

**Summary Minutes of the  
U.S. Environmental Protection Agency  
Science Advisory Board  
Risk and Technology Review (RTR) Methods Review Panel  
Public Meeting, June 29-30, 2017**

Date and Time: Thursday, June 29, 2017 from 9:00 AM to 5:00 PM, and Friday June 30, 2017 from 9:00 AM to 3:40 PM (Eastern Time).

Location: Hyatt Regency Crystal City, 2799 Jefferson Davis Highway, Arlington, VA 22202

Purpose: To conduct a peer review of EPA's draft report, *Screening Methodologies to Support Risk and Technology Reviews (RTR): A Case Study Analysis (Draft May, 2017)*.

Participants:

**Risk and Technology Review Methods Review Panel** (See Attachment A for full roster):

Dr. Jay Turner, Chair	Mr. Stanley Hayes
Dr. Tami Bond	Dr. Joseph Irudayaraj
Dr. Tiffany Bredfeldt	Dr. Abby A. Li
Dr. Gregory Carmichael	Dr. Slawo Lomnicki
Dr. Richard Di Giulio	Dr. Sidney Marlborough
Dr. Charles T. Driscoll, Jr.	Dr. P. Barry Ryan
Dr. David Eastmond	Dr. James Sadd
Dr. Gary Ginsberg	Dr. Veronica Vieira
Dr. Dale Hattis	

Dr. Lomnicki and Dr. Di Giulio attended via teleconference.

**EPA SAB Staff:**

Dr. Bryan J. Bloomer, Designated Federal Official, SAB Staff Office

**EPA Staff:**

Mr. Chris Sarsony, EPA Office of Air Quality Planning and Standards, Office of Air and Radiation

Ms. Kelly Rimer, EPA Office of Air Quality Planning and Standards, Office of Air and Radiation

**Other Attendees:** A list of persons present at the meeting, who requested information on accessing the teleconference line or live webcast, or who noted via email that they participated via teleconference or live webcast, is provided in Attachment B.

Materials Available: The agenda, charge questions, review documents and other meeting materials listed below are available on the SAB website ([www.epa.gov/sab](http://www.epa.gov/sab)) at the following SAB Risk and Technology Review (RTR) Methods Review Panel June 29-30, 2017 public meeting webpage:

<https://yosemite.epa.gov/sab/sabproduct.nsf/a84bfee16cc358ad85256ccd006b0b4b/7c45e3d12a1a39cc8525809d0069f8ee!OpenDocument&Date=2017-06-29>

- Agency-provided Background Material  
Information responsive to clarifying questions of the panelists provided by EPA.

RTR technical support document provided by EPA as part of response to clarifying questions of panelists June 29th.

- Agency Briefing Material  
EPA Presentation by Kelly Rimer and Chris Sarsony for the Risk and Technology Review Methods Panel June 29th. *Screening Methodologies to Support Risk and Technology Reviews: A Case Study Analysis*

- Committee Members' Comments  
Compiled pre-meeting comments of review panelists.

- List of public speakers  
List of public speakers for June 29th.

- Public comment submitted to the SAB Staff Office  
Earthjustice NRDC comment supporting material: March 2016 Earthjustice comments submitted to the docket for draft EPA Guidelines for Human Exposure Assessment.

Earthjustice NRDC comment supporting material: Multiple cosigned comments on EPA Request for Information and Citations on Methods for Cumulative Risk Assessment, EPA-HQ-ORD-2013-0292, May 1, 2013.

Earthjustice NRDC comments supporting material: NRDC scientists and additional cosigners comments on EPA Draft Guidelines for Human Exposure Assessment March 2016.

Earthjustice NRDC submitted comments for 2017 RTR Methods Review.

Earthjustice NRDC supporting material: NRDC Science & Environmental Health Network Issue Paper: "Strengthening Toxic Risk Assessment to Protect Human Health" 2012.

