

**Summary Minutes of the Clean Air Scientific Advisory Committee (CASAC)
Particulate Matter (PM) Review Panel Public Teleconference**

Monday, September 20, 2004

**EPA Science Advisory Board (SAB) Staff Office
1025 F St., N.W., Washington, DC**

Panel Members: See Panel Roster – Appendix A

Dates & Times: Monday, September 20, 2004, 11:00 AM – 3:00 PM Eastern Time

Location: SAB Staff Office, 1025 F St., N.W., Washington, DC

Purpose: The purpose of this meeting was for the CASAC PM Review Panel to discuss the August 2004 revisions to Chapter 9 (Integrative Synthesis) of the Fourth External Review Draft of the Air Quality Criteria Document (AQCD) for PM.

Attendees: Chair: Dr. Philip Hopke

CASAC Members: Dr. Ellis Cowling
Dr. James Crapo
Dr. Frederick Miller
Mr. Richard Poirot
Dr. Frank Speizer
Dr. Barbara Zielinska

Consultants: Dr. Jane Keonig
Dr. Petros Koutrakis
Dr. Allan Legge
Dr. Paul Lioy
Dr. Morton Lippmann
Dr. Joe Mauderly
Dr. Roger McClellan
Dr. Gunter Oberdorster
Dr. Robert Rowe
Dr. Jonathan Samet
Dr. Sverre Vedal
Mr. Ronald White
Dr. Warren White
Dr. George Wolff

EPA SAB Staff: Mr. Fred Butterfield, CASAC Designated Federal
Officer (DFO)
Dr. Vanessa Vu, SAB Staff Office Director

Other EPA Staff: Robert Elias, ORD, NCEA-RTP
Gerald Gleason, OGC, ARLO
Lester Grant, ORD, NCEA-RTP
Karen Martin, OAR, OAQPS
Mary Ross, OAR, OAQPS
Steve Silverman, OGC, SWERLO
John Vandenberg, ORD, NCEA
Amy Vasu, OAR, OAQPS
William Wilson, ORD, NCEA-RTP

Other participants: Bryan Baldwin, Southern Co.
Kurt Blase, O'Connor and Hannan
Jeanette Clute, Ford Motor Company
Robert Connery, Holland & Hart, LLP (on behalf of
the National Cattlemen's Beef Association)
Pat Fritz, New York State Department of Health
Jon Heuss, Air Improvement Resource, Inc. (AIR)
Kyle Isakower, American Petroleum Institute (API)
Philip Johnson, Northeast States for Coordinated Air
Use Management (NESCAUM)
Ann Milford, Environmental Defense
Suresh Moolgavkar, Sciences International, Inc.
Will Ollison, American Petroleum Institute (API)
Anne Smith, Charles River Associates, Inc. (CRA)
Joseph Suchecki, Engine Manufacturers Association
(EMA)
Tamara Thies, National Cattlemen's Beef Association
(NCBA)
David Tollerud, University of Louisville, School of
Public Health
Deborah Shprentz, American Lung Association (ALA)
Ron Wyzga, Electric Power Research Institute (EPRI)

Meeting Summary

The discussion followed the issues and general timing as presented in the meeting agenda (Appendix B).

MONDAY, SEPTEMBER 20, 2004

Convene Meeting, Call Attendance, Introduction and Administration

Mr. Fred Butterfield, Designated Federal Officer (DFO) for the CASAC, opened the teleconference, called attendance, and welcomed all attendees. He noted that the CASAC is a Federal advisory committee chartered under the Federal Advisory Committee Act (FACA) to

provide advice and recommendations to the EPA Administrator. Consistent with FACA regulations, its deliberations are held as public meetings and teleconferences for which advance notice is given in the *Federal Register*. The DFO is present at all such meetings to assure compliance with FACA requirements. Meeting minutes were taken (by the DFO) for this teleconference. The minutes will be certified by the CASAC (and PM Review Panel) Chair and made available on the SAB Web site (www.epa.gov/sab). All Panelists have earlier submitted documentation with respect to possible financial conflicts-of-interest, which was reviewed by a SAB staff member prior to the meeting and found to be satisfactory.

