

**Summary Minutes of the
U.S. Environmental Protection Agency
Clean Air Scientific Advisory Committee (CASAC) and CASAC Ozone Review Panel
Public Teleconference
May 28, 2014 and June 4, 2014
Chapel Hill, NC**

CASAC Members: Dr. Christopher Frey, Chair
Dr. Helen Suh
Dr. Ron Wyzga
Mr. George Allen
Dr. Ana Diez-Roux
Dr. Jack Harkema
Dr. Kathleen Weathers

CASAC Ozone
Review Panel Members¹: Dr. Armistead (Ted) Russell
Mr. Ed Avol (May 28, 2014 only)
Dr. Michelle Bell (June 4, 2014 only)
Dr. Joseph D. Brain
Dr. David Chock
Dr. David Grantz
Dr. Daniel Jacob
Dr. Steven Kleeberger (May 28, 2014 only)
Dr. Frederick J. Miller
Dr. Howard Neufeld
Dr. James Ultman
Dr. Sverre Vedal
Dr. Peter Woodbury
Dr. James Ultman

Purpose: To review the CASAC's draft letters on EPA's *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards* (Second External Review Draft, February 2014), *Health Risk and Exposure Assessment for Ozone* (Second External Review Draft, February 2014) and *Welfare Risk and Exposure Assessment for Ozone* (Second External Review Draft, February 2014).

Designated Federal Officer: Dr. Holly Stallworth, Designated Federal Officer

Other EPA Staff: Christopher Zarba, Aaron Yeow, David Orlin, Diana Wong, Heather Simon, John Vandenberg, Karen Wesson, Stephen Graham, Steve Silounen, Susan Stone, Tom Long, Zachary Pekar, James Brown, John Langstaff, Kris Novak, Steve Dutton,

¹ For full Ozone Review Panel roster, see epa.gov/casac and click on Ozone Review Panel.

Tom Luben, Tom Brennan, Joann Rice, Alison Davis, Amy Lamson, Darryl Weatherhead, Pat Dolwick, Christine Davis, Scott Jenkins, Erika Sasser, Vicki Sandiford, Travis Smith, Bryan Hubbell, Liz Naess, James Hemby, Alexis Aubrow, Barbara Buckley, Jeff Herrick, Erin Hines, Joseph Pinto, Robin Dunkins, Josh Lewis, Richard Burkhart, Matthew Davis

Public listening to Webcast²: A Bachman, Albert Hendler, Alexis Zubrow, Amanda Peterka, Anne Arnold, Cathe Kalisz, Charles Bennett, Christopher Wilson, Cindy Langworthy, Darryl Weatherhead, David Ailor (National Oilseed Processors Association), Deborah Shprentz, Douglas Lempke, Erin Hines, Frank O'Donnell, Gail Cooke (NMED), George Wolff, Georgia Murray, Gretchen Goldman, Jill Cooper, Joe Fontaine, John Graham, John Jansen, Joseph Pinto, Karen Goll, Ken Satin, Kimber Scavo, Kurt Blasé, Lindsey Jones, Lori Cherry (NC Div. of Air Quality), Margaret Caravelli, Mark Kresowik, Martha Webster, Mary Martin, Melina Williams, Michael Geigert, Mike Catanzaro, Pat Dolwick, Patrick Ambrosio, Paul Garbe (CDC), Rachel Broadwin (Cal/EPA, OEHHA), Randy Loftis, Roger Jerry (SC DHEC), Roger McClellan, Samuel Oltmans, Shari Keller (Shell Oil Products US), Sig Jaunarajs, Sonja Sax (Gradient), Stephanie Ma, Stephanie Tsao, Stewart Holm, Stuart Parker (IWP News), Susan Anenberg, Ted Steichen (America Petroleum Institute), Terry McGuire, Tom Downs, Tom Luben, Zabrina Arnovitz (Sierra Club)

Other public³: John Graham (Clean Air Task Force), Ana Burhop (Senate Environment and Public Works), Joanna Ekrem (Washington State Department of Ecology), Neeraja K. Erraguntla (Texas Commission on Environmental Quality), Casey Deitrich (CQ Transcriptions), Adele King Malone (Nevada Division of Environmental Protection), Stephanie Shirley (Texas Commission on Environmental Quality), Shannon S. Broome (Katten Muchin Rosenman LLP), Patricia D. Koman (University of Michigan School of Public Health), Will Ollison (American Petroleum Institute), Ted Steichen (American Petroleum Institute), David Pavlich (Phillips 66)

Meeting Materials and Meeting Webpage:

<http://yosemite.epa.gov/sab/sabproduct.nsf/bf498bd32a1c7fdf85257242006dd6cb/8b2797e7d5480f7e85257c8900761372!OpenDocument&Date=2014-05-28>

The materials listed below may be found on the meeting webpage at:

- Agenda
- Federal Register Notice
- Charge Memos
- CASAC Draft letters
 - *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards*
 - *Health Risk and Exposure Assessment for Ozone*

² / These names were taken from the Adobe Connect report from the Webcast. Not all participants identified their affiliations.

