

**Summary Minutes of the  
U.S. Environmental Protection Agency (EPA)  
Chemical Assessment Advisory Committee (CAAC)  
Augmented for the Ethylene Oxide (EtO) Review  
Public Teleconference  
February 20, 2015**

Date and Time: Friday, February 20, 2015, 1:00 PM – 5:00 PM ET

Location: Telephone only

Purpose: To discuss the draft peer review report, *01-07-15 Draft Science Advisory Board Review of the EPA's Evaluation of the Inhalation Carcinogenicity of Ethylene Oxide*<sup>1</sup>.

Participants: Augmented CAAC for EtO

Dr. Peter S. Thorne, Chair (for full Augmented CAAC for EtO, see roster<sup>2</sup>)

Dr. Henry Anderson

Dr. William Michael Foster

Dr. Gary Ginsberg

Dr. Steve Herringa

Dr. Peter Infante

Dr. Lawrence Lash

Dr. Maria Morandi

Dr. Victoria Persky

Dr. Kenneth Ramos

Dr. Stephen Roberts

Dr. Elizabeth (Lianne) Sheppard

Dr. Daniel Zelterman

Mr. Aaron Yeow, Designated Federal Office (DFO), EPA SAB Staff Office

Dr. Vincent Cogliano, EPA, Office of Research and Development (ORD)

Mr. David Bussard, EPA ORD

Ms. Jennifer Jinot, EPA, ORD

Other Attendees (See Attachment A)

## **Opening Remarks**

Mr. Aaron Yeow, DFO, opened the meeting. He noted that as required under the Federal Advisory Committee Act (FACA), the SAB's deliberations are held in public with advanced notice given in the Federal Register, and the meeting minutes will be made publicly available after the meeting. He noted that there were two members of the public who registered in advance with the SAB Staff Office to present oral comments. He noted that the Augmented CAAC for EtO received written public comments, which were also posted on the meeting webpage. He stated that the SAB Staff Office determined that there were no issues with conflict-of-interest nor any issues with an appearance of a lack of impartiality for any of the Augmented CAAC for EtO members. He then turned it over to Dr. Peter S. Thorne, Chair

of the Augmented CAAC for EtO. Dr. Thorne welcomed everyone and provided an overview of the Agenda.<sup>3</sup>

### **EPA Comments**

Dr. Vincent Cogliano, IRIS Program Director of EPA's National Center Environmental Assessment (NCEA), provided welcoming remarks. Mr. David Bussard, Director, Washington Division, EPA NCEA, indicated that EPA had provided written comments<sup>4</sup> for the Augmented CAAC to consider. Ms. Jennifer Jinot, Assessment Manager, EPA NCEA, made a presentation<sup>5</sup> that focused on requests for clarifications on the draft report.

Dr. Heeringa stated that he would be able to address one of the issues brought up by EPA and that it would not need any further discussion. Dr. Thorne requested that as the Augmented CAAC went through the response to charge questions that Dr. Heeringa provide further detail on how he would address the EPA comment so that it would be brought up in open discussion.

### **Public Comments**

Registered public speakers made oral statements in the order provided in the List of Public Speakers.<sup>6</sup>

Dr. Nancy Beck, American Chemistry Council, presented her comments,<sup>7</sup> which focused on the need for further clarification for support of linear modeling, further clarification regarding rejecting the Union Carbide dataset, and the need for improving the response to Charge Question 7 (response to public comments).

Mr. Bill Gulledge, American Chemistry Council, presented his comments<sup>8</sup> which focused on clarifying the cover letter and executive summary, use of the Swedish sterilization worker cohort, uncertainties in the NIOSH cohort, impact of the dose-response curve, and advances in the understanding of the biology of cancer.

Dr. Roberts indicated that the comment from Dr. Beck regarding the linear modeling justification was a good one and that during the November meeting, the Augmented CAAC stated that they would cite the EPA Cancer Guidelines as the justification and that they would elaborate on it in the report.

### **Discussion of Draft Report**

Dr. Morandi made a general comment that there was a need of a summary of recommendations at the end of each response to the charge questions. The Augmented CAAC agreed and indicated that would provide clarity to the report. They stated that the recommendations are all in the responses, but just need to be pulled out and summarized at the end of each response. Dr. Ramos indicated that this was the approach that was taken in the reporting out of major points at the November 18-20, 2014 meeting.