Dr. Vanessa Vu, SAB Staff Office Director, thanked the Chair and members of the CASAC PM Review Panel for taking part in this review. She also gave special thanks to the Agency and EPA colleagues within the Office of Research and Development (ORD).

Purpose of Meeting

Dr. Phil Hopke, CASAC and PM Review Panel Chair, briefly stated the purpose of the meeting. He reminded Panel members that were able to come to closure on Chapters 7 (toxicology) and 8 (epidemiology) of the revised Air Quality Criteria Document (AQCD) for particulate matter at the Panel's most-recent meeting in July, and that they hoped to be able to complete their review of the updated draft of Chapter 9 (Integrative Synthesis), and the entire PM AQCD, today.

Overview of Revisions to Chapter 9 of EPA's 4th Revised Draft AQCD for PM

Dr. Les Grant, Director of NCEA-RTP, gave a summary presentation on the major revisions to Chapter 9 of the document (Appendix C).

Public Comment Period

Mr. Butterfield kicked-off the public comment period by reminding speakers to limit their oral statements to no more than five minutes. (See Appendix D for a summary listing of all public speakers, including their affiliations.)

Ms. Deborah Shprentz, Consultant to the American Lung Association (ALA)

Ms. Shprentz's main point is ALA's strong concern that the appendix has been eliminated from Chapter 9. The appendix contained three tables that included important information that is absolutely critical to the purpose of the PM AQCD and to the interpretation of the scientific evidence. ALA believes that the information in those tables clearly indicated that adverse health effects, morbidity and mortality are occurring at levels below the current 24-hour and annual-average standards for PM_{2.5}. Accordingly, she strongly urged that tables 9.A(1), (2), and (3) be reinstated when EPA publishes the final PM criteria document. Overall, ALA found the tone and conclusions to this latest draft of Chapter 9 to be very cautious and conservative, and replete with numerous caveats, even relative to EPA's recently published five-year progress report on the PM research program. However, while noting that a lot of good information is contained therein, ALA also believes that the effects on infants and children are downplayed, given the vast number of new studies and the weight of the scientific evidence. Finally, she emphasized that

hundreds of new health studies have been published since 2002, the cutoff date for inclusion in this AQCD; and that, upon the completion of the AQCD next month, EPA must immediately commit to gathering and interpretation of the post 2002 scientific data, for inclusion in the next edition of the PM air quality criteria document.

Dr. Anne Smith, Charles River Associates, Inc., speaking on behalf of the Utility Air Regulatory Group (UARG)

Dr. Smith started by saying this draft PM AQCD has been substantially restructured and the content has condensed a lot since the last version in July, and that some of these changes have improved the quality and the exposition, particularly with regard to the attempts to integrate across various types of evidence. However, at the same time, she felt that the overall message remains quite biased through the selective omissions and the unwarranted discussions about hypotheses that are not supported by evidence. In turn, the condensing has had the effect of increasing or exacerbating some of the bias, particularly because there has been no additional discussion of modeling a certainty, which might have helped mitigate some of these biases. As a result, the overall PM document now is making a direct case in this chapter that the evidence of a PM effect is not only strong, but has become stronger since 1996, which she feels is at odds with the trend since 1996 in the evidence. She shared several specific examples of where selected statements about the research and omissions about some of the other findings have exacerbated this problem and overstated the appearance of a strengthening trend, and also discussed both the temporality criteria and robustness. Dr. Smith concluded with points about: (1) over-reliance on hypotheses of an effect that are not supported by any toxicological or epidemiological evidence; and (2) the particle-bound water hypothesis receiving more, not less attention in this draft, even though it is not supported by any evidence.