³/ These individual either announced themselves on the teleconference or requested the call-in number and were, presumably, on the line.

- *Welfare Risk and Exposure Assessment for Ozone*
- Agency Presentation
- Agency Follow-up
- Public Comments
- Congressional Correspondence
- Registered Public Speakers
- Public Comments
 - *American Road and Transportation Builders Association (ARBTA)*
 - *American Lung Association and Sierra Club by David Baron*
 - *Jeffrey Holmstead, Bracewell & Giulia*
 - *Roger McClellan*
 - *American Lung Association*
 - *Utility Air Regulatory Group-comments by Anne Smith*
 - *Earth System Sciences by Nicole Downey*
 - *American Petroleum Institute by Julie Goodman and Sonja Sax*
 - *ENVIRON by Chris Emery*
 - *Allen Lefohn and Samuel Oltmans*
 - *American Petroleum Institute. (PDF, 1 pp., 338,257 bytes)*
 - *American Petroleum Institute*
 - *American Petroleum Institute and Gradient*
 - *William F. McDonnell*
 - *Allen Lefohn and Samuel Oltmans*
 - *American Lung Association*
 - *Rio Tinto*
 - *Baton Rouge Area Chamber*
 - *U.S. Chamber of Commerce and other trade associations*
 - *Petroleum Institute and Gradient*

Meeting Summary

The discussion followed the plan presented in the meeting agenda.

WEDNESDAY, MAY 28, 2014

Dr. Stallworth convened the meeting and explained that CASAC operates under the Federal Advisory Committee Act. She noted that as required under the Federal Advisory Committee Act (FACA), the Panel'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. She noted that the Panel would be hearing from 15 public speakers. She also announced the availability of a live streaming webcast on the CASAC webpage (URL shown above).

Public Comments

Public comments were presented in the order in the List of Public Speakers (posted on the meeting webpage). After each public commenter finished their remarks, Dr. Frey invited members of the panel to ask questions of clarification.

On behalf of himself, Samuel Oltman said that if the Ozone NAAQS were set at 70 ppb or below, high background levels will lead to violations of the standard. Mr. Oltmans

urged CASAC to remove its recommendations to EPA to seek opportunities for reduction of international transport, citing studies that found contributions from Asia were limited to 5ppb. Dr. Oltmans said that natural uncontrollable contributions from stratospheric intrusion were 4 – 5 times greater than ozone associated with long-range transport from Asia.

On behalf of himself, Allen Lefohn said Yellowstone National Park would violate the standard multiple times if it is lowered to 65 ppb. Dr. Lefohn said the health benefits achieved by reducing high ozone concentrations would be offset by increased health effects among people exposed to mid-range concentrations.

On behalf of himself, Roger McClellan said it was premature for the Ozone Review Panel to offer a closure letter on an incomplete Health Risk and Exposure Assessment (HREA). Dr. McClellan urged the Panel to offer a letter to the Administrator clearly documenting the Panel's expectations for improvement in the document. He also said CASAC's past advice reflected both scientific and policy judgments.

On behalf of Earth System Sciences, Nicole Downey said EPA's "exceptional events" policy cannot be used to exclude background or multiple sources mixing together. Dr. Downey described a significant implementation issue that arises when background contributions are not considered in granting an exception to the ozone standard.

On behalf of the American Petroleum Institute, Sonja Sax said she agreed the Higher-order Direct Decoupled Method used to model ozone concentrations in urban areas and the updated McDonnell-Stewart-Smith (MSS) models were significant improvement over the previous assessment. Dr. Sax emphasized the significant uncertainties that remain, specifically unquantified uncertainty in ozone concentration estimates and its potential impact on risk. Dr. Sax said mortality estimates should include confidence bounds which, for some cities, extended down to zero. Dr. Sax said the percentage of children experiencing FEV₁ decrements (>10%) was just 1 – 6% for a scenario of just meeting the current standard and only slightly lower with lower standards when results for multiple days were considered.