- June 6, 2017 Federal Register Notice announcing the public meeting (82 FR 26100 – 26101)
- Agenda for June 29-30, 2017 public meeting

## **Meeting Summary**

The public meeting was announced in the Federal Register and was conducted according to the meeting agenda. A summary of matters discussed and conclusions reached at the meeting is presented below.

### **June 29, 2017**

#### **Opening Statements**

Dr. Bryan Bloomer, Designated Federal Officer (DFO) for the SAB RTR Methods Panel convened the meeting at 9:00 a.m. with a statement reminding the audience that the panel operates under the auspices of the Federal Advisory Committee Act (FACA). Dr. Bloomer then called the roll. He also reviewed the materials which had been provided to the panel and noted that a complete set of materials was available at the meeting website for reference purposes. He reminded everyone that panel deliberations are public and that any contacts among panelists or between panelists and the EPA or public are required to include the DFO. He noted that all panel members were appointed to provide individual expertise and advice, not to represent any organization. He stated that the SAB Staff Office had identified no financial conflicts of interest or appearance of a loss of impartiality for any panel member for this review. He also noted that minutes of the meeting were being taken to summarize discussions and action items in accordance with the requirements of FACA. He described the process for completing a final report to be sent to the Administrator, including the production of a public draft for review and approval by the Chartered Science Advisory Board (SAB). Then he requested that panel members introduce themselves and make a brief statement regarding their research interests and experiences relevant to the review.

Mr. Chris Zarba, Director of the SAB Staff Office, welcomed everyone and thanked them for the efforts they were putting forward on behalf of the American people by reviewing the draft EPA report and developing consensus expert advice in response to the Agency's charge questions. He stated a commitment to openness and transparency in how the group conducts its business and that after the meeting, there would be additional opportunities for the public to provide comments and information for consideration by the panel and the SAB as the SAB develops its advisory report. He noted that members of the public could contact the DFO for more information on the advisory process and how they can best provide oral and written input for panel members' consideration. He also stated that information about the SAB advisory process and opportunities for public input is presented on SAB's website.

Dr. Jay Turner reviewed the agenda for the meeting and no changes were made. He also summarized the objective of the meeting to peer review the draft EPA report, *Screening*

*Methodologies to Support Risk and Technology Reviews (RTR): A Case Study analysis (External Review Draft May, 2017).*

**Presentation by EPA:**

EPA representatives, Mr. Chris Sarsony and Ms. Kelly Rimer, presented information to the panel regarding the draft report and charge to the panel. The presentation is entitled, *Screening Methodologies to Support Risk and Technology Reviews: A Case Study Analysis* and is available on the meeting website. Several questions were raised during the course of the presentation that resulted in EPA providing additional clarifying information. This additional clarifying information was posted to the meeting website on June 30<sup>th</sup>, and is available at the same URL as above under the heading “Materials Available.”

Issues raised and discussed amongst the panel included: sensitivity analyses of results to alternative assumptions; data quality issues and how they impact results; overall assessment of precision of results relative to the uncertainty in important input variables and data; modeling approaches; and probabilistic approaches for future RTR assessment methodology.

**Public Comments:**

Five sets of written comments were submitted for the panel’s consideration and were posted on the meeting website. At the meeting, Ms. Emma Cheuse from Earthjustice and Ms. Miriam Rotkin-Ellman from the Natural Resources Defense Council provided oral public comments via teleconference for the panel’s consideration. The oral public comments emphasized points provided in written comments submitted by the speakers.

Ms Rotkin-Ellman raised for the panel’s consideration the critical importance of the RTR methodology to understand the risk that remains after promulgation of a NESHAP. Ms. Cheuse emphasized that how the Agency uses and defines the term “negligible” risk is quite important and seems to vary a bit throughout the document. She also emphasized her position that the panel should carefully consider how the term “negligible” is used throughout the document. Ms. Cheuse, and Ms. Rotkin-Ellman indicated separately in their comments an assertion that “...there may not be a negligible level of risk to the public.”

**Discussion of Panel’s Review of EPA’s draft *Screening Methodologies to Support Risk and Technology Reviews (RTR) (Draft May, 2017).***

The following is a summary of the issues discussed during the meeting.

The panel chair initiated the panel’s discussion of the report by indicating that the group will proceed according to the agenda with charge questions discussed in numerical order.

The panel discussed the technical nature of the review it was conducting. The panel then noted that it was not asked to evaluate the policy implications but instead to focus on technical matters related to the RTR analysis methods.

## **Discussion of Charge Questions:**

The discussions occurred amongst panel members with occasional clarifying questions asked of EPA and answered by EPA or by its identified contractors (as noted in Attachment B's 'List of Members of the Public at the Meeting'). A summary of the panel discussion and preliminary conclusions for each charge question is provided on the meeting website.

### *Charge Question 1, the three-tiered multipathway screening approach used in the RTR analyses*

The panel discussed charge question 1 on the topic of the three-tiered multipathway screening approach used in the RTR analyses (see the Agency Charge posted on the meeting website). The discussion was led by Dr. Eastmond and covered the following issues: the structure and logic of the overall approach; the limited number of case studies in a document that is titled a "Case Study Analysis"; and how the panel would benefit from more information to conduct its overall evaluation.

Discussion ensued regarding the tiered approach and the multipathway screening when certain scenarios appear to be separated out (e.g. lakes vs. other water bodies). In addition, questions were discussed regarding: "adding together" or performing a cumulative risk assessment vs. separate assessments across chemicals and individual sources; inclusion (or not) of background levels of the chemical for the specific analysis; and the cumulative risks to people from multiple sources or multiple exposure pathways regarding assertions made within the EPA report. EPA clarified that the Clean Air Act limits RTR analyses to one source category at a time without consideration of chemical background levels and other source categories; some panel members expressed concerns regarding the implications of such limitations. Further issues were raised regarding the limited evaluation of life stages, especially early life, for target endpoints.

The Agency's purpose for conducting a screening level analysis was discussed; it is used to reduce the number of specific facilities requiring more detailed analysis and thereby targets limited resources. The panel provided overall support, noting the Agency's approach was reasonable. However, some panel members emphasized the need for the Agency to consider future development of a full probabilistic approach to better constrain the assessment results. The panel raised and discussed issues related to data availability and "ground truthing" the results of the screening analysis. The panel discussed details of the model, including input data, and noted there were existing opportunities for collaboration across the Agency to refine and possibly harmonize approaches. The panel discussed the tiered approach and expressed caution regarding prematurely screening out facilities from further analysis, especially in the presence of significant data issues that may exist. Some panelists noted that resource demands to conduct various analyses must be considered and to remember the context which is a screening-level analysis.

Several members of the panel discussed the lack of access to past RTR screening analysis results or an overall evaluation of results across many analyses. These members noted that, step by step, the current RTR assessment approach seems reasonable; however, considering possible data issues, the panel agreed that in order to fully evaluate the RTR assessment approach panelists

would prefer to have environmental measurements of chemicals that could be used to evaluate intermediate values calculated in the models on the way to a risk number.

#### Charge Question 2, the risk equivalency factor methodology

The panel discussed charge question two, and the discussion was initiated by the lead discussant Dr. Ginsberg. While the panel generally supported the use of exposure equivalency factors (EEFs) for data poor compounds, several issues were raised and discussed including a detailed consideration of Figure 3.2 in EPA's draft report. EPA provided clarifying information that is posted on the meeting website. The panel discussed the derivation of EEFs and discussed whether the approach may include some polycyclic aromatic hydrocarbon (PAH) that are not generally considered carcinogens. The panel also discussed the modeling methodology with consideration of probabilistic approaches and sensitivity analyses that may yield insights on the appropriateness of conclusions or screens.

#### Charge Question 3, fishing and lake and pond assumptions

The panel discussed charge question three, and the discussion was initiated by Dr. Driscoll. The panel suggested several modifications to the TRIM.FaTE modeling and assumptions. Specific technical discussion occurred such as consideration of methods or data sources for more realistic ingestion rates and other model parameters. The panel found the assumption that the subsistence fisher is the only fisher taking fish from the lake to be excessively protective. The panel noted there is considerable variability in relevant parameters across lakes and various water body types that should be further considered to determine whether the result, overall, in assessments are too conservative. The panel discussed the methodological approach and the impact of potentially key assumptions such as single fisher consumption of fish from a given lake, fishing related travel, and the importance of stocking strategies, trophic levels and assumptions related to the chemical properties. The panel discussed that a more detailed description and documentation of the methodology is desired. Some panelists expressed confusion about which data sets were being used, the vintage of data being used, and the quality of the data. The panel urged the Agency to provide greater transparency of underlying data including how studies were selected or excluded, how data were prioritized, how the evidence was weighted, etc. This information would support a more robust evaluation of the methodology. The panel indicated Agency resource demands should be considered given the application of the method to the chemicals or industries in question, essentially reminding itself that the method is designed to be a progressive screening approach with each successive level of screening requiring more investment of resources to conduct. The panel indicated attention should be paid to the deposition approach and the meteorology considerations (including modeling and measurement considerations), mixing height modeling approaches, and fish consumption assumptions.

#### Charge Question 4, lake data, plume rise, and meteorological data

The panel discussed charge question four, and the discussion was initiated by Dr. Bond. The panel discussed the point of view of the report and who was the intended audience. The panel discussed various issues including the opportunity to use data sets such as the National Land Cover Dataset (NLCD) and the United States Geological Survey Digital Elevation Model

datasets to identify relevant lakes. The panel discussed, and expressed concern, regarding EPA's *a priori* exclusion of swampy lakes which may host fish. The panel discussed plume rise modeling approaches including considering the use of plume-rise models other than those described in the Agency's proposed screening procedure. The panel discussed mixing height impacts on plume rise and plume re-entrainment and the implications of meteorology, meteorological data selection and land data use selection. The panel then considered the use of hourly meteorological data and sources and availability of data and the use of baseline modeling with correction factors as opposed to performing full model runs. The panel discussed the use of expert judgement versus the utility of seeking and using more data. Panelists noted specific concerns that were identified for further or more detailed investigation in the report, such as comparing the screening results obtained using TRIM.FaTE to those calculated by a more physically realistic model such as AERMOD.

The panel discussed limitations of the agency's proposed approach and issues of uncertainty for primary inputs. The panel engaged in a brief discussion of metrics (range or probabilities) to avoid "false precision" or misleading single point estimates and considered significant issues of QA/QC of input data. General data quality issues were identified during the discussion and the potential impact framed by historical analyses. The discussion resulted in the identification of two overarching suggestions for EPA's consideration. The first suggestion was whether EPA should consider that the emissions data in the NEI (National Emission Inventory) may differ from actual releases, either because of upset conditions, or because self-reporting does not always suffice. The location of emissions may also be different than reported. These inaccuracies may have important effects on predicted exposures. Panel members agreed that EPA should gather data and "ground truth" the method and data for future specific applications of the RTR methodology. The second suggestion was that EPA consider the development of a probabilistic analysis and approach to determine the parameters and assumptions that most greatly affect predicted exposures. Identification of factors that dominate risk and uncertainty could guide future screening analyses by providing justification to obtain detailed input data for those factors. Probabilistic analysis could also assist in estimating confidence bounds.

The Designated Federal Officer recessed the meeting at 5:00 PM.

### **June 30, 2017**

The meeting was reconvened from recess at 9:00 AM by the Designated Federal Officer, Dr. Bloomer. Dr. Bloomer reminded those present and on the teleconference line that the panel operates under the auspices of the FACA and the meeting proceeded with Dr. Turner covering the goals for the day and reviewing the agenda.

The Agency acknowledged panel requests for clarifying information from the previous day's discussion and presented responsive clarifying data to the panel; these data are posted on the meeting website.

#### Charge Question 5, the gardener scenario

The panel discussed charge question five, and the discussion was initiated by Dr. Ryan. The panel discussed the soil ingestion rate assumptions included in the gardener scenario. One panelist introduced a discussion of probabilistic frameworks and how they might apply in this topic area. The panel discussed how “conservative” or “health protective” the methods may be and potential opportunities for links to efforts across the Agency, such as partnering with the EPA Office of Pesticide Programs (OPP) to obtain consumption data and other data. The panel urged consideration of adding other life stages (such as infants and children) to the models and related assumptions and sources of data. The panel discussed the soil biology implications, regional variations in gardening seasonality, and impacts of considering animals, such as chickens, across farm type or landscape setting for farm locations used within the models (such as urban, rural, suburban.). The panel went on to emphasize the importance of good definitions for terms used in the report.

#### Charge Question 6, the environmental risk screening approach

The panel discussed charge question six, and the discussion was initiated by Dr. Carmichael. The panel discussed various issues including the type of data included in the models that were selected, such as location data. The panel talked about multiple source contributions and the combined impact on the final endpoint for the analysis. They also discussed meteorological data and the use of freely available reanalysis meteorological data sets. Further discussion included treatment of air dispersion within the Agency’s models. The panel considered alternative modeling methods given the purpose of model screening e.g., wind rose-like probabilities for some meteorological parameters and the selection of pollutants for analysis (including discussion of hydrochloric acid (HCl) and selenium). The panel discussed the need for updating the references in the Agency’s report. Some panelists raised for discussion issues regarding regional review and local assessments (i.e., regional analyses may be necessary given receptors and receptor sensitivity). Some specifics were discussed looking for clarity and accuracy such as the magnitude of values used as reported in Tables 4-1 (e.g. water quality and soil criteria for mercury are very high) and 4-3 (species included in the analysis) of the Agency’s draft report. The panel was generally supportive of the overall method and encourages future refinements to the modeling approaches, data and assumptions.

#### Charge Question 7, modeling approaches for urban/rural assessment

The panel discussed charge question seven, and the discussion was initiated by Dr. Sadd. The panel discussed the land classification data and data sources. The panel suggested alternative data sources and approaches to data evaluation. The panel went on to discuss the level of detail in the Agency’s draft document and how it should be revised to address the needs of the intended audience. The panel urged that “ground-truth” evaluations of RTR screening method results be performed against measured data and that it is likely such data will need to be gathered in the field going forward. Further discussion centered on the assumptions used in RTR analysis related to land use such as rates of urbanization. One panelist raised the point of conducting continuous variable method development and another suggested methods for assessing land use through visual data inspection. The panel discussed meteorology, available meteorological data station

locations, available re-analysis meteorological data, and meteorological data processing along with other AERMOD parameters for use in the RTR screening analyses. The panel also discussed parametrization and use of proxy data for land use classification for input to the RTR screening analysis methods.

*Charge Question 8, the census block receptor check tool*

The panel discussed charge question eight, and the discussion was initiated by Dr. Vieira. The panel discussed the census block receptor-check tool technique concluding that it is labor intensive and subjective. The panel expressed concerns about bias and accuracy of this tool and discussed the best land use data sets to input. The discussion included an overall affirmation of considerations embodied in the Agency's census block receptor-check tool and alternatives to the centroid approach.

**Clarifying Comments from Members of the Public:**

After discussion of the charge questions, EPA staff and EPA contractors were asked clarifying technical questions and provided responses confirming panelists understanding of finer points of the data, modeling, and methods. EPA's Ms. Kelly Rimer and Mr. Chris Sarsony provided clarifying comments regarding the limitations under the Clean Air Act that are placed upon the Agency for conducting these assessments. Mr. Sarsony responded to a question about whether the RTR risk assessments consider cumulative risks from other sources or background levels. Mr. Sarsony indicated that the Clean Air Act requires the Agency to assess the human health and environmental risks remaining 8 years after promulgation of the standards for each source category (e.g., petroleum refineries). Therefore, risks are evaluated for each source category individually, except in cases where emissions units from another category are co-located at a facility in the category being considered. In these co-location cases, the whole-facility emissions are considered in the risk assessment. In addition, the risks from multiple facilities in the same source category are combined when their modeling domains overlap.

Mr. Smith from Earthjustice provided oral comments via teleconference that: reinforced the importance of the work of the panel; implored the panel to ensure the methods are protective; and affirmed the addition of the urban gardener scenario and supported the consideration of children. Mr. Smith went on to add that he encourages the method to demonstrate evidence of very low risk before a facility is screened out. Mr. Smith indicated that he would like to see the EPA follow up on previous recommendations that he contends have not yet been addressed, especially those that relate to early life stages. He concluded his remarks by thanking EPA and expressing his great appreciation for the time of this panel.

### **Writing Session by Panel Subgroups:**

After receiving clarifying public comments, the panel commenced their writing session. During the writing session, the eight different writing teams of the panel (one team per charge question) met separately to further develop the preliminary draft areas of consensus and key points made during the discussion of that charge question.

After the writing session concluded, the lead author for each charge question then presented their writing team's preliminary draft list of areas of consensus and key points. The panel discussed these draft materials with amendments and adjustments tracked by the lead authors for each charge question. The panel worked to achieve a verbal consensus position on the preliminary draft key points that were presented.

### **Summary and Next Steps:**

After the deliberations on the charge questions concluded, the Chair mentioned that next steps are forthcoming in an email to the panelists from the DFO. The DFO indicated that the rough schedule included writing team summaries due by the following Monday, and individual comments due within two weeks from each panelist. The report would be written over the next few months and is likely to be submitted for quality review sometime in the upcoming winter. The Designated Federal Officer adjourned the meeting at 3:42 pm ET.

Respectfully Submitted:

Certified as Accurate:

\_\_\_\_\_  
/s/  
Bryan Bloomer, Ph.D.  
Designated Federal Official

\_\_\_\_\_  
/s/  
Dr. Jay R. Turner, Chair  
SAB Risk and Technology Review (RTR)  
Methods Review Panel

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

## **ATTACHMENT A**

### **ROSTER**

#### **U.S. Environmental Protection Agency Science Advisory Board Risk and Technology Review Methods Review Panel**

#### **CHAIR**

**Dr. Jay Turner**, Associate Professor and Vice Dean for Education, Department of Energy, Environmental and Chemical Engineering, School of Engineering & Applied Science, Washington University, St. Louis, MO

#### **MEMBERS**

**Dr. Tami Bond**, Nathan M. Newmark Distinguished Professor, Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, Urbana, IL

**Dr. Tiffany Bredfeldt**, Senior Toxicologist, Toxicology, Texas Commission on Environmental Quality, Austin, TX

**Dr. Gregory Carmichael**, Professor of Chemical and Biochemical Engineering, College of Engineering, University of Iowa, Iowa City, IA

**Dr. Richard Di Giulio**, Professor, Nicholas School of the Environment, Duke University, Durham, NC

**Dr. Charles T. Driscoll, Jr.**, Distinguished Professor and University Professor of Environmental Systems Engineering, Department of Civil and Environmental Engineering, College of Engineering and Computer Science, Syracuse University, Syracuse, NY

**Dr. David Eastmond**, Professor and Chair, Department of Cell Biology and Neuroscience, Toxicology Graduate Program, University of California - Riverside, Riverside, CA

**Dr. Gary Ginsberg**, Toxicologist, Environmental & Occupational Health, Connecticut Department of Public Health, Hartford, CT

**Dr. Dale Hattis**, Research Professor, Center for Technology, Environment, and Development, George Perkins Marsh Institute, Clark University, Worcester, MA

**Mr. Stanley Hayes**, Principal (emeritus), Ramboll Environ, San Francisco, CA

**Dr. Joseph Irudayaraj**, Professor and Interim Director, Agricultural and Biological Engineering; Toxicology, Agriculture; Engineering; Health and Human Sciences, Purdue University, West Lafayette, IN

**Dr. Abby A. Li**, Senior Managing Scientist, Health Science Practice, Exponent Incorporated, San Francisco, CA,

**Dr. Slawo Lomnicki**, Assistant Professor, Environmental Sciences, College of Coast and Environment, Louisiana State University, Baton Rouge, LA

**Dr. Sidney Marlborough**, Sr. Environmental Coordinator, Noble Energy, Inc, Houston, TX, United States

**Dr P. Barry Ryan**, Professor of Exposure Science and Environmental Chemistry, Environmental and Occupational Health, Rollins School of Public Health, Emory University, Atlanta, GA

**Dr. James Sadd**, Professor, Environmental Science, Occidental College, Los Angeles, CA

**Dr. Veronica Vieira**, Associate Professor of Public Health, Environmental Health Sciences, Program in Public Health, University of California, Irvine, Irvine, CA

#### **SCIENCE ADVISORY BOARD STAFF**

**Dr. Bryan J. Bloomer**, Designated Federal Officer, US EPA, Office of the Administrator, Science Advisory Board Staff Office

## ATTACHMENT B

### Other Attendees

**List of Members of the Public at the Meeting, Who Requested Information on Accessing the Teleconference Line or Live Webcast, or Who Participated On the Teleconference or Live Webcast:  
June 29-30, 2017**

<b>First Name</b>	<b>Last Name</b>	<b>Organization</b>
Thomas	Armitage	EPA
Susan	Barnes	Trinity Consultants
Tim	Benner	EPA
David	Burch	ICF
Tom	Carpenter	EPA SAB
Greg	Carter	ICF
Emma	Cheuse	Earthjustice
Sharon	Cooperstein	EPA
Amelia	DaCruz	not reported
Jonathan	De'Ath	National Lime Association
Laura	Dumais	Earthjustice
Barry	Elman	EPA
Joseph	Freudenberg	Carmeuse Lime and Stone
Bradford	Frisby	National Lime Association
Alexandra	Hamilton	Hunton & Williams
Travis	Hicks	Southern Company
Jim	Hirtz	EPA
Leif	Hockstad	EPA
Terri	Hollingsworth	EPA
Annie	Jarabek	EPA
Ann	Johnson	EPA
Khanna	Johnston	EPA SAB
Alan	Kao	Ramboll Environ
Andrew	Knudsen	Hunton & Williams
Leila	Lackey	EPA
Amy	Lamson	EPA
Harold	Lee	Graymont
Leonard	Levin	EPRI
Carl	Mazza	EPA
Margaret	McVey	ICF
Mark	Morris	EPA

Ted	Palma	EPA
Stuart	Parker	IWP News
Kelly	Rimer	EPA
Miriam	Rotkin-Ellman	NRDC
Esther	Sallinas	EPA
Chris	Sarsony	EPA
Sue	Shallal	EPA SAB
John	Shoaf	EPA
Darcie	Smith	EPA
Michael	Stewart	EPA
James	Tyree	EPA
Arun	Varghese	ICF
Justin	Walters	Earthjustice
Linda	Wilson	NYS OAG
Robyn	Winz	Earthjustice
Clint	Woods	Association of Air Pollution Control Agencies
Matthew	Woody	EPA
Minchao	Xu	Earthjustice
Aaron	Yeow	EPA
Yuan	Zhuang	Ramboll Environ