Regarding the response to Charge Question 2b, the Augmented CAAC agreed to revisions to the discussion on the use of Akaike information criterion (AIC) and to distinguish between general comments on the use of AIC and comments on EPA's application of AIC in the assessment.

For the response to Charge Question 3, the Augmented CAAC agreed to drop lines 1-6 on page 14 and to refer to the response to Charge Question 4 instead. Drs. Sheppard and Heeringa had previously submitted written comments<sup>9</sup> on proposed revisions to the response to Charge Question 3 and these

changes were discussed and agreed to. For Charge Question 3a, the Augmented CAAC wanted to reiterate that the use of categorical data is not preferred, but if it were used, the use of medians is a better measure of exposure than the use of means. For the response to Charge Question 3c, Dr. Heeringa mentioned that EPA's request for clarifications, item 5, asked about the plausibility of using the "local maximum" to the overall likelihood function for the two-piece spline model fit. The Augmented CAAC found it was a plausible approach, but did not think the report needed to be revised to address it.

Regarding the response to Charge Question 4, the Augmented CAAC agreed to revisions to clarify the recommendations on descriptive tables and figures for the NIOSH data set on p. 17 line 42 – p. 18 lines 13.

For the response to Charge Question 5b, on p. 22, lines 22-23, Dr. Roberts indicated, in response to public comments, there needed to be some expansion in the discussion about agreeing with EPA not including a non-linear assessment, as per the EPA Cancer Guidelines. Dr. Thorne asked him what would be in the expansion and Dr. Roberts indicated that they would cite the EPA Cancer Guidelines and say what is there about the data that would lead them to conclude that a non-linear approach is not warranted. Drs. Ginsberg and Ramos both agreed to expand the discussion of EtO acting by a genotoxic mode of action, which would strengthen the rationale as to why a non-linear approach was not needed. For item 2 on lines 26-28, in response to public comments, the Augmented CAAC had some discussion on how to revise and clarify the recommendation regarding the use of the Union Carbide data and the Swedish sterilization worker data. They should be assessed qualitatively, such as strengths and weaknesses, in the weight of evidence. There was also discussion on the response to Charge Question 6 on p. 29, starting on line 22, which discusses the Swedish study and revisions to clarify the recommendations were agreed upon.

Regarding the response to Charge Question 7, the Augmented CAAC agreed to revise p. 30 lines 10-16 to strike references to the number of public comments that EPA received. Dr. Lash stated that the Augmented CAAC did assess the quality of each of EPA's responses and disagreed with a public comment that their task was to agree or disagree with each of EPA's responses.

After returning from a 5-minute break, the Augmented CAAC discussed the Executive Summary. Dr. Thorne noted that the Executive Summary would be revised to be consistent with the revisions discussed in the response to charge questions. One member asked what should be done with editorial changes. Dr. Thorne responded that wordsmithing changes could be sent to Mr. Yeow and himself, but anything substantive that required discussion should be discussed in public on the call.

Dr. Ginsberg had an edit to the response to Charge Question 5a. He recommended deleting the sentence on p. 20, lines 13-15 and the Augmented CAAC agreed to that revision.

For the Letter to the Administrator, the members agreed that revisions would be made to make it consistent with the revisions discussed for the responses to charge questions and Executive Summary. The Augmented CAAC agreed to delete the sentence on lines 25-28 on the second page of the letter because it was not a main recommendation. The Augmented CAAC agreed to add a sentence to the letter to indicate that the Augmented CAAC found the overall changes made from the 2007 draft assessment have been responsive. Although the Augmented CAAC has further recommendations to improve the document, the recommended changes should not require lengthy delays in the release of the assessment.

## **Additional Clarifying Public Comment**

Two members of the public requested an opportunity to provide brief clarifying comments.

Dr. Nancy Beck, American Chemistry Council, stated that the EPA Cancer Guidelines do not clearly say that if full information is not available then the default should be used. She indicated that the guidelines state that if there is biological support but the mode of action is not known, one can also present other approaches. Her second point related to Charge Question 7 (EPA response to public comments). She indicated that ACC previously asked the Augmented CAAC to broaden this charge question to discuss the scientific soundness of EPA's response. She stated that the Augmented CAAC has unduly narrowed the charge by not revising the charge.

