



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON D.C. 20460**

**OFFICE OF THE ADMINISTRATOR  
SCIENCE ADVISORY BOARD**

September 15, 2010

EPA-COUNCIL-10-005

The Honorable Lisa P. Jackson  
Administrator  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, D.C. 20460

Subject: Review of Revised PM<sub>2.5</sub> Emissions and Modeling Estimates for the  
Second Prospective Study of Benefits and Costs of the Clean Air Act

Dear Administrator Jackson:

The Air Quality Modeling Subcommittee (AQMS) of the Advisory Council on Clean Air Compliance Analysis (Council) held a public teleconference on August 11, 2010 to further evaluate the Agency's estimates of atmospheric fine particulate matter (PM<sub>2.5</sub>) concentrations corresponding to scenarios prepared for the Second Section 812 Prospective Study of costs and benefits of the Clean Air Act. During meetings in February and March, the AQMS learned of potential biases in the estimates of primary PM<sub>2.5</sub> and was briefed on the Agency's plans to correct processing errors in the PM<sub>2.5