Dr. Ron Wyzga, Electric Power Research Institute (EPRI)

Dr. Wyzga applauded one significant change in Chapter 9, *i.e.*, the deletion of the quantitative dose-response relationships. His biggest concern are tied to the time-series studies the model specification issue, which he characterized as being at least as important as the GAM issue. Specifically, his point is that this really needs to be given a lot more attention in Chapter 9 and the implications of this issue need to be discussed further. Dr. Wyzga also noted that, while the document tries to integrate, and certainly does a much better job than earlier versions, he would like to see it go a little bit further, citing examples from both the toxicology and epidemiology chapters. In addition, he commented that, while Chapter 9 has a very interesting discussion on inhaled particles carried in other toxic agents, he did not see any of that in Chapter 7 and 8. He also remarked that the Agency really ought to include some of the other new studies — and, in particular, some of the new cohort studies (*i.e.*, the host study) — in the document.

Dr. David Tollerud (M.D.), University of Louisville, School of Public Health (speaking on American Thoracic Society [ATS])

Dr. Tollerud began by complimenting the writers of the PM AQCD on a generally thorough and highly informed view of a very hard and complex topic. He then highlighted several sections of Chapter 9 related to human health effects that strongly support the view of ATS, noting that the evidence is more than sufficient to move onto the standard-setting process in regulating harmful particulate exposures. Dr. Tollerud commented that one of the stated concerns by EPA and

others over the years has been the relationship between epidemiological evidence and toxicological data regarding causation, noting that, in Chapter 9 (portions of which he quoted), powerful new epidemiological and toxicological data are summarized that clearly demonstrate plausible mechanistic pathways for cardiovascular and respiratory effects at even low levels of particulate air pollution. Finally, he remarked that the public health impact of allowing current levels of particulate exposure to continue is large. Again quoting from Chapter 9, Dr. Tollerud stated that, “taken together ... it can be concluded that small incremental risks for large groups of populations can result in large public health impact estimates.” He concluded by stating that the American Thoracic Society believes that the evidence is clear and that further evaluation of the strength of evidence is not necessary to proceed with a standard-setting process. Rather, it is time for the Agency to begin to act on the evidence by promulgating new regulations to decrease the levels of particulate air pollution to which the American public is exposed.

Dr. Suresh Moolgavkar, Sciences International, Inc., speaking on behalf of the PM Fine Coalition

In the interest of time, Dr. Suresh Moolgavkar skipped-over all positive comments he had to say concerning Chapter 9, stating that, while this chapter has been reorganized in response both to the CASAC and public comments, it still continues to espouse a certainty that is simply not displayed in the literature, particularly the epidemiological literature. First there are fractional errors and the presentation is also highly misleading. The second point, and one that has been made by other commenters, is mainly that the model choice, particularly in time studies, is not discussed at all, and is simply given short shift in this chapter. Similarly, for the long-term studies, Dr. Moolgavkar remarked that the association with sulfur dioxide in the second study by the American Cancer Society (ACS2) is simply swept under the carpet with the statement that sulfur dioxide is a precursor to sulfates and then simply ignored after that. He also discussed the role of sulfur dioxide as a confounding factor in the long-term study, adding that he believed that when the risk and operational studies are small, as in the case of air pollution studies, then the reference for time is inadequate to control for such confounding.

There was opportunity for questions-and-answers between the presenters and the members of the Panel following each of these presentations.

Summary of CASAC PM Review Panel Discussion and Deliberations re: Chapter 9 (Integrative Synthesis) of the AQCD for PM

Overall, the CASAC PM Review Panel found that this latest revision of Chapter 9 was greatly improved over the prior (June 2004) version. The Panel had no major issues with respect to Section 9.1.1. In particular, no member of the Panel saw a serious problem with the general breadth and scope of this chapter, although it was noted that NCEA-RTP will clearly still need to do some editing. In response to one Panel member who inquired about the possibility of further reducing the length of Chapter 9, Dr. Grant stated that he does not anticipate any further efforts at substantial shortening of this chapter. In reply to another Panelist who asked if there was going to be an executive summary, Dr. Grant remarked that we have probably arrived at a point where Chapter 9 essentially must serve as an executive summary.

