live audio webcast. He asked members of the public listening to the webcast to send him an email at [armitage.thomas@epa.gov](mailto:armitage.thomas@epa.gov) to let him know that they were on-line.

### **Introduction of SAB Members**

Dr. Michael Honeycutt, Chair of the SAB, welcomed members of the SAB and other attendees to the meeting. He indicated that the SAB would be meeting for the next two days to receive briefings from EPA, provide consultative advice to the agency, and make decisions about advisory activities. He asked members of the SAB and liaisons to the Board to introduce themselves. Following the introduction of SAB members, Dr. Honeycutt stated that the SAB would hear remarks from the EPA Administrator. He then introduced EPA Administrator Andrew Wheeler.

### **Remarks from the EPA Administrator**

EPA Administrator Andrew Wheeler began his remarks by thanking SAB members for their service and recognizing the role the SAB plays in helping EPA fulfill its mission of protecting human health and the environment. Administrator Wheeler noted that service on the SAB required a commitment of time and effort and he thanked SAB members for their willingness to serve.

Administrator Wheeler spoke about the process by which the EPA engages the SAB on regulatory science matters. The Administrator commented that the current process was lengthy and time consuming. He indicated that he had asked the EPA Office of Policy, Office of General Counsel, and Science Advisory Board Office to update the process. He indicated that a new process would be developed to ensure: (1) early engagement between EPA and the full SAB, with more rapid and frequent briefings on major proposed regulations shortly after their release; (2) more transparency and consistency in engagement of the full SAB and the public on key regulatory science issues; and (3) improved coordination among EPA advisory committees in providing advice and recommendations. The Administrator indicated that implementing these changes was a top priority.

Administrator Wheeler spoke about advice that EPA was requesting from the SAB. The Administrator indicated that EPA would benefit from a consultation with the SAB on existing mechanisms for secure access to personally identifying information and confidential business information under the proposed Science and Transparency Rule. He noted that the Dr. Maria Doa of EPA Office of Research and Development would be briefing the SAB on the Science and Transparency Rule later in the day. The Administrator also remarked that the EPA was asking the SAB for advice on updating the agency's guidelines for carcinogen risk assessment. He noted that a consultation on this topic was on the meeting agenda. The Administrator also noted that Drs. Edward Ohanian and David Bussard of EPA's Risk Assessment Forum would provide further information on updating the guidelines, and answer questions from SAB members. In addition, the Administrator remarked that the EPA would be asking the SAB for advice on risk communication. He commented on the importance of risk communication to EPA's mission and indicated that the SAB could provide advice on this topic. The Administrator mentioned two specific cases to highlight the importance of risk communication. He indicated that the EPA had provided information to the public about the agency's comprehensive multimedia per- and

polyfluoroalkyl substances (PFAS) action plan and the Toxics Release Inventory. He noted that the SAB would be receiving a briefing on the PFAS action plan.

Administrator Wheeler also commented on the length of time required to complete SAB reviews. He remarked that lengthy SAB reviews can delay the completion of important work, such as integrated risk Information System (IRIS) assessments. The Administrator commented, for example, that the recent SAB review of the ethyl tertiary butyl ether and tert-butyl alcohol assessment had taken too long to complete. He indicated that it was important to find ways to complete SAB reviews in a shorter period of time.

After the Administrator concluded his remarks, he engaged SAB members in discussion. SAB members commented on the process for SAB review of regulatory science. A member commented that it was important that the EPA engage SAB in bringing new science to bear on regulations. Another member commented that it was important that the EPA receive advice from the SAB in a time frame that would allow the agency to incorporate changes into proposed regulations. The Chair of the SAB asked Administrator Wheeler when the EPA expected to implement the new regulation review process. The Administrator responded that the agency wanted to implement the process as soon as possible and noted that under the new process the SAB would receive a briefings on rules when they were proposed.

A member commented on the Administrator's concern about the timeliness of EPA assessments. He noted that timeliness of assessments could also be addressed by looking at internal EPA processes across the board. The Administrator responded, indicating there had been concern that IRIS reviews had taken too long to complete, and the IRIS program had made process changes. He also noted that the National Ambient Air Quality Standards were required to be reviewed every five years and it was important to find ways to meet this requirement.

A member asked the Administrator to comment on efforts that EPA was making to ensure that regulations were supported by sound science. The Administrator responded, indicating that much of the agency's work relied upon science. He stressed the importance of receiving scientific advice from the SAB and other advisory committees. He also noted that the agency often faced regulatory deadlines, and that policy decisions were necessary to meet those deadlines.

A member noted that the agency had received many public comments on the proposed Science and Transparency Rule and that many questions had been raised about the proposal. He asked the Administrator to comment on questions that had been raised about the proposed rule. The Administrator responded, noting that he was surprised the agency had received so many comments on the rule. He indicated that the agency was in the process of reviewing the comments. He noted that the agency would benefit from specific advice on how to provide secure access to personally identifying information and confidential business information under the proposed rule. The Administrator noted that there were provisions in the proposed rule that would allow important studies to be used. However, he noted that it was important to safeguard personally identifying information and confidential business information. He commented that the Food and Drug Administration had safeguards in place to protect this kind of information and it was important for the EPA to look at how this had been done.

Dr. Honeycutt thanked the Administrator for his remarks and indicated that the SAB would next hear public comments.

## Public Comments

Dr. Honeycutt called for public comments from individuals who had registered in advance to provide oral statements. He stated that he would call each person on the list of public speakers.<sup>4</sup> He asked that speakers limit their comments to five minutes. He indicated that he would allow time for one or two follow-up SAB questions per speaker.

Bernard Goldstein, Environmental Protection Network was on the phone and provided oral comments and a written statement.<sup>5</sup> Dr. Goldstein's statement focused on EPA's proposed Science and Transparency Rule and revision of EPA's Cancer Risk Guidelines. He commented on reasons why revision of the cancer guidelines must be undertaken with deliberation and he provided comments and concerns about provisions of the proposed Science and Transparency Rule.

Penelope Fenner-Crisp was on the phone and provided oral comments and a written statement.<sup>6, 7</sup> Dr. Fenner-Crisp commented on revision of EPA's cancer and new non-cancer guidelines. She commented that the timeline for revising the Guidelines will not allow robust and credible science policy to be developed, nor will it allow full engagement of the SAB, the National Academies and other stakeholders in its review. She outlined specific activities, steps and timelines to produce soundly-based and fully-vetted guidelines.