On behalf of the American Lung Association, Deborah Shprentz said CASAC should recommend a much tighter standard than the outdated default range of 60 – 70 ppb that was under consideration nine years ago before the latest science assessment was completed. Ms. Shprentz said the evidence was much stronger for almost every health endpoint in this review. Causal findings were strengthened from "suggestive" to "likely causal" for cardiovascular effects and total mortality from short-term exposures and for respiratory effects from long-term exposures. Ms. Shprentz cited the Adams (2002) study that reported 20% of subjects experienced lung function decrements of 10% FEV₁ at 60 ppb. Ms. Shprentz said the combined human exposure studies and epidemiological evidence supports a standard no higher than 60 ppb.

On behalf of the Utility Air Regulatory Group, Anne Smith said the model for premature mortality based on long-term exposure showing a threshold at 56 ppb has a significant

impact on risk estimates. Using the model, her results show that there is zero risk in 10 of 12 cities in long-term mortality under the current standard of 75 ppb. Dr. Smith said CASAC first needs to review a third draft of the HREA once EPA's sensitivity analyses with the threshold model are completed. Dr. Smith cited new errors found in the corrected estimates of epidemiology-based mortality and morbidity risks, in which the lower bound of uncertainty ranges were incorrectly reported. Dr. Smith said a third draft HREA should be prepared and reviewed by CASAC.

On behalf of American Chemistry Council, American Forest & Paper Association, American Petroleum Institute, American Wood Council, American Iron and Steel Institute, Corn Refiners Association, Council of Industrial Boiler Owners, National Oilseed Processors Association, Portland Cement Association, Treated Wood Council, U.S. Chamber of Commerce, Utility Air Regulatory Group, Julie Goodman pointed out the difference between the distribution of ozone concentrations and ozone concentrations used in controlled human exposure studies. Dr. Goodman said CASAC has given no consideration to whether a standard as low as 60ppb is needed to shift the distributions of exposures down to reduce health effects. Because of these issues, D. Goodman said additional drafts of both the HREA and Policy Assessment should be provided for public comment before they are finalized.

On behalf of ENVIRON, Chris Emery said the HREA is confusing on whether it considers NOx-only reductions or NOx reductions combined with reductions in volatile organic compounds (VOC). Dr. Emery said the latter are much more reasonable assumptions for cities. Mr. Emery supported CASAC's comments that EPA needs to be clearer about the use of primarily NOx-only emission reduction scenarios. He also said EPA needs to explicitly say that background is what remains as emission reductions approach 100%. Mr. Emery encouraged a revamping of EPA's exceptional events policy to include background.

On behalf of the Sierra Club, Joshua Berman said it is incumbent upon CASAC to provide clear science to EPA that points out where adverse effects are likely to occur. Mr. Berman said the standard should be 60ppb in view of epidemiological studies and evidence showing an increased risk of preterm birth at 61ppb. Mr. Berman also noted that 56ppb was the threshold for children.

On behalf of the American Lung Association, American Public Health Association, American Thoracic Society, Asthma and Allergy Foundation of America, Health Care Without Harm, National Association of County and City Health Officials, Trust for America's Health, Janice Nolan urged CASAC to recommend an 8-hour ozone standard no higher than 60 ppb based on evidence showing exposures down to 60ppb produced adverse effects (meeting the American Thoracic Society criteria for adversity) for healthy individuals. Ms. Nolan said studies from the US and Canada show that a standard of 65 ppb does not provide enough protection. Ms. Nolan noted the post-2006 epidemiological research shows the previous recommended range of 60 – 70 ppb fails to meet the Clean Air Act requirements.

On behalf of the Appalachian Mountain Club, Georgia Murray urged CASAC to endorse 60ppb to provide protection for people in national parks and people exercising outdoors. Ms. Murray said 70 ppb provides little margin of safety and clear impacts have been shown at 65 ppb, even for healthy adults. She also urged CASAC to endorse a secondary standard of 7 ppm-hours on the W126 index over 24 hours to protect against night time exposure.

On behalf of the American Lung Association, David Baron suggested a few clarifications in the draft letter on the Policy Assessment in view of the U.S. Court of Appeals' decision in *Mississippi v. EPA*. Mr. Baron asked the Panel to identify the lowest level at which adverse effects are likely in CASAC's scientific judgment. Mr. Baron cautioned that the draft Policy Assessment letter describes harmful effects at specific levels without stating CASAC's opinion on whether those effects are adverse. Finally, Mr. Baron reiterated that the primary standard has to be set below the level where adverse effects are likely.