With respect to Section 9.1.2, one Panel member commented that he was pleased with the inclusion of trends data. He also urged that 2001 to 2003 data, if that is available today, be placed in this chapter in a summarized form to supplement what is provided. The Panel then turned to Section 9.2.1, and specifically to the issue of defining fine and coarse particles in separate subclasses. After a lengthy discussion, one Panelist commented that he thought the Panel had covered that issue adequately — and had arrived to a consensus decision — in a previous meeting, stating that the principle justification at the time (and remaining so) for selecting and staying with a 2.5-micron cut point was to be conservative with respect to accumulation mode aerosols, which could under humid conditions grow beyond the one-micron cut point. It was agreed that the justification for this needs to be made clearer in the document, which Dr. Grant committed to do.

The Panel discussed the epidemiological evidence in 9.2.2. One Panel member's major concern was being able to separate out the coarse particulate matter (PM_{10-2.5}) data, while another Panelist expressed his concerns about the "robustness" of the PM_{10-2.5} data in the context of whether the data are strong enough to set another standard for the coarse particles — *i.e.*, is there sufficient data concerning the adverse health effects of coarse PM that we can ultimately recommend regulating it? Dr. Grant noted these concerns, and offered that it might be useful if NCEA were to insert into Chapter 9 a paragraph or so that clarifies this and lays-out what is known about the relevant adverse health effects associated of each particle size. The epidemiologists on the Panel stated that they were generally happy with the way this section of the chapter reads.

Another Panelist expressed his ongoing concern about the way the aspects of threshold are represented, as well as the assumption of linearity, noting EPA's position that the available studies do not provide strong evidence of a clear threshold. This precipitated an extensive discussion among Panel members, with one Panelist noting that linearity is seemingly limited to the range of current doses where data exists, and another member stating that there needs to be a better, more balanced discussion of the issue of linearity versus non-linearity. It was also noted that low-dose exposure-response relationships are not precisely quantifiable, so this is where you truly do need some interdisciplinary interpretation, with another member remarking that this also applies to toxicological data.

Dr. Grant countered that, in the section on concentration response relationships, he thought that NCEA did a reasonably good job of stating rather clearly what the available information is, in terms of looking at some of these studies and thresholds. He added that the Agency could add some more information in this chapter. In addition, NCEA could also further clarify this issue by stating that there is neither sufficient evidence to come to a strong conclusion that there is no threshold nor is there strong evidence to come to a conclusion that there is a threshold, down below these levels of interest. This met with general approval among the members of the Panel. The Chair requested that EPA also add some careful cross-referencing between Chapters 8 and 9 here to address other concerns expressed by the Panel members.

With regard to Section 9.2.3 (Toxicology), one Panel member expressed concern with six lines of text that refer to a quantitative comparison of responses of rats and humans, requesting that these be eliminated. Another Panelist requested that his previously-stated caveats about certain aspects of the particular model under which these comparisons were made be incorporated in the

chapter, which would address the both his concerns and that of his colleague on the Panel. Still another member of the Panel proposed language to the effect that the inflammatory reaction in animals in a well-controlled animal study could be demonstrated to have a consistent effect in humans as well — without the comparative statement that one is more sensitive than the other. Dr. Grant indicated that he could include a statement to this effect.

The Panel then turned to Section 9.2.4, dealing with potential and susceptible and vulnerable subpopulations. One Panelist commented that this section seemed to be incomplete, while another member weighed-in that there are two issues: one is how you handle socioeconomic variables, to control for them in models; and the second is, does the risk vary depending on level of socioeconomic status indicator. He added that this is one of those issues of general societal concern at present, which is, are those socio-economically-disadvantaged at greater risk from many kinds of exposures, including environmental exposures. Dr. Grant concurred with this Panel member, noting that this is why the Agency singled-out this issue here, as NCEA deemed it be appropriate. The Panelist then asked whether EPA could simply introduce the subject relative to the summary of the various vulnerability factors that have been looked at, to which Dr. Grant agreed.