John Bachman was on the phone and provided oral comments and a written statement.<sup>8</sup> Mr. Bachman's comments focused on the need for SAB to recognize and push back on attempts by EPA management to diminish the importance of science and external science advice. He commented on the need for the SAB to review proposed regulatory actions.

Genna Reed, Union of Concerned Scientists, provided oral comments and a written statement.<sup>9</sup> Her comments focused on the need for SAB action in several areas. She commented that: (1) the SAB should continue to fulfill its roles and responsibilities to review EPA actions laid out in statute; (2) the SAB should to review the scientific basis of the Strengthening Transparency rule in its entirety; (3) the SAB should be involved in reviewing the agency's development of cancer and noncancer risk assessment guidelines; (4) the SAB should have the opportunity to fully review the EPA's air office's regulatory proposal on cost benefit assessment; and (4) the SAB Drinking Water Committee should EPA activities related to the PFAS action plan.

Michelle Mabson, Earthjustice, provided oral comments and a written statement.<sup>10,11</sup> She expressed concerns about EPA's Proposed Rule, *Strengthening Transparency in Regulatory Science* and commented that the EPA should not weaken the Guidelines for Carcinogen Risk Assessment or any other risk assessment guidelines. She also comment that EPA's proposal to find that regulation of hazardous air pollutants emitted by coal-fired power plants is not "appropriate" under the Clean Air Act should be withdrawn. In addition she expressed concerns about EPA's Per- and Polyfluoroalkyl Substances (PFAS) Action Plan, and commented that the EPA should withdraw its Revised Definition of Waters of the United States.

Tracey Woodruff, Institute for Health Policy Studies, University of California, San Francisco, provided oral comments. Her comments focused on guidelines for cancer and noncancer risk assessment and the need to ensure that the agency applied science that will protect people's health. Following her comments, SAB members asked questions about the kinds of studies that should be used in assessing cancer and noncancer risks.

Christopher Frey, North Carolina State University, was on the phone and provided oral and written comments.<sup>12</sup> Dr. Frey's comments focused on the need for SAB review of proposed rules. He also commented on the need for EPA to be more forthcoming with information in order to better enable the SAB to do its job of reviewing proposed regulatory actions. In addition, Dr. Frey commented on points raised in the EPA Administrator's April 19, 2019 letter to the SAB on review of planned regulatory actions.<sup>13</sup>

Veena Singula was on the phone and provided oral and written comments.<sup>14</sup> Dr. Singula's comments focused on EPA's review of the Guidelines for Carcinogen and Noncancer Assessment. She commented that it was important to identify areas of the guidelines that required updates based on current science. She commented that the EPA should engage the National Academies of Sciences (NAS) to conduct a review and provide recommendations for updating the guidelines. She commented that the EPA should then use this information to develop a scoping plan for the guidelines update and solicit public comment on the plan. Dr. Singula also commented on EPA's proposed Science and Transparency rule, noting that the costs of implementing the proposal would be substantial.

Madison Condon, Institute for Policy Integrity, New York University School of Law, provided oral and written comments.<sup>15,16</sup> The oral comments focused on the proposed Mercury and Air Toxics Rule (MATS) and the proposed redefinition of Waters of the U.S. Regarding the MATS rule, the speaker noted that the Clean Air Act does not require EPA to ignore co-benefits when making an appropriate-and-necessary determination and that ignoring such benefits is an unreasonable exercise of agency discretion because it is inconsistent with relevant case law, executive guidance, administrative practice, and sound economic principles. The speaker also expressed concern about EPA's residual risk and technology review (RTR) for MATS. Regarding the redefinition of the Waters of the U.S., the speaker commented that the proposed rule was flawed as a result of multiple unjustified assumptions and multiple unjustified steps in the agencies' economic analysis.

Ted Steichen, American Petroleum Institute provided oral and written comments.<sup>17,18,19</sup> Mr Steichen's oral comments focused on the SAB self-initiated project proposal titled: *Scientific Issues in Identifying, Estimating, and Validating the Co-Benefits of Clean-Air Regulations*. Mr. Stichen commented that the SAB should give careful consideration to how the project would support the Administrator's plans as transmitted to the Assistant Administrators in his May 13, 2019 memo moving forward on the subject of the June 2018 announcement of proposed rulemaking (ANPRM).

Michael Doursen, Toxicology Excellence for Risk Assessment, provided oral and written comments.<sup>20</sup> Dr. Dourson's comments focused on: (1) why the Science Transparency Rule is necessary from a risk assessment perspective; (2) revising the Guidelines for Carcinogen and Noncancer Assessment; (3) the importance of the Per- and Polyfluoroalkyl Substances (PFAS) Action Plan; and (4) EPA's proposed Waters of the U.S. Rule and the application of ambient water quality criteria to such waters.

## **Review of the Agenda**

Dr. Honeycutt thanked the speakers for their comments and briefly reviewed the meeting agenda. He noted that the SAB would receive briefings from EPA and discuss: (1) the agency's proposed Science and Transparency Rule; (2) whether the SAB should provide advice on planned actions on EPA's 2018 Spring Regulatory Agenda; (3) actions related to updating EPA Guidelines for Carcinogen and Noncancer Assessment; (4) whether to undertake a proposed SAB self-initiated project; (5) EPA's PFAS Action Plan; and (6) whether to provide SAB advice on EPA's proposed Waters of the U.S. Rule.

Dr. Honeycutt noted that there would be a second public comment period on the second day of the meeting. He indicated that members of the public who wished to provide short clarifying comments at that time should notify the DFO (Dr. Armitage) by the end of the morning break on the next day.

Dr. Honeycutt indicated that he expected to adjourn the meeting by 12:30 p.m. the next day and noted that he would discuss follow-up activities before adjourning.

### **Discussion of EPA's Science and Transparency Rule**

Following a short break, Dr. Honeycutt indicated that the SAB would receive an interactive briefing from EPA on the agency's proposed Science and Transparency Rule.<sup>21</sup> He indicated that the SAB would hear a presentation from Dr. Mara Doa, Senior Science Advisor in EPA's Office of Research and Development, ask questions about the rule, and discuss how the SAB should proceed in providing consultative advice on the rule.