On behalf of himself, Jeff Holmstead again urged CASAC to comply with all statutory obligations under the Clean Air Act, including Section 109(d)(2)(C)(iv) which requires CASAC to advise the Administrator of any adverse public health, welfare, social, economic or energy effects that may result from various strategies for attainment of the NAAQS. Mr. Holmstead expressed surprise that CASAC hasn't asked EPA staff to address these issues. Mr. Holmstead cited a footnote in *Whitman v. American Trucking Association* to support his belief that advice on adverse effects could be transmitted at the same time as advice on the standards.

In response, Dr. Frey noted that he was going to propose language for the draft Policy Assessment letter that CASAC would, with an appropriate ad hoc panel, address "adverse effects" in response to documentation or assessments produced by EPA.

Written comments from all speakers may be found posted on the meeting webpage.

Dr. Karen Wesson, Group Leader in the Health and Environmental Impacts Division in EPA's Office of Air Quality Planning and Standards (OAQPS) went through her detailed presentation posted on the meeting webpage shown above. In response to a question, Dr. Wesson said she did not intend that questions included in her presentation would be additional charge questions but, rather, would serve to provide some focus for CASAC to clarify its language and recommendations.

Panel Discussion of the Welfare Risk and Exposure Assessment Letter

In discussing the draft letter on the Welfare Risk and Exposure Assessment (WREA), panelists discussed the definition of biogenic emissions and noted that it should include an anthropogenic influence since humans are modifying the landscape. In reference to charge question 5, some panelists stressed the need to clarify whether CASAC was asking for revisions in a final WREA or offering recommendations for a future review. In reference to charge question 9, panelists agreed to strengthen the text to say that EPA's

discussion of uncertainty was overemphasized in comparison to the science that is well established. In reference to charge question 10 in which the panel suggested performing the i-tree analysis for single species, an EPA scientist said EPA would not be able to restrict such analysis to single species. Panelists concluded that, rather than request additional analysis with i-Tree that may be infeasible given limitations of model structure, EPA should discuss the bias that results from assigning zero sensitivity to ozone species for which data are lacking.

In reference to the cover letter on the WREA, panelists agreed that text should be added to say that EPA has appropriately connected biomass loss, crop yields and visible foliar injury to adverse impacts on public welfare.

Dr. Frey polled the chartered CASAC members for the disposition of the WREA letter, with the revisions discussed, and the letter received their unanimous approval.

Panel Discussion of the Health Risk and Exposure Assessment Letter

Dr. Frey led the panel to go over consensus responses to every charge question and discussed clarification and revision of response where needed. For the response to charge question 3, the panel agreed that the write-up for Figure 3-3 needed to be clarified. Also, the last paragraph that stated the current NAAQS for ozone is not protective of human health should be moved to the response to charge question 19, and to the letter to the Administrator.

For the response to charge question 4, the panel agreed that NO_x-only emission reductions are just one approach to meet the standard, and that there can be alternative approaches, such as VOC-only and VOC-NO_x emission reductions. The paragraph on this topic will be revised accordingly. For chapter 5, Characterization of Human Exposure to Ozone, the last sentence in the response to charge question 6 should be deleted, as it addressed the same subject twice. For response to charge question 9, discussion of uncertainty and variability, the panel agreed that the overall model uncertainty should be clarified. Disagreement between modeled and measured ozone exposures in the Wayne County, MI validation study should be discussed.

For Chapter 6, one panelist pointed out that health effects may be underestimated because there is no data on diseased lung. The paragraph in response to charge question 12 was not the correct revised version, and should be changed. The panelist asked EPA to clarify if the panel could ask EPA to do additional sensitivity analyses based on literature published beyond the cutoff date of the literature review of the ISA. An EPA scientist responded that typically papers that are published after the final ISA are not used.

For Chapter 7, Characterization of Health Risk Based on Epidemiological Studies, the panel agreed that since EPA will conduct a threshold sensitivity analysis for the Jerrett et al. (2009) study in response to public comment, there is a need to qualify every mention of long-term mortality risks in CASAC's report based on this study. Numerical risk estimates for long-term exposure to ozone should be deleted. However, the panel found

that there is sufficient scientific evidence of adverse effects based on other endpoints, including controlled human exposure studies, short-term mortality risks, and emergency department admission studies such that the same bottom line conclusion will be reached. The paragraph in response to charge question 13 will be revised to reflect this point.