This was followed by a discussion raised by a Panelist about how cigarette smoking is a major variable factor that's driving all of these issues in terms of susceptibility. Another member of the Panel countered that, while smoking certainly cannot be downgraded as a major risk factor, the ACS cohort study suggests the effect of air pollution is actually greater in a relative sense on the non-smoker. The resolution was that an acceptable path forward was for the Agency to add a few sentences in Chapter 9 that notes that smoking indeed contributes cardiovascular disease.

Having concluded its discussion on the section on public health impacts, the Panel moved into consideration of the chapter's treatment of welfare effects, beginning with visibility. The Panel decided that it would be useful to include a clear statement to the effect that there is a well-defined linear relationship between $PM_{2.5}$ concentration and observed light extinction, that is, for a given aerosol composition, visibility effects are highly linear with mass concentration. In addition, having reasonable stability in the particle size distribution of fine particles provides a reasonably stable ratio of visibility effects, such that a certain level of visibility gives you some indication of what fine particle concentrations are. Dr. Grant acknowledged the Panel member's key point that visibility does not simply depend on the amount of concentration, but rather tends to be linear, adding that he will ensure that this is brought into the document.

One Panel member noted that he was very pleased that the suggestion had been introduced about the concluding statements in the visibility and the other welfare effects. He recognized that most of this document deals with health effects, which is the dominant concern that our nation has, but that there still many people who will welcome the maintenance of pleasing vistas, not only in the National Parks, but also in our urban areas. This Panel member added that he would like to see a concise and robust conclusionary statement with regard to welfare effects (structured similar to those concerning health) that would allow people to understand the extent to which the Panel is concerned about atmospheric chemicals, deposition, ecosystems, as well as materials-damaging effects. He also suggested that Agency bring a specific figure on nitrogen cascade into Chapter 9

and provide a few sentences to discuss or highlight it, to which Dr. Grant agreed. With regard to climate change processes, one member remarked that he was simply glad to see it included.

Finally, another Panelist noted a real disparity between the health section and the welfare section, as it relates to current knowledge and conclusions. He asked the Agency to capture the concerns of individual members in the summary sections of the different subsections on welfare effects. Dr. Grant acknowledged the concerns and stated that he and his staff would take a look at what NCEA could do to provide a separate, clear summary in this chapter, similar to what exists with our understanding of health effects.

The Chair then canvassed each member of the Panel individually on whether the Panel is ready to close on Chapter 9 and, by extension, the entire AQCD for PM. Each member indicated that he or she was ready to close on this chapter, albeit two of them reluctantly. The Chair noted that the Panel had a reasonable degree of unanimity in closing on this chapter, with the understanding that NCEA would have the usual “fix-up, clean-up” items — but otherwise adding that the Panel was done. He personally thanked Dr. Grant for the work that he and his NCEA staff put into this document. Dr. Grant, in turn, remarked that he and his staff appreciated those sentiments and wanted to thank the CASAC PM Review Panel for the very constructive comments over the past number of years on this document.

Dr. Karen Martin of EPA’s Office of Air Quality Planning and Standards (OAQPS) commented that OAQPS will be releasing the 2nd draft PM Staff Paper and Risk Assessment at the end of January 2005 for a 60- to 90-day review, with discussion about prospective meeting dates to follow.

Summary, Wrap-up, Next Steps and Closing Remarks

After an extensive discussion, the Panel concluded that this revised chapter had been sufficiently improved that it could close on Chapter 9, with the understanding that NCEA-RTP will make further revisions as necessary to address the issues raised both in this report and in the Panelists’ individual review comments [as provided in Appendix B of the Panel’s report dated October 4, 2004; see the below URL.] This action completes the Panel’s review of the revised AQCD for PM.

Dr. Hopke asked the Panel members to submit any final comments as soon as possible to both himself and Mr. Butterfield. The Panel’s consensus comments on these three chapters will be summarized in its forthcoming report, with the individual review comments of Panel members presented in an appendix to that report.

