



March 9, 2010

MEMORANDUM

SUBJECT: CASAC Review of the *Policy Assessment for the Review of the Particulate Matter National Ambient Air Quality Standards -- First External Review Draft*

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TO: Holly Stallworth
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Attached is the draft document, *Policy Assessment for the Review of the Particulate Matter National Ambient Air Quality Standards - First External Review Draft* (Policy Assessment), prepared by the Environmental Protection Agency's (EPA) Office of Air Quality Planning and Standards (OAQPS) staff as part of EPA's ongoing review of the national ambient air quality standards (NAAQS) for particulate matter (PM). This document will be the focus of a review by the Clean Air Scientific Advisory Committee (CASAC) Particulate Matter Review Panel (the Panel), scheduled as a teleconference for April 8-9, 2010.

The attached draft Policy Assessment document presents factors relevant to EPA's review of the current primary (health-based) standards and secondary (welfare-based) standards for both fine and coarse particles. This draft document draws upon information assessed and presented in the final *Integrated Science Assessment for Particulate Matter*, prepared by EPA's National Center for Environmental Assessment after undergoing review by the Panel and the public, and the second drafts of the *Quantitative Health Risk Assessment for Particulate Matter* (Risk Assessment) and the *Urban-Focused Visibility Assessment for Particulate Matter* (Visibility Assessment), which will be reviewed at a meeting of the CASAC Panel scheduled for March 10-11, 2010 in Research Triangle Park, NC.

Following CASAC and public review of this first draft Policy Assessment, we will produce a second draft Policy Assessment for CASAC and public review, prior to preparing a final Policy Assessment in July 2010. Our review of the PM NAAQS will conclude with Agency rulemaking. Our current schedule anticipates that proposed and final rules will be signed in November, 2010, and July, 2011, respectively.

Document for Review

We will send printed copies of the first draft Policy Assessment, described below, to members of the Panel. In addition, we request that you forward to the Panel the electronic file containing this document. This document will also be available on the EPA website: http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_2007_pa.html. Attached to this memorandum are charge questions to guide the Panel's review of this document.

- *Policy Assessment for the Review of the Particulate Matter National Ambient Air Quality Standard - First External Review Draft*

Chapter 1 includes information on the purpose and background for this review, as well as an overview of the general approach and organization of the policy assessment. Chapters 2 and 3 present staff observations and preliminary conclusions related to the review of the primary standards for fine and thoracic coarse particles, respectively. Each chapter begins with a discussion of policy assessment approaches and focuses on evidence-based considerations based on the updated scientific and technical information as assessed and presented in the final *Integrated Science Assessment*. In addition, chapter 2 also includes a discussion of quantitative risk-based considerations as assessed and presented in the second draft Risk Assessment. Preliminary staff conclusions are presented with regard to the adequacy of the current primary standards and potential alternative primary standards for consideration, in terms of indicators, averaging times, forms, and levels. Chapter 4 focuses on PM-related visibility impairment, and presents staff observations and preliminary conclusions with regard to the adequacy of the current standards and potential distinct secondary standards for consideration, in terms of alternative indicators, averaging times, forms, and levels. This chapter focuses on the updated scientific and technical information as assessed and presented in the final *Integrated Science Assessment* as well as the quantitative analyses presented in the second draft Visibility Assessment. Chapter 5 focuses on other PM-related welfare effects, including effects on climate, ecological effects, and effects on materials, and presents staff observations and preliminary conclusions with regard to the adequacy of the current standards and the extent to which information is available to support consideration of alternative standards.

We look forward to discussing this first draft Policy Assessment with the Panel at our upcoming teleconference in April. At the Panel's request, we will provide a brief overview of this document at the meeting on March 10-11 to provide context for the Panel's review of the second drafts of the Risk Assessment and Visibility Assessment at that meeting. Should you have any questions regarding this first draft Policy Assessment, please contact Ms. Beth Hassett-Sipple (919-541-4605; email hassett-sipple.beth@epa.gov).

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Attachment:

Charge to the CASAC PM Review Panel for Review of the Draft PM Policy Assessment

Charge to the CASAC PM Review Panel for Review of the First Draft Policy Assessment for the Review of the Particulate Matter NAAQS

The first draft Policy Assessment (PA), conveyed to the CASAC PM Panel on March 9, 2010, includes staff's preliminary evaluation of the policy implications of the scientific assessment of the evidence presented in the Integrated Science Assessment (ISA) and the results of quantitative assessment based on analyses presented in the second draft Risk and Exposure Assessments (REAs). Consistent with CASAC's comments on a preliminary draft Policy Assessment (September 2009) that encouraged the development of a document focused on key policy-relevant issues that draws from and is not repetitive of information in the ISA and REAs, staff has organized the discussion in the Policy Assessment around answering a series of policy-relevant questions. Taken together, staff's responses to these questions support preliminary staff conclusions and the identification of policy options for consideration in our review of the primary and secondary PM NAAQS.