Because there was a public comment that the revised table for the estimates of epidemiology-based mortality risk is still incorrect, an EPA scientist clarified that the error is in the lower confidence limit of risk, for which the currently reported values are actually the 12.5th percentiles rather than the 2.5th percentiles.

One panelist said he would provide a paragraph on environmental justice in Chapter 7.

WEDNESDAY, JUNE 4, 2015

Discussion of the Health Risk and Exposure Assessment Letter Continued:

The panel discussed the paragraph that was provided by one panelist in Chapter 7. The paragraph stated that air modeling applied to smaller geographic areas suggested that health risks for smaller more urban areas can increase for many cities as NAAQS alternatives become more stringent. This is because reductions in nitrogen oxides emissions can lead to less scavenging of ozone and free radicals, resulting in locally higher levels of ozone. The panelist asked EPA to characterize the populations at risk in these areas and to determine whether there could be any environmental justice issues associated with these differences. The panel agreed that EPA can do the analyses for the next review cycle, but not for this round of review. If data or analyses results are already available upon which to support a discussion of these issues, the EPA should identify and discuss whether and to what extent health risks in the urban core may be affected by NO_x reductions or other possible strategies.

Dr. Frey mentioned that NO_x and VOCs are co-pollutant issues, and involve multipollutant approach to air quality management.

The panel then discussed the letter to the administrator. The panel found the draft letter focused on the methods, but did not have much about the results of the risk estimates. Evaluation of the risk estimates should be provided in the letter, panelists agreed. Dr. Frey said there should be mention of a multipollutant approach to air quality management.

Dr. Frey polled the chartered CASAC members for the disposition of the HREA letter, with the revisions discussed, and the letter received their unanimous approval.

Panel Discussion on the Policy Assessment Letter

Primary Standard:

Panelists turned their attention to discussing CASAC's recommendation on the primary standard, specifically whether the upper bound of CASAC's recommended range should be 65 ppb or 70 ppb. Dr. Frey pointed out that they needed to summarize the evidence of adverse effects at various levels of a possible revised standard. One panelist noted that the HREA showed sequentially declining impacts as the level of the standard decreases, thus a continuum of effects made it hard to pick a level with sufficient public health protection. Another panelist said a "weight of evidence" approach was needed, integrating and synthesizing across the evidence. Dr. Frey said he would like CASAC to advise on the margin of safety but to do so separately from the science. Panelists wrestled with the distinction between policy and science in the face of a continuum of declining effects as the level of ozone decreases. During the discussion, several concepts were explored. Initially, it was suggested that if 70 ppb was included in CASAC's recommended range, then CASAC should say that there is no margin of safety at 70 ppb. Panelists pondered whether there was a scientific basis for determining a margin of safety and concluded that it was subjective. One panelist suggested that CASAC say a value of 70 ppb has no margin of safety and that a margin of safety should be added but that there was no scientific basis for knowing how far below 70 ppb you would need to go to have a margin of safety. Subsequently, a suggestion was made to say that 70 ppb does not provide an adequate margin of safety. One panelist suggested saying the standard should be "lower than 72 ppb" where adverse effects have been observed. However, the panel deliberations subsequently focused on 70 ppb as an upper bound. Dr. Frey suggested that if possible the panel should identify a quantitative upper bound, and that language of "less than" a particular number, such as less than 70 ppb, could be interpreted by the Administrator as one unit smaller, such as 69 ppb. Panelists discussed the continuity of the relationship between ozone levels and risk and the difficulty of defining how much risk is acceptable. One panelist suggested that 70 ppb could be described as having a "limited" margin of safety while another panelist said it would have an "inadequate" margin of safety. One panelist pointed out that the relationship between ozone and risk was actually discontinuous because data was available in increments of 5 ppb. As a result of the deliberations, the panel reached agreement that its policy judgment regarding 70 ppb is that 70 ppb provides little margin of safety.

Panelists discussed dose-response relationships and the graded curve relating ozone to various health effects and whether their decision criteria should be based on dose-response evidence or on simulations found in the HREA. Dr. Frey said CASAC could say it had substantial concerns about the margin of safety at 70 ppb and provide a line of reasoning for 65. He also said CASAC could provide a policy judgement that 65 ppb is a better choice. One person said he was uncomfortable recommending 60 – 70 ppb while adding a disclaimer that 70 ppb had a limited margin of safety. Dr. Frey said CASAC could offer policy advice in a separate section of the letter.