Dr. Honeycutt noted that in an April 19, 2019 letter to the SAB, the EPA Administrator had stated that the Agency would benefit from consultation with the SAB on existing mechanisms for secure access to confidential business information and personally identifying information as discussed in the proposed rule. Dr. Honeycutt also noted that work group of the SAB had developed a list of questions identifying additional key issues that could be addressed in a review of the proposed rule. He noted that SAB members Drs. Gardella and Smith had the lead for this activity. He noted that the SAB work group's questions could help guide the SAB discussion of the proposed rule.

Dr. Honeycutt then introduced Dr. Maria Doa who provided a presentation<sup>22</sup> on the proposed rule. Dr. Doa presented an overview of the proposed rule. She indicated that the proposed rule had been published on April 30, 2018. She noted that the rule was intended to strengthen regulatory science and would require that, for significant regulatory actions, the underlying data for pivotal regulatory science be made publicly available to support independent validation of studies supporting rulemaking.

Dr. Doa reviewed specific requirements of the proposed rule. She discussed the scope of the rule, noting that it applied prospectively to final significant regulatory actions and applied retrospectively and prospectively to dose-response data and models considered to be pivotal to regulatory science in future significant regulatory actions. She noted that the rule required that underlying raw data and computer codes, regardless of who generated or funded them, be made publicly available. The requirement applied regardless of when the data and computer codes were generated. Dr. Doa noted that certain terms were defined in the proposed rule (e.g., pivotal regulatory science, regulatory science, regulatory decisions). Dr. Doa indicated that the rule required EPA to identify all studies or other regulatory science used for any final agency action, and that EPA must make those studies available to the public to the extent practicable.

Dr. Doa noted that, for dose-response models, the proposed rule required that EPA evaluate on a case-by-case basis the appropriateness of using default assumptions. The rule required that EPA conduct sensitivity analysis of alternative assumptions for each model. It identified criteria for determining high priority studies based on a study's consideration of a range of dose-response models and assumptions. It identified peer review requirements and it provided the Administrator with the ability to grant exemptions to the requirements of the proposed rule.

Dr. Doa reviewed EPA's request for public comments on the proposed rule. She noted that the EPA had held a hearing on the proposed rule on July 17, 2018 and had received comments from 91 speakers. She

noted that the EPA had received 597,083 written public comments, of which 9,276 were unique. Dr. Doa identified some of the organizations that had provided comments. She also identified the major categories of public comments.

Dr. Doa acknowledged that the EPA had received questions about the proposed rule from a work group of the SAB and noted that the SAB questions were related to issues raised in the public comments. She indicated that the EPA was in the process of evaluating public comments and would consider the SAB questions as part of its consideration of public comments. In addition, Dr. Doa noted that the EPA had requested a consultation with the SAB on existing mechanisms for protecting confidential business information (CBI) and personally identifying information (PII). She indicated that the EPA would engage in this consultation on a dedicated public conference call later in the summer.

SAB members asked questions and provided comments. A member asked how EPA had reduced the number of public comments that it was considering. In response, it was explained that only a portion of the total number of comments were unique.

SAB members noted that the SAB had been asked to limit its advice on the proposed rule to specific topics. Members asked whether there would be an opportunity for the SAB to provide advice on other topics. Dr. Doa responded that EPA wanted to receive advice on mechanisms for secure access to personally identifying information and confidential business information. She noted that the agency was still in the process of reviewing the detailed public comments received and therefore it might be premature for the SAB to focus on other issues.

SAB members asked whether EPA would be responding to the questions that had been submitted by the SAB. Dr. Doa indicated that as the agency moved forward it could address some of the issues raised by the SAB work group. A member noted that there was concern about exclusion of important data from specific studies. He asked whether EPA would be considering the question of which specific studies to exclude from the requirements of the proposed rule. Dr. Doa responded that in rulemaking EPA would not be looking at individual studies. A member commented that there was concern that older study data would not be available under the proposed rule. He asked who would decide how to interpret the requirement to make data available to the extent practicable. Dr. Doa responded that in rulemaking EPA typically develops guidance to address such regulatory requirements.

Members commented on other issues. Members commented that it would be helpful to receive EPA responses to the SAB work group questions before a public teleconference was held for the consultation on PII and CBI. Members raised questions about how to define terms in the proposed rule. Members asked why EPA was consulting the SAB on the relatively narrow issues of secure access to CBI and PII and whether the agency would accept comments on other aspects of the proposed rule. SAB members discussed the Food and Drug Administration (FDA) model of protecting access to PII and whether EPA was considering other models. Some members commented that making raw data publicly available was not practical, and some suggested that it would be useful to consider making an analysis data set publicly available. A member asked when EPA wanted to receive comments on mechanisms for secure access to PII and CBI. Dr. Doa responded that the agency wanted comments on this issue by the end of the summer. Some members commented that many important studies had been completed overseas. They asked whether EPA intended to exclude such studies from use. Dr. Doa responded that public comments had been submitted on this issue and that EPA was considering how these studies should be handled. Members commented that it would be helpful to receive more detailed information about how EPA intended to address the issues raised in the questions from the SAB and in the public comments. A member commented that he would like to receive more information about EPA's implementation plans

for the proposed regulation. Another member commented that it might be useful for the EPA to provide guidance on how to handle studies that provided particular types of data. Other members commented that they wished to submit additional questions about EPA's plans to address PII and CBI.

Dr. Honeycutt thanked Dr. Doa for her presentation and asked Board members to submit any additional questions about secure access to PII and CBI to the DFO so they could be provided to EPA before the SAB consultation on that topic.

### **Discussion of Planned Actions on the 2018 Spring Regulatory Agenda**

After a lunch break the SAB reconvened and discussed planned actions on the 2018 regulatory agenda. Dr. Honeycutt noted that in an April 19<sup>th</sup> letter to the SAB, Administrator Wheeler had indicated that the EPA would be updating the process by which the agency engages with the SAB on regulatory science matters. Dr. Honeycutt introduced Lindsey Jones of EPA's Office of Policy to discuss plans to improve the process.