Action Items:

- Panel members are requested to send their initial or updated individual review comments on the revised Chapters 9 to both Dr. Hopke and Mr. Butterfield as soon as possible.
[Completed]

- Dr. Hopke will prepare and circulate a draft consensus report from the Panel on this meeting within one week of the date of this teleconference. [Completed; the Panel's report from this September 20, 2004 meeting (EPA-SAB-CASAC-05-001, dated October 4, 2004) can be found on the EPA Web Site at: <http://www.epa.gov/sab/fiscal05.htm>.]
- Dr. Grant's staff will update the revised Chapter 9 (Integrative Synthesis) of the PM AQCD, and NCEA-RTP will publish the final revised Air Quality Criteria Document (AQCD) for Particulate Matter no later than October 29, 2004. [Completed; the final AQCD for PM was posted on the NCEA Web page on Friday, October 29, 2004, at URL: <http://cfpub2.epa.gov/ncea/cfm/recordisplay.cfm?deid=87903>.]

Respectfully Submitted:

Certified as True:

/s/

/s/

Fred A. Butterfield, III

Philip Hopke, Ph.D.

Fred A. Butterfield, III
CASAC DFO

Philip Hopke, Ph.D.
CASAC Chair

Date: December 28, 2004

APPENDICES

- Appendix A: Roster of the CASAC Particulate Matter Review Panel
- Appendix B: Meeting Agenda
- Appendix C: Summary Presentation on Major Revisions to Chapter 9 (Integrative Synthesis) of 4th External Review Draft of EPA's PM AQCD, Dr. Les Grant (NCEA-RTP)
- Appendix D: List of Public Speakers

Appendix A – Roster of the CASAC Particulate Matter Review Panel

**U.S. Environmental Protection Agency
EPA Science Advisory Board (SAB) Staff Office
Clean Air Scientific Advisory Committee
CASAC Particulate Matter (PM) Review Panel***

CHAIR

Dr. Philip Hopke, Bayard D. Clarkson Distinguished Professor, Department of Chemical Engineering, Clarkson University, Potsdam, NY
Also Member: SAB Board

CASAC MEMBERS

Dr. Ellis Cowling, University Distinguished Professor At-Large, North Carolina State University, Colleges of Natural Resources and Agriculture and Life Sciences, North Carolina State University, Raleigh, NC

Dr. James D. Crapo, Chairman, Department of Medicine, National Jewish Medical and Research Center, Denver, CO, and Chief Executive Officer (CEO) of Aeolus Pharmaceuticals, Inc.

Dr. Frederick J. Miller, Vice President for Research, CIIT Centers for Health Research, Research Triangle Park, NC

Mr. Richard L. Poirot, Environmental Analyst, Air Pollution Control Division, Department of Environmental Conservation, Vermont Agency of Natural Resources, Waterbury, VT

Dr. Frank Speizer, Edward Kass Professor of Medicine, Channing Laboratory, Harvard Medical School, Boston, MA

Dr. Barbara Zielinska, Research Professor, Division of Atmospheric Science, Desert Research Institute, Reno, NV

CONSULTANTS

Dr. Jane Q. Koenig, Professor, Department of Environmental Health, School of Public Health and Community Medicine, University of Washington, Seattle, WA

Dr. Petros Koutrakis, Professor of Environmental Science, Environmental Health, School of Public Health, Harvard University (HSPH), Boston, MA

Dr. Allan Legge, President, Biosphere Solutions, Calgary, Alberta

Dr. Paul J. Liroy, Associate Director and Professor, Environmental and Occupational Health Sciences Institute, UMDNJ - Robert Wood Johnson Medical School, NJ

Dr. Morton Lippmann, Professor, Nelson Institute of Environmental Medicine, New York University School of Medicine, Tuxedo, NY

Dr. Joe Mauderly, Vice President, Senior Scientist, and Director, National Environmental Respiratory Center, Lovelace Respiratory Research Institute, Albuquerque, NM