The chartered CASAC members agreed to put forth a recommendation for a revised primary standard of a range of 60 ppb to 70 ppb based on identification of adverse effects from scientific evidence, with a separate discussion of policy advice to the effect that 70 ppb provides little margin of safety.

Secondary Standard:

With respect to the secondary standard, one panelist said the decision on the secondary standard posed a similar issue as the decision on the primary standard in that both decisions became difficult with the choice of an upper bound. He noted a discrepancy between recommending no more than 2% relative biomass loss (RBL) and, at the same time, recommending a W126 value that corresponded to a 4.4% RBL for the median species. He also noted that if RBL was limited to not more than 2% for the median species, the corresponding W126 value would be 7 ppm-hr. Panelists discussed the scientific basis for CASAC's previous recommendation to keep RBL to 2% and crop yield loss to 5%.

One panelist pointed out that with a standard of 13 ppm-hr, 5 of 12 modeled species would have RBL less than 2%. One panelist asked whether one high ozone year would lead to permanent biomass losses and others said it would, in fact, result in a permanent reduction in yield over the life cycle of the tree. Someone mentioned the Heck and Cowling (1997) report was really clear about holding biomass loss to 1 – 2%. Dr. Frey pointed out that a statistical sample of 12 would produce a confidence interval around the median that falls between the 4th and 9th value but another panelist said that kind of bootstrapping was more appropriate for measurements, not the modelled values based on exposure-response functions from studies that were the topic at hand.

A panelist pointed out that 15 ppm-hrs was roughly equivalent to the current standard of 75 ppb which had been deemed inadequate in a previous charge question. Someone else expressed caution about this equivalence given EPA's assumption of NO_x-only across-the-board reductions as the optimal control strategy.

Again, one panelist noted that CASAC's adoption of a 2% RBL criteria did not square with recommending a W126 range that went up to 13 ppm-hr. It was noted that black cherry was the second most sensitive species after cottonwood and was very common and ecologically important. Soybeans were mentioned as an important crop species that was not protected at a value of 13 ppm-hrs.

Panelists noted that the W126 level that would hold crop losses to 5% would not hold biomass losses in trees to 2%. Again, concern was expressed over recommending a range that would not hold biomass losses in trees to 2%, having already declared 2% to be a threshold of adverse impact. Panelists pondered the scientific basis for protecting trees. Dr. Frey expressed that it was preferable for the CASAC to provide sufficient advice to the Administrator to help her in making a judgment in choosing a level of a secondary standard. Dr. Frey said CASAC could, for example, express that it's preferable to protect tree species and, if so, that would point to the lower end of the W126 range. As a result of deliberations, there was panel support for advising the Administrator on the recommended W126 levels related to each of crop yield loss, foliar injury, and RBL for trees, pointing out that protection against each of these types of loss are associated with different W126 levels, and advising that as the W126 level is lowered, there is greater protection and protection for more adverse effect endpoints.

Dr. Frey said he wanted to add a paragraph on the CASAC charter and its willingness to deal with implementation issues if asked by EPA. He also wanted to repeat CASAC's traditional support for multi-pollutant analyses and programs.

Dr. Frey said that the letter could say that if three-year averaging is used, then it should be adjusted to protect against one-year peaks. One panelist said the recommendation should go up to 15 ppm-hrs provided one-year summation is used but should be lowered to 13 ppm-hrs if multi-year averaging is used.

Chartered CASAC members agreed to a recommendation of an upper bound of 15 ppm-hrs if one-year summation is used or 13 ppm-hrs if multi-year averaging is used, and to a recommendation of 7 ppm-hours as a lower bound for a one year summation

Members of the chartered CASAC approved the CASAC report on the Second Draft Policy Assessment as amended by the panel's deliberations.

Dr. Stallworth adjourned the meeting.

On Behalf of the Committee,
Respectfully Submitted,

Holly Stallworth, Ph.D. /s/
Designated Federal Officer

Certified as True:

Christopher Frey, Ph.D.. /s/
Chair, Clean Air Scientific Advisory Committee
Chair, Ozone Review Panel

NOTE AND DISCLAIMER: The minutes of this public meeting reflect diverse ideas and suggestions offered by committee members during the course of deliberations within the meeting. Such ideas, suggestions, and deliberations do not necessarily reflect definitive consensus advice from the panel members. The reader is cautioned to not rely on the minutes 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.