Ms. Jones discussed EPA's plans to update the regulation review process. She noted that the SAB had a long history of providing advice to EPA on regulatory science issues. She noted that for the past seven years, the SAB had considered whether SAB review of actions listed on EPA's regulatory agendas was needed. She indicated that this had not proven to be an efficient way to conduct these reviews. She noted that involving the SAB in a timely way was challenging, particularly when the EPA faced court ordered deadlines. Ms. Jones noted that there were 22 different advisory committees providing advice to the EPA. She indicated that the agency needed to decide which committee(s) should review particular rules. She informed SAB members that the EPA was undertaking an internal review of how to streamline the process and indicated that their old process would no longer be used.

Ms. Jones indicated that the agency was still developing the new review process and welcomed advice to help move forward. SAB members provided comments. A member noted that different advisory committees served different purposes. In particular, he noted that the Clean Air Act Advisory Committee had a different role from the SAB. He noted that advisory committees had different charges, and the review of regulations by more than one committee might be needed. Ms. Jones responded that evaluating the how different advisory committees should be engaged would be part of the new process. Another member commented that when a science committee, such as the Clean Air Scientific Advisory Committee had conducted a review, SAB review might be redundant. However, he stressed that some other advisory committees were not charged with reviewing the science supporting EPA regulations. He indicated that reviews conducted by these other committees often focused on legal and policy issues.

Members provided comments on the timing of the regulation review process. A member noted that the SAB should undertake reviews close to the time when actions were published in the Federal Register. Ms. Jones commented that the agency needed to decide when reviews of proposed regulations should be scheduled. A member commented that it would be helpful for the agency to provide more timely answers to SAB questions about proposed regulations. Ms. Jones commented that supporting information should be made available to the SAB in advance of scheduled reviews. Another member commented that there were often time pressures resulting from various statutes. A member noted the requirement that the EPA inform the SAB of a regulatory action when the agency shared information with other federal agencies. A member commented that developing a consensus report could be a lengthy process, and to cut down on the time required, EPA might decide that there may be cases where a consensus advisory report was not needed. Another member disagreed with this suggestion. Dr. Honeycutt asked EPA when the new regulation review process would be developed. Ms. Jones

responded that the agency would soon begin meetings with the SAB Office to develop the process. Dr. Honeycutt thanked Ms. Jones for her presentation and asked Dr. Cullen to begin the discussion of planned actions on EPA's 2018 Spring Regulatory Agenda.

Dr. Alison Cullen, Chair of the SAB Work Group on EPA Planned Actions for Consideration of the Underlying Science, reviewed the Work Group recommendations concerning actions on EPA's Spring 2018 Regulatory Agenda. Dr. Cullen noted that the Environmental Research Development and Demonstration Authorization Act (ERDDAA) required the EPA to make available to the SAB proposed criteria documents, standards, limitations, or regulations provided to any other federal agency for formal review and comment, together with the relevant scientific and technical information on which the proposed action is based. Dr. Cullen described the process followed by the SAB Work Group to review planned actions on the 2018 Regulatory Agenda. She noted that a Work Group memo<sup>23</sup> that had been provided to members of the chartered SAB described the Work Group's review process and recommendations.

Dr. Cullen indicated EPA had identified the major actions in the Spring 2018 Regulatory Agenda, The Work Group had considered whether SAB review of these major actions was needed. Of the 12 major planned actions considered, the Work Group recommended that the SAB provide advice on three of them. Dr. Cullen noted that two of the 12 major actions had insufficient information for the Work Group to make a recommendation. She noted that the Work Group had found that seven of the actions did not merit further SAB consideration. Dr. Cullen also noted that a table summarizing the proposed regulatory actions considered by the Work Group, and recommendations to the Board, was provided in the Work Group memorandum.

Dr. Cullen indicated that the Work Group recommended deferring SAB review of the following planned actions until sufficient information was available: (1) Oil and Natural Gas Sector: Emission Standards for New, Reconstructed and Modified sources Review; and (2) Updates to Wet Weather Treatment Regulations for POTWs. She indicated that the Work Group recommended SAB review of the following planned actions: (1) Mercury and Air Toxics Standards for Power Plants Residual Risk and Technology Review and Cost Review; (2) Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy; and (3) Strengthening Transparency in Regulatory Science.

SAB members discussed the Work Group recommendations. Members first discussed the Work Group recommendations for no further action. A member agreed that one of the planned actions, Treatment of Biogenic CO<sub>2</sub> Emissions Under the Clean Air Act Permitting Programs did not warrant review. He noted, however, that it appeared the science was inconsistent with the rule. He recommended that the Board write a letter to the Administrator to convey this point. There was no disagreement with this recommendation. A member commented that the review of the proposed action titled *General National Ambient Air Quality Standards Implementation Update Rule* should be deferred until sufficient information was available. There was no disagreement with this recommendation. The SAB then discussed the Work Group recommendations for deferred review pending the availability of further information was available. There was no disagreement with the Work Group recommendations.

SAB members next discussed the Work Group recommendations for SAB reviews. Members first discussed whether the SAB should review the proposed Safer Fuel Efficient (SAFE) vehicles rule. A member noted that the Work Group had recommended review of this rule if an agreement could not be reached between EPA and the California Air Resources Board. Dr. Honeycutt suggested a vote to determine whether the SAB should review this proposed rule. He suggested that the Board consider

three options; (1) review the proposed rule; (2) defer review of the rule; or (3) determine that no SAB review is needed. Members discussed the options and decided by a voice vote that the SAB would review the proposed SAFE vehicles rule.

SAB members discussed whether the SAB should review the proposed Mercury and Air Toxics Standards (MATS) rule. Members commented that there were two issues to be considered in reviewing this rule: (1) the assessment of co-benefits, and (2) whether the methodology for the residual risk and technology review (RTR) had been correctly applied. One member commented that the SAB should not review the rule because it focused on policy, others disagreed and expressed the opinion that the SAB should review the proposed rule. Following the discussion the SAB decided by voice vote that the SAB would review the proposed MATS rule. Several members indicated that they would like to participate on a work group to review the cost benefit analysis. Other members expressed an interest in participating in a work group to review whether the RTR methodology had been correctly applied.