We ask the CASAC PM Panel to focus on the charge questions below in their review of the first draft Policy Assessment, but we would appreciate comments on any other topics as well.

Overarching Questions (related to Chapters 2, 3, 4, 5)

1. Organizational Structure

- a. Does the Panel find the introductory and background material, including that pertaining to previous reviews of the PM standards and the current review, to be clearly communicated and appropriately characterized?
- b. To what extent does the Panel find that the questions posed appropriately reflect the important policy-relevant issues for this review? Are there additional policy-relevant questions that should be addressed?
- c. What are the Panel's views regarding the level of detail used to address these policy-relevant questions? Please comment on the extent to which the discussions are appropriately focused in addressing the questions.

2. Technical Content

- a. Do the discussions accurately reflect and clearly communicate the currently available health and welfare effects evidence, including important uncertainties, as characterized in the final ISA?
- b. Do the discussions accurately reflect and clearly communicate policy-relevant information from the human health risk and visibility assessments, including important uncertainties, as characterized in the second draft REAs?

Review of the Primary Standards for Fine Particles (Chapter 2)

3. **Approach (section 2.1.3):** Various approaches are described for translating different air quality metrics from epidemiological studies into the basis for reaching preliminary staff conclusions on the adequacy of the current PM_{2.5} standards and on alternative standards for

consideration. What are the Panel's views regarding the appropriate weight to place on these various approaches; should specific approaches be afforded more or less weight? Are there additional approaches that should be considered?

4. Adequacy of current suite of PM_{2.5} standards (section 2.2):

What are the Panel's views on the following:

- a. The appropriateness and characterization of the sets of long- and short-term PM_{2.5} exposure studies highlighted? (section 2.2.1)
 - Are there specific studies that should be given more or less emphasis?
 - Are there additional studies that should be focused on?
 - Does the Panel generally support placing greater weight on multi-city vs. single-city short-term exposure studies?
 - Does the Panel agree with the characterizations of PM_{2.5} air quality at which associations have been observed?
- b. The focus on persons with lower socioeconomic status as a susceptible population in addition to consideration of newly available evidence for susceptible populations identified in previous reviews (e.g., children, older adults, persons with pre-existing cardiac and respiratory disease)? (section 2.2.1)
- c. The preliminary staff conclusion that the estimated risks remaining upon simulation of just meeting the current suite of standards can reasonably be judged to be important from a public health perspective? (section 2.2.2)
- d. The relative roles of the annual and 24-hour standards in providing public health protection as informed by the quantitative risk assessment, specifically in focusing on simulation of estimated risks remaining upon just meeting the current suite of standards? (section 2.2.2)
- e. The integration of evidence-based and risk-based considerations to inform the preliminary staff conclusion that the available information clearly calls into question the adequacy of the current suite of PM_{2.5} standards and provides strong support for giving consideration to revising the current standards to provide increased public health protection? (section 2.2.3)

5. Indicator (section 2.3.1):

What are the Panel's views on the following:

- a. The preliminary staff conclusion that it is reasonable to retain PM_{2.5} as an indicator for fine particles?
- b. The preliminary staff conclusion that the currently available information is too limited to support a distinct PM standard for ultrafine particles?
- c. The preliminary staff conclusion that the currently available information is not sufficient to support consideration of a separate indicator for a specific PM_{2.5} component or for the mix of fine particles from any specific source category, and that data are too limited to consider eliminating any component or source category from the mix of fine particles included in the PM_{2.5} mass-based indicator?

6. Averaging Times (section 2.3.2):

What are the Panel's views on the following:

- a. The preliminary staff conclusion that it is reasonable to retain annual and 24- hour averaging times?
- b. The preliminary staff conclusions that the currently available evidence is too limited to support additional averaging times to address sub-daily exposures or seasonal exposures?

7. Forms (section 2.3.3): What are the Panel's views on the utility of additional analyses to inform consideration of eliminating provisions included in the current form of the annual standard that allow for spatial averaging across monitors, specifically with regard to the potential for disproportionate impacts on susceptible populations with lower socioeconomic status?