Dr. Roger O. McClellan, Consultant, Albuquerque, NM

Dr. Günter Oberdörster, Professor of Toxicology, Department of Environmental Medicine, School of Medicine and Dentistry, University of Rochester, Rochester, NY

Dr. Robert D. Rowe, President, Stratus Consulting, Inc., Boulder, CO

Dr. Jonathan M. Samet, Professor and Chair, Department of Epidemiology, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD

Dr. Sverre Vedal, Professor of Medicine, National Jewish Medical and Research Center, Denver, CO

Mr. Ronald H. White, Research Scientist, Epidemiology, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD

Dr. Warren H. White, Visiting Professor, Crocker Nuclear Laboratory, University of California - Davis, Davis, CA

Dr. George T. Wolff, Principal Scientist, General Motors Corporation, Detroit, MI

SCIENCE ADVISORY BOARD STAFF

Mr. Fred Butterfield, CASAC Designated Federal Officer, 1200 Pennsylvania Avenue, N.W., Washington, DC, 20460, Phone: 202-343-9994, Fax: 202-233-0643 (butterfield.fred@epa.gov) [Physical/Courier/FedEx Address: Fred A. Butterfield, III, EPA Science Advisory Board Staff Office (Mail Code 1400F), Woodies Building, 1025 F Street, N.W., Room 3604, Washington, DC 20004, Telephone: 202-343-9994]

* Members of this CASAC Panel consist of:

a. CASAC Members: Experts appointed to the statutory Clean Air Scientific Advisory Committee by the EPA Administrator; and

b. CASAC Consultants: Experts appointed by the SAB Staff Director to serve on one of the CASAC's National Ambient Air Quality Standards (NAAQS) Panels for a particular criteria air pollutant

Appendix B – Meeting Agenda

**U.S. Environmental Protection Agency
Clean Air Scientific Advisory Committee (CASAC)
CASAC Particulate Matter Review Panel**

**Public Teleconference
Monday, September 20, 2004 – 11:00 am to 3:00 pm Eastern Time**

**EPA Science Advisory Board (SAB) Staff Office
1025 F. Street, N.W., Washington, DC 20004**

Ongoing Review of EPA’s 4th Revised Draft Air Quality Criteria Document (AQCD) for Particulate Matter (PM) ❖ Chapter 9 (Integrative Synthesis)

Final Meeting Agenda

Monday, September 20, 2004

11:00 am	Convene Teleconference; Call Attendance; Introductions and Administration	Mr. Fred Butterfield, CASAC DFO
11:10 am	Purpose of Meeting	Dr. Phil Hopke, Chair
11:15 am	Summary Presentation on Major Revisions to Chapter 9 (Integrative Synthesis) of 4th External Review Draft of EPA’s PM AQCD	Dr. Les Grant, Director, National Center for Environmental Assessment (NCEA-RTP)
11:45 am	Public Comment Period	Mr. Butterfield (Facilitator)
12:05 pm	CASAC PM Review Panelists’ Discussion	PM Review Panel Members
2:45 pm	Summary and Next Steps	Dr. Hopke
3:00 pm	Adjourn Meeting	Mr. Butterfield

**Appendix C – Summary Presentation on Major Revisions to Chapter 9
(Integrative Synthesis) of 4th External Review Draft of EPA’s PM AQCD,
Dr. Les Grant (NCEA-RTP)**