SAB members discussed whether the SAB should review the proposed rule titled, *Strengthening Transparency in Regulatory Science*. Members discussed whether the SAB could engage outside experts in reviewing the proposed rule. Dr. Honeycutt indicated that the SAB Office could form a panel to conduct a review but forming a panel was likely to be a lengthy process, and the panel's report would ultimately be reviewed and approved by the chartered SAB. A member commented that the SAB should not review the rule because such a review would focus on policy issues. Other members disagreed and noted that there were science issues that should be reviewed by the SAB. A member commented that there were multiple science questions to be considered. Members discussed problems associated with making large data sets publicly available. A member commented that making judgements about which data sets should be publicly available conflicted with the objective of conducting a systematic review. Following the discussion, the SAB decided by a voice vote that a work group would develop a draft report on the proposed rule, and that the work group report would be brought to the full SAB for review, discussion, and approval.

### **Consultation on Actions Related to Updating EPA Guidelines for Carcinogen and Non-cancer Assessment**

Following a break the SAB received a briefing<sup>24</sup> on EPA activities to update the agency's cancer and non-cancer risk assessment guidance. Drs. Edward Ohanian and David Bussard of EPA's Risk Assessment Forum briefed SAB members on the guidelines update. Dr. Ohanian described the Risk Assessment Forum's mission to develop: (1) agencywide risk assessment guidelines, (2) guidance, and (3) methods in support of agency decision making. Dr. Bussard indicated that the agency was interested in moving quickly to revise the Guidelines and wanted to receive feedback on the revision from SAB members within 30 days. He then described the topics covered in the 2005 Guidelines for Carcinogen Risk Assessment. He also discussed some of the specific Risk Assessment Forum guidelines that EPA had developed for specific non cancer health effects. Dr. Bussard then reviewed the charge questions<sup>25</sup> that EPA had sent to the SAB for the consultation on updating the cancer and non-cancer risk assessment guidelines.

SAB members provided individual comments in response to the charge questions. A member commented that it appeared EPA had an aggressive schedule for revision of the Guidelines. She also noted that it was important to develop guidance on how to evaluate data quality. Another member commented that multiple risk numbers were sometimes established, and this posed problems for risk managers. He noted that guidance to address such cases was a high priority. A member commented that

it was important that statisticians consider how to avoid drawing improper conclusions from studies. He expressed particular concern about epidemiology studies.

A member commented that it was important to consider how to look at the effects of multiple chemicals. She recommended that the EPA develop a unified risk assessment approach to consider various classes of chemicals. Another member commented that there was a need to develop guidance on considering immunotoxicological endpoints. She also recommended developing guidance concerning reproductive and developmental endpoints. A member suggested that EPA develop guidance for assessing risks associated with DNA reactive and non-DNA reactive chemicals.

A member asked EPA staff whether the agency had identified high priority topics to be addressed in revising the risk assessment guidance. EPA staff responded that the agency had begun this work. The member asked whether EPA would be asking the SAB for additional advice later in the process. EPA staff indicated that the agency may want to come back to the SAB for further advice. A member asked whether the process of revising the guidelines would affect ongoing chemical assessments. EPA staff responded that they were not aware of changes in the process for ongoing assessments.

Following the discussion, Dr. Honeycutt thanked EPA staff for their presentation and Board members for their comments. He asked SAB members to provide written comments to the DFO in response to the charge questions within three weeks.

### **Discussion of Science Advisory Board Self-Initiated Project**

Dr. Honeycutt indicated that, before recessing for the day, the SAB would discuss whether the Board should undertake a proposed self-initiated project. He noted that proposals for self-initiated projects had been developed by the SAB regulation review work group, and a project titled *Scientific issues in Identifying, Estimating, and Validating the Co-Benefits of Clean Air Regulations*<sup>26</sup> had been suggested by SAB member Dr. John Graham. SAB member Dr. Deborah Bennett summarized the proposal and it was discussed by the Board. A member commented that it was an important project and recommended that the issue of identifying and estimating co-benefits be addressed by the SAB. Another member commented that the SAB Regulation review work group had focused on developing self-initiated project proposals to address cross-cutting issues. A member commented that evaluation of co-benefits could be a central question raised in the SAB review of EPA's economic guidelines. Other members commented that evaluating co-benefits was an issue of concern in the review of the Mercury and Air Toxics proposal. Dr. Honeycutt indicated that EPA was likely to be requesting SAB advice on projects that involved evaluation of co-benefits. Therefore, he indicated that it could be pre-mature to undertake the proposed self-initiated project. He suggested that the project be tabled and reconsidered later. There was no disagreement with this suggestion, Several members commented, however, that the SAB should not drop the project from future consideration. Dr. Honeycutt thanked members for their comments and indicated that the project would be reconsidered when requests for advice were received from the EPA. Dr. Honeycutt then indicated that the SAB would recess and reconvene at 9:00 a.m. the following day.

**Thursday, June 6, 2019**

### **Reconvene Meeting**

The meeting reconvened at 9:00 a.m. Dr. Honeycutt indicated that the SAB would receive a briefing on EPA's *PFAS Action Plan*, discuss EPA's proposed Waters of the U.S. rule, and hear brief clarifying public comments. He noted that he expected to adjourn before 12:30 p.m.

## Per and Polyfluoroalkyl Substances (PFAS) Action Plan

Dr. Honeycutt called upon Drs. Jennifer McLain of EPA's Office of Ground Water and Drinking Water and Andrew Gillespie of EPA's Office of Research and Development to present a briefing on the *PFAS Action Plan*.<sup>27</sup> Dr. McLain described PFAS chemicals. She indicated that they are persistent and ubiquitous chemicals and noted that Dr. Gillespie would discuss ongoing and planned EPA research to develop a better understanding of the effects of PFAS. She indicated that the PFAS Action Plan was a multi-media, national research, management, and risk communication plan. Dr. McLain discussed ongoing and planned actions to address PFAS in drinking water, including ground water cleanup and drinking water monitoring. She also discussed enforcement and risk communication activities.

Dr. Gillespie described ongoing and planned EPA research to understand PFAS toxicity, exposure, and risk, and to identify effective treatment and remediation actions. He indicated that, to assess human health risks, the EPA was developing standard toxicity assessments where data were available, and would use in vitro, high throughput screening approaches to fill data gaps. To assess ecological toxicity, EPA was conducting a systematic review of the literature and developing a research plan that included identification of sensitive taxa, research to understand bioaccumulation, and developing benchmarks, and thresholds. Dr. Gillespie also noted that EPA would use Adverse Outcome pathways as an organizational framework for this work. Dr. Gillespie also discussed ongoing and planned activities to: (1) develop and validate analytical methods for detecting and quantifying PFAS in water, air, and solids; (2) develop test methods, models, and databases to characterize PFAS sources and exposures; (3) evaluate and test drinking water treatment technologies; (4) evaluate technologies for remediating PFAS impacted soils, waters, and sediments; (5) evaluate the efficacy of materials management technologies for PFAS; and (6) provide technical assistance to states tribes, and local communities.