8. Levels (sections 2.3.4, 2.3.5, and 2.3.6):

What are the Panel's views on the following:

- a. The preliminary staff conclusions regarding alternative standard levels that are appropriate for consideration, and the rationale upon which those conclusions are based?
- b. The insights that can be gained from the quantitative risk assessment to inform our understanding of the roles that the annual and 24-hour standards play in providing public health protection, specifically in focusing on simulations of estimated risks remaining upon just meeting alternative suites of standards? (sections 2.3.4.2 and 2.3.5.2)
- c. The policy implications of the uncertainties associated with estimating risks, including potential underestimation of risk, in reaching conclusions regarding standards that would provide public health protection with an adequate margin of safety?
- d. A policy approach for identifying a suite of standard levels in which the annual standard would be the "generally controlling" standard to provide protection for both long- and short-term PM_{2.5} exposures, in conjunction with a 24-hour standard set to provide supplemental protection against days with high peak concentrations associated with localized "hotspots" and risk arising from seasonal emission that might not be controlled by a national annual standard? (section 2.3.6)
- e. Additional considerations that could inform our conclusions related to alternative suites of fine particle standards?

Review of the Primary Standard for Thoracic Coarse Particles (Chapter 3)

9. Adequacy of the current 24-hour PM₁₀ standard (section 3.2):

What are the Panel's views on the following:

- a. The preliminary staff conclusion that the available scientific evidence supports maintaining a standard that provides protection against health effects associated with exposure to thoracic coarse particles?

Update

- b. The various approaches described for translating the evidence and related uncertainties into the basis for conclusions on the adequacy of the current PM₁₀ standard?
- c. The adequacy of the public health protection afforded by the current PM₁₀ standard against exposures to thoracic coarse particles?

10. Indicator (sections 3.3.1, 3.3.2, and 3.3.3):

What are the Panel's views on the following:

- a. The preliminary staff conclusion that it is appropriate to maintain a standard that provides protection against all thoracic coarse particles, regardless of their source of origin or composition?
- b. The appropriateness of maintaining an indicator that allows lower PM_{10-2.5} concentrations in urban areas than non-urban areas?
- c. The appropriateness of either a PM₁₀ or PM_{10-2.5} indicator for a standard meant to protect against exposures to thoracic coarse particles?

11. Averaging Time (section 3.3.4):

What are the Panel's views on the preliminary staff conclusions that the currently available evidence supports maintaining a 24-hour standard to protect against health effects associated with short-term exposures to thoracic coarse particles, and does not support consideration of a long-term thoracic coarse particle standard?

12. Form (section 3.3.6):

What are the Panel's views on the preliminary staff conclusion that it is appropriate to consider a 98th percentile form for a revised 24-hour standard meant to protect against short-term exposures to thoracic coarse particles?

13. Level (section 3.3.7):

What are the Panel's views on the appropriateness of considering 98th percentile, 24-hour PM₁₀ or PM_{10-2.5} concentrations in epidemiological study locations for identifying a range of potential alternative standard levels for consideration, recognizing the more limited air quality information available for PM_{10-2.5}?

Review of the Secondary PM_{2.5} Standards for Visibility-Related Effects (Chapter 4)

14. Adequacy (section 4.2):

What are the Panel's views on the preliminary staff conclusion that the currently available information clearly calls into question the adequacy of the current suite of PM_{2.5} standards to provide public welfare protection from unacceptable levels of visibility impairment, primarily in urban areas, and supports consideration of alternative standards to provide appropriate protection?

15. Indicator (section 4.3.1):

What are the Panel's views on the following:

- a. The appropriateness of considering PM light extinction and PM_{2.5} mass as indicators for a distinct secondary PM standard for visibility protection, and the relative advantages and disadvantages associated with each indicator?

Update

- b. The appropriateness of considering the contribution of coarse particles with respect to a potential PM light extinction indicator?

16. Averaging times (section 4.3.2):

What are the Panel's views on the following:

- a. The preliminary staff conclusion that consideration should be given to a 1-hour averaging time?
- b. The advantages and disadvantages of focusing on a 1-hour daily maximum or each 1-hour average concentration during all daylight hours?

17. Levels and Forms (section 4.3.3):

What are the Panel's views on the following:

- a. The preliminary staff conclusions regarding ranges of options with varying levels and forms in combination with different indicators (light extinction and PM_{2.5} mass-based indicators) and averaging times (1-hour daily maximum or each 1-hour average concentration during all daylight hours)?
- b. Additional approaches that could help inform our consideration of alternative levels and forms?

Review of the Secondary Standards for Other Welfare-related Effects (Chapter 5)

18. **Climate (section 5.2):** What are the Panel's views on the preliminary staff conclusion that there is insufficient information to base a standard on climate impacts associated with current ambient PM concentrations?
19. **Ecological effects (section 5.3):** What are the Panel's views on the preliminary staff conclusion that data are insufficient to support establishing a distinct standard for ambient PM based on ecosystem effects not addressed in the ongoing NO_x/SO_x secondary NAAQS review?
20. **Material effects (section 5.4):** What are the Panel's views on the preliminary staff conclusion that no new evidence calls into question the adequacy of the protection afforded by the current suite of PM standards, and that there continues to be support for retaining an appropriate degree of control for both fine and coarse particles to provide protection against materials damage and soiling?