Mr. Bill Gulledge, American Chemistry Council, stated that the Augmented CAAC should present more discussion on why they prefer the use of the NIOSH data set over the Union Carbide and Swedish data sets. He indicated the Augmented CAAC should recommend that EPA compare the quality of each of the data sets and let EPA choose which data set to use, and not to preclude the use of any of the data sets.

## **Action Items and Next Steps**

Dr. Thorne and Mr. Yeow indicated that the Augmented CAAC would receive a revised version of the report based on the discussions on the call and would have a chance (via email) to concur on whether it was ready to go to the Chartered SAB.

Dr. Sheppard wanted to make sure the issues mentioned in EPA's requests for clarification were addressed. Dr. Thorne indicated that EPA did not request to make any additional clarifying remarks, but asked if there were any issues that she was concerned about. Dr. Sheppard brought up point 3 from EPA's comments which asked whether there were any statistical or mathematical reasons that could provide an alternative rationale for rejecting the individual exposure model results. Dr. Sheppard's response was that there were no statistical or mathematical reasons that she could think of and that the Augmented CAAC did not specifically suggest that there were. For point 4 regarding the median vs. mean discussion, the Augmented CAAC found the discussion in the report was sufficient with an added explicit statement about including the use of the means in a sensitivity analysis. For point 5, regarding the plausibility of the suggested model, the Augmented CAAC agreed to add a sentence or two in the response to the charge question expressing their support for such a model.

The lead authors and those with assignments were asked to send in their write-ups by Monday, March 2, 2015.

The meeting was adjourned by Mr. Yeow at 3:47 pm.

Respectfully Submitted:

Certified as Accurate:

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Mr. Aaron Yeow  
Designated Federal Officer  
EPA SAB Staff Office

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Dr. Peter S. Thorne  
Chair  
Chemical Assessment Advisory Committee  
Augmented for the Ethylene Oxide Review

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.

## Materials Cited

The following meeting materials are available on the SAB website: <http://www.epa.gov/sab>, at the [February 20, 2015 SAB Meeting page](#):

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<sup>1</sup> 01-07-15 Draft Science Advisory Board Review of the EPA's Evaluation of the Inhalation Carcinogenicity of Ethylene Oxide

<sup>2</sup> Roster

<sup>3</sup> Agenda

<sup>4</sup> EPA Request for Clarifications in the SAB Draft Report (1-07-15) on Ethylene Oxide

<sup>5</sup> EPA Presentation – Request for Clarifications

<sup>6</sup> List of Public Speakers

<sup>7</sup> Comments from Dr. Nancy Beck, American Chemistry Council

<sup>8</sup> Comments from Mr. Bill Gullede, American Chemistry Council Ethylene Oxide Panel

<sup>9</sup> Comments from Drs. Sheppard and Heeringa on 01/07/15 Draft Report to Facilitate Discussion on 2/20/15 Teleconference

**ATTACHMENT A – Other Attendees  
CAAC EtO Public Teleconference**

<b>Name</b>	<b>Affiliation</b>
Beck, Nancy	American Chemistry Council
Bennett, Brian	Huntsman Corporation
Brown, Leyton	Huntsman Corporation
Casano, Pat	GE
Dempsey, Ruey	AdvaMed
English, Caroline	NSF International
Flowers, Lynn	USEPA
Gulledge, Bill	American Chemistry Council
Hegstad, Maria	InsideEPA
Hsu, John	Raymond James & Associates
Jones, Samantha	USEPA
Kim, Jim	Office of Management and Budget
Kopylev, Leonid	USEPA
Lin, Yu-sheng	USEPA
Perovich, Gina	USEPA
Putzrath, Resha	Navy and Marine Corps Public Health Center
Rausch, Louette	BA Specialty Chemicals
Rieth, Sue	USEPA
Rizzuto, Pat	Bloomberg BNA, Inc.
Ross, Christine	USEPA
Sass, Jennifer	Natural Resources Defense Council
Stephan, Curtis	Edwards Lifesciences LLC
Vandevort, Jake	B & C Consortia Management LLC