**Lester D. Grant - Opening Remarks
CASAC teleconference call - 9/20/04**

- Good morning, everyone. Let me add our welcome on behalf of EPA’s Office of Research and Development. My staff and I are pleased to have finally reached this point in the process of the review of the PM Criteria Document. It has been gratifying to see the many positive written comments provided on Chapter 9 in advance by CASAC panelists.
- As for my opening remarks concerning revisions to Chapter 9, there’s little to be gained by drawing things out in order to provide a detailed cataloguing of the changes made in response to CASAC and public comments on the prior draft reviewed two months ago in July. Still a few points are probably worth highlighting.
- First, one overarching point should be noted. That is, in response to CASAC urgings we have made a very substantial effort to tighten up the chapter, to make it more sharply focused and concise. This included several general changes. Not only have we taken out extraneous material from some sections, but we have also largely removed most reference citations from the main text, referring instead mainly back to specific sections in earlier chapters for more detailed discussion and reference cites. We have also tried to add more sharply focused statements of key findings and conclusions at the end of major sections.
- As for some important revisions in various individual sections, we added into the introduction a discussion of PM air quality trends, as background information to help provide context for ensuing discussions of PM exposures and effects.
- Next, early on in Section 9.2 (Synthesis of PM-related Health Effects Information), we have tried to provide a clearer, sharper statement of criteria to be used for evaluation of the health effects evidence. More specifically, we modified the criteria previously used in earlier drafts of Chapter 9 to more closely reflect those used in the 2004 Surgeon General’s Report (in keeping with CASAC advice).
- In Section 9.2.1, which discusses distinctions between fine and coarse particles, the main revision made was to provide clearer discussion regarding overlaps between various types of fine and coarse particles in the intermodal region (roughly in the 1 to 3 μm range).
- As for Section 9.2.2 (the Assessment of Epidemiologic Evidence), the general thrust of the revisions was to provide clear and explicit application of the criteria posed at the outset of the chapter, as drawn from the Surgeon General’s Report. This included, for example, discussion of consistency and robustness of the epidemiological results.

- The next section (9.2.3) was extensively reorganized to help better focus on the issue of coherence of evidence across disciplines (dosimetry, toxicology, epi) and how such evidence adds support for biological plausibility of PM-related health effects. The discussion was reorganized to discuss cross-disciplinary information, as it relates to the four major categories of health effects (cardiovascular, respiratory, cancer, infant development/mortality) purported to be associated with ambient PM exposures and assessed in earlier chapters.
- I should also note that, as part of the introduction to the third subsection on health effects, we presented background information on several cross-cutting issues, *e.g.*, approaches to conduct and interpretation of experimental studies and findings; interspecies dosimetry, dosimetry comparisons; and particles as carriers of other toxic agents.
- The 4th subsection (on Susceptible/Vulnerable Subpopulations) was revamped somewhat, to address CASAC concerns regarding the need to distinguish better between factors placing population subgroups at greater risk for PM health effects due to inherent susceptibility versus increased vulnerability due to environmental or other social factors (*e.g.*, education level, etc.).
- Lastly, a few points should be noted with regard to the final overall section on welfare effects:
 - ! Probably the most important change was to sharpen the discussion of visibility effects so as to bring into it more directly policy-relevant information, *e.g.*, more information on the perception and attitude studies.
 - ! We also shortened the ecological effects section a little, to focus more sharply on key issues; in particular more sharply on the nitrogen cascade and nitrogen-deposition related effects.
- That should suffice for now to highlight some of the major types of revisions made in Chapter 9. We look forward to hearing your comments and advice. Thank you.

Appendix D – List of Public Speakers

List of Public Speakers

**U.S. Environmental Protection Agency
Clean Air Scientific Advisory Committee (CASAC) Particulate Matter (PM) Review Panel
Ongoing Review of EPA's 4th External Review Draft Air Quality Criteria
Document (AQCD) for PM**

Public Teleconference ❖ September 20, 2004

SAB Conference Center, 1025 F Street, N.W., Suite 3700, Washington, DC 20004

#	Speaker's Name	Organizational Affiliation	Organization(s) Represented [or Funding Organization(s)]
1	Ms. Deborah Shprentz	Consultant	American Lung Association (ALA)
2	Dr. Anne Smith	Charles River Associates, Inc.	Utility Air Regulatory Group (UARG)
3	Dr. Ron Wyzga	Electric Power Research Institute (EPRI)	same
4	Dr. David Tollerud (M.D.)	University of Louisville, School of Public Health	American Thoracic Society (ATS)
5	Dr. Suresh Moolgavkar	Sciences International, Inc.	PM Fine Coalition