Dr. Honeycutt thanked the EPA speakers for the presentation and asked EPA staff whether the agency was receiving input from states concerning possible PFAS levels of concern. EPA staff indicated that they were receiving information from states and others. Dr. Honeycutt called for questions and comments from SAB members. A member commented that in the past, analytical methods were developed as rules and therefore it was difficult to modify them. EPA staff responded that under the Safe Drinking Water Act, methods are not incorporated by rule. A member asked why EPA had undertaken such a large effort to address PFAS chemicals. EPA staff responded that there was public concern about PFAS chemicals and EPA thought it was important to develop the Action Plan. A member questioned whether research results had indicated the need for the level of effort supporting the PFAS action plan. He asked EPA staff to describe the effects of human exposure to PFAS chemicals. EPA staff discussed PFAS effects on the liver and thyroid. EPA staff noted that draft assessments were being developed.

Members provided other comments. A member commented that blood levels of PFAS chemicals appeared to be decreasing in recent years. Other members commented that, for ecotoxicological evaluations, it would be useful to develop freshwater and saltwater assessment and tissue methods. Members questioned whether States had set PFAS levels of concern and whether EPA had consulted Health Canada on PFAS guidelines. EPA staff responded that they were aware of work being conducted in Canada. A member commented that infant exposure to PFAS chemicals was a particular concern and noted that EPA should consider post-natal development endpoints. Another member commented that EPA should look at occupational exposure data. Following the discussion, Dr. Honeycutt thanked EPA staff for responding to SAB comments and indicated that the Board would discuss the next item on the meeting agenda, EPA's proposed Waters of the U.S. rule.

## **Discussion of EPA's Proposed Waters of the U.S. Rule**

Dr. Honeycutt indicated that the SAB would next discuss whether to review the technical basis of EPA's proposed Waters of the U.S. (WOTUS) rule.<sup>28</sup> He noted that a work group chaired by SAB member Dr. Alison Cullen had reviewed the proposed rule, conducted fact-finding activities, and developed recommendations. He indicated that the WOTUS Work Group's memorandum<sup>29</sup> to the Board contained the recommendations. He then introduced Mr. John Goodin and Dr. Owen McDonough of EPA's Office of Water to provide information about the proposed rule.

EPA staff explained that the agency and the Department of the Army had proposed the WOTUS rule to clarify the extent of waters under the jurisdiction of the Clean Water Act. EPA staff explained that the proposed rule was consistent with statutory authority. They noted that the line between Federal and State waters was informed by science. They indicated, however, that this line was a legal distinction established within the overall framework and construct of the Clean Water Act (CWA). EPA staff discussed whether ground water was included in Waters of the U.S. They explained that the agency had considered existing policy and the legislative history of the Clean Water Act and had concluded ground water should not be included in waters of the U.S.

Dr. Honeycutt thanked EPA staff for their presentation and asked Dr. Cullen to summarize the SAB Work Group's memo. Dr. Cullen briefly summarized the process that the Work Group had followed and the Work Group's recommendations. She noted that, in reviewing the proposed rule, the Work Group had found that there were some gaps between science and policy that warranted review and bridging.

SAB members asked questions and provided comments. Members commented on the importance of ground water connections. Members commented that the U.S. Geological Survey had done much work to document the importance of ground water - surface water connections. Members noted that it was now widely recognized that contaminated ground water affected many hazardous waste sites. Members noted that EPA had received public comments on this issue and also on the importance of protecting ephemeral waters. Some members recognized that EPA's revised definition of Waters of the U.S. was based on the agency's interpretation of the statute and case law. Some members commented that the revised definition appeared to be a policy decision and questioned whether the SAB should comment on policy. Other members commented that the revised definition did not take into account the importance of ground water and ephemeral waters.

Dr. Honeycutt suggested that the SAB develop a commentary to recognize that EPA's revised definition of Waters of the U.S. was based on the agency's interpretation of the statute and case law, but also indicated that there were science issues to be considered. Several members expressed agreement with Dr. Honeycutt's suggestion. The SAB then decided by a voice vote that the WOTUS Work Group would develop a draft commentary on EPA's proposed Waters of the U.S. rule, and that the draft commentary would be sent to the full SAB for review and approval.

## **Brief Clarifying Public Comments**

Dr. Honeycutt indicated that the SAB would next hear clarifying public comments. The DFO indicated that two individuals had requested time to present clarifying public comments. Dr. Honeycutt called Steve Silverman and Genna Reed to provide clarifying comments.

Steve Silverman commented that EPA's SAFE vehicles rule would benefit from SAB review. He also commented on legal issues concerning the exemption provision in EPA's proposed Science and

Transparency Rule. In addition, he commented on the proposed change in the process for SAB review of regulations, noting that pre-proposal review was required.

Genna Reed commented that: the meaning of SAB consultation should be clarified; the SAB should ask the EPA to clarify the meaning of “double blind study” mentioned in the Administrator’s remarks; there should be adequate time provided for SAB review of the Science and Transparency Rule; and there were numerous scientific and technical issues related to EPA’s *PFAS Action Plan*.

### **Closing Remarks and Next Steps**

Dr. Honeycutt thanked members of the SAB for participating in the meeting and reviewed the follow-up action items and next steps. He stated that the SAB Office would schedule a public teleconference to provide consultative advice on mechanisms for secure access to PII and CBI as discussed in the proposed Science and Transparency rule. He also indicated that SAB members would provide written comments for this consultation.

Dr. Honeycutt indicated that the SAB Office would take follow-up steps to implement the SAB’s decisions to advise EPA on planned actions in the Spring 2018 Regulatory Agenda. He indicated that work groups would be formed to begin these reviews. He noted that he would like to complete this work by October. Dr. Honeycutt also indicated that he looked forward to receiving more information from the EPA concerning the new process for regulation review.

In addition, Dr. Honeycutt indicated that he would work with the DFO to develop a report to the EPA transmitting SAB members’ comments on updating EPA guidelines for carcinogen and noncancer assessments. He asked SAB members to send their written comments to the DFO by June 21<sup>st</sup> so they could be included in the report.

Dr. Honeycutt then asked the DFO to adjourn the meeting if there were no additional items to discuss. The DFO adjourned the meeting.

Respectfully Submitted:

Certified as Accurate:

/s/

/s/

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Dr. Thomas Armitage  
Designated Federal Officer

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Dr. Michael Honeycutt, Chair  
Science Advisory Board

**NOTE AND DISCLAIMER:** The minutes of this public meeting reflect diverse ideas and suggestions offered by SAB members during the course of deliberations within the meeting. Such ideas, suggestions and deliberations do not necessarily reflect consensus advice from SAB 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.

## Materials Cited

The following meeting materials are available on the EPA Science Advisory Board website, [www.epa.gov/SAB](http://www.epa.gov/SAB), on the June 5-6, 2019 meeting page.

<https://yosemite.epa.gov/sab/sabproduct.nsf/a84bfee16cc358ad85256ccd006b0b4b/5721ce28fad51122852583e4006ba391!OpenDocument&Date=2019-06-06>

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<sup>1</sup> Roster

<sup>2</sup> Federal Register Notice

<sup>3</sup> Agenda

<sup>4</sup> Registered Public Speakers

<sup>5</sup> Written Statement from Bernard Goldstein (Revised June 5, 2019)

<sup>6</sup> Presentation on Actions Related to Updating EPA Guidelines for Carcinogen and Noncancer Assessment from Penelope A. Fenner-Crisp

<sup>7</sup> Written Statement from Penelope A. Fenner-Crisp

<sup>8</sup> Written Statement from John Bachmann

<sup>9</sup> Written Statement from Genna Reed, Union of Concerned Scientists

<sup>10</sup> Comments from Earthjustice for the Science Advisory Board's Consideration in Advance of Its June 2019 Meeting.

<sup>11</sup> Attachment #5 to Public Comments from Earthjustice

<sup>12</sup> Written Statement from Christopher Frey, North Carolina State University

<sup>13</sup> Supporting Material: Letter from EPA Administrator Andrew Wheeler to Dr. Michael Honeycutt and Members of the SAB about Review of Planned Regulatory Actions

<sup>14</sup> Public Comments from Scientists, Academics, and Health Professionals on Updating EPA Guidelines for Carcinogen and Noncancer Assessment. Submitted by Veena Singula, University of California, San Francisco

<sup>15</sup> Comments on EPA's Mercury and Air Toxics Reconsideration. Submitted by Jack Lienke, Institute for Policy Integrity, New York University Law School

<sup>16</sup> Comments on EPA's Proposed Waters of the U.S. Rule, Submitted by Bethany A. Davis Noll, Institute for Policy Integrity, New York University Law School

<sup>17</sup> Written Statement from Mr. Ted Steichen, American Petroleum Institute

<sup>18</sup> Comments on EPA Advanced Notice of Proposed Rulemaking on Increasing Consistency and Transparency in Considering Costs and Benefits in the Rulemaking Process. Submitted by Ted Steichen, American Petroleum Institute

<sup>19</sup> Comments on the EPA Proposed Rule: Strengthening Transparency in Regulatory Science. Submitted by Ted Steichen, American Petroleum Institute

<sup>20</sup> Comments on Issues Before the Science Advisory Board. Submitted by Michael Dourson, Toxicology Excellence for Risk Assessment

<sup>21</sup> Supporting Material: Proposed Rule Titled Strengthening Transparency in Regulatory Science (FR 83 18768)

<sup>22</sup> EPA Presentation. Strengthening Transparency in Regulatory Science Rulemaking. Dr. Maria Doa

<sup>23</sup> Preparations for Chartered Science Advisory Board (SAB) Discussions of EPA Planned Agency Actions and their Supporting Science in the Spring 2018 Regulatory Agenda

<sup>24</sup> EPA Presentation. SAB Consultation - Updating EPA's Cancer and non-Cancer Risk Assessment Guidance

<sup>25</sup> Agency Charge: Actions Related to Updating EPA Guidelines for Carcinogen and Noncancer Assessment Advisory

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<sup>26</sup> Proposed EPA Science Advisory Board Project: Scientific Issues in Identifying, Estimating, and Validating the Co-Benefits of Clean-Air Regulations

<sup>27</sup> EPA Presentation. EPA's PFAS Action Plan. Dr. Jennifer McLain and Dr. Andrew Gillespie

<sup>28</sup> Supporting Material: Proposed Rule Titled Revised Definition of "Waters of the United States" (FR 84 4154)

<sup>29</sup> Preparation for Chartered Science Advisory Board (SAB) Discussion of EPA's Proposed Waters of the U.S. (WOTUS) Rule

**ATTACHMENT A – Other Attendees**  
**U.S. Environmental Protection Agency Science Advisory Board**  
**June 5-6, 2019**

<b>Name</b>	<b>Affiliation</b>
Abboud, Mike	EPA
Aldridge, Ashlee	EPA
Allen, George	
Allen, Lucas	American Academy of Pediatrics
Ambrozaitis, Giedrius	Alliance of Automobile Manufacturers
Amidon, Ashley	
Angrish, Michelle	
Apfel, Carrie	Earthjustice
Arzuaga, Xabier	EPA
Assmus, Phillip	
Avery, James	EPA
Axelrad, Daniel	EPA
Bachman, John	
Bahadori, Tina	EPA
Bainwol, Garrett	Auto Alliance
Bakovic, Steven	OMB
Beach, Christopher	EPA
Bell, Johanna	
Bell, Ruth	EPN
Belzer, Richard	Independent consultant, SAB CAAC
Bendix, Aria	
Berner, Ted	EPA
Birchfield, Norman	EPA
Blase, Kurt	BlaseGroup LLC
Bloomer, Bryan	EPA
Branosky, Evan	
Braverman, Carole	EPA
Broder, Michael	EPA
Bromberg, Kevin	
Brust, Laura	
Burden, Susan	EPA
Callahan, michael	EPN
Carignan, Sylvia	Bloomberg Environment
Carlson, Laura	EPA
Carpenter, Thomas	
Cheuse, Emma	Earthjustice
Chou, Karen	Michigan State University, SAB CAAC
Chung, D.	
Cogliano, Vincent	EPA
Collet, Susan	
Condon, Madison	Policy Integrity

Cooper, Coralie	NESCAUM
Coyner, Emily	
Crunden, Ev	
Cuje, Jace	EPA
D'Amico, Louis	EPA
D'Arcy, Daniel	Bipartisan Policy Center
Davidson, Ken	EPA
Davies, Steve	Agri-Pulse
Davis, Allen	EPA
Davis, Ben	EPN
Deck, Leland	EPA
Dockins, Chris	EPA
Dourson, Mike	TERA
Druwe, Ingrid	EPA
Dubi, Patrick	Water Environment Federation
Dunlap, David	EPA
Dzubow, Rebecca	EPA
English, Joanne	SAB CAAC
Fenner-Crisp, P.A,	
Figueroa, Zaida	EPA
Firmin, Scott	
Flowers, Lynn	EPA
Folland, William	
Foster, Kelly	Waterkeeper Alliance
Foster, Stiven	EPA
Frey, Christopher	North Carolina State University
Friedman, Lisa	New York Times
Fritz, Jason	EPA
Gallagher, Sean	
Gendzier, Jonathan	Southern Environmental Law Center
Gillooly, Amanda	GASP
Gledhill, Jonathan	Policy Navigation Group
Glen, Barbara	EPA
Goeden, Helen	Minnesota Department of Health
Goldman, Gretchen	Union of Concerned Scientists
Goldstein, Bernard	EPN
Gormley, Neil	Earthjustice
Gray, Leon	EPA
Green, Miranda	
Greenbaum, Dan	
Greene, Sophie	EPA
Griggs, Mary Beth	
Grimes, Brianna	EEI
Gruehagen, Chris	
Guillen, Alex	Politico
Hale, Zack	S&P Global
Harker, Riena	EPA

Hartigan, Suzanne	American Chemistry Council
Hashimoto, Hayden	Clean Air Task Force
Hawkins, Belinda	EPA
Heckman, Jory	
Hegsted, maria	Inside EPA
Hetes, Robert	EPA
Hilton, Gina	People for the Ethical Treatment of Animals
Hockstadt, Leif	EPA
Hogue, Cheryl	
Homeister, Nancy	Ford Motor Company
Hotchkiss, Andrew	EPA
Houston, Kelly	AEI, LLC
Irby, Sebastian	EPN
Jenkins, Lisa	Chemical Watch
Johnston, Khanna	EPA
Junga, Eric	
Kagen Evans, Caren	EPN
Kalisz, Cathe	
Kavanagh, Peter	CNN
Keshava, Channa	EPA
Keteles, Kristen	EPA
Kim, Hae Eun	EPA
Knight, Chris	Argus
Kraft, Andrew	EPA
Kwok, Rose	EPA
Lamson, Amy	EPA
Landis, Wayne	Western Washington University, SAB CAAC
Lange, Sabine	
LaRoss, David	
Lavelle, Marianne	Inside Climate
Lavoie, Emma	EPA
Lebens, Bob	
Lee, Janice	EPA
Lefohn, Allen	A.S.L. & Associates
Lehmann, Geniece	EPA
Lewis, Carrie	Portland Water District
Lim, David	Industry Dive
Logomansini, Angela	
Mabson, Michelle	Earthjustice
Mandel, Kyla	
Mangino, Mario	EPA
Martel, S,	
Martin, Lawrence	EPA
Mason, Deirdre	ASDWA
Mauel, Linda	EPA
Mazza, Carl	EPA
McDow, Stephen	EPA

McGinnis, Sean	
McHale, Caitlin	National Mining Association
Medeiros, Kevin	
Meyer, Brittany	Michael J. Fox Foundation for Parkinson's Research
Miller, Andy	EPA
Miller, Eric	
Miller, Gregory	EPA
Molina, Michael	EPA
Moody, Chris	American Water Works Association
Moore, Tirrill	Southern Environmental Law Center
Morozov, Viktor	EPA
Nawaguna, Elvina	CQ
Nolan, Janice	
Olson, Marian	EPA
Parrish, Don	
Peffer, Mel	EPA
Pensak, Mindy	EPA
Phillips, Anna	
Potter, Amy	GA EPD
Pratt, Margaret	EPA
Pratt, Mary	EPA
Raffaele, Kathleen	EPA
Ramasamy, Santhini	EPA
Rayasam, Swati	UCSF
Reed, Genna	Union of Concerned Scientists
Reilly, Sean	E&E News
Reinhart, Paul	EPA
Richmond-Bryant, Jennifer	EPA
Roberts, Cindy	EPA
Rollins, Jim	PNG
Ross, Mary	EPA
Sangupta, Shayak	Carnegie Mellon University
Schlea, Stephanie	Association of Metropolitan Water Agencies
Schroeder, Kathleen	EPA
Serda, Sophia	EPA
Sewell, Anna	Earthjustice
Shaikh, Rashid	
Shallal, Sue	EPA
Sharma, R.	
Shoaf, John	EPA
Sicilliano, John	
Silverman, Steve	Environmental Protection Network
Sinks, Tom	EPA
Singula, Veena	
Simon, Ted	Ted Simon, LLC, SAB CAAC
Sloan, J.	

Smith, Abby	Bloomberg Environment
Smith, Cecelia	U.S. News and World Report
Smith, Tyler	
Snider, Annie	Politico
Stallworth, Holly	EPA
Steichen, Ted	API
Subramanian, Hema	EPA
Sun, Yan	Earthjustice
Swick, Derek	API
Szymanski, Laura	Geological Society of America
Teichman, Kevin	EPA
Thayer, Kris	EPA
Thompson, Janie	House Science Committee
Timm, Gary	
Tracy, Tom	EPA
Vandenberg, John	EPA
Vette, Alan	EPA
Wallace, Gregory	CNN
Weaver, James	EPA
Whatling, Paul	
Wilkes, Wendi	
Williams, Alexa	House Transportation and Infrastructure Committee
Williams, John	GA EPD
Williams, Thea	EPA
Wittenberg, Ariel	E&E News
Wong, Diana	EPA
Woock, Stephen	Wayerhauser Company
Woodall, George	EPA
Woodruff, Tracey	UCSF
Yeow, Aaron	EPA
Yu, Xue Han	EPA
Zarba, Chris	
Zavalier, Jerome	EPA
Zimmerman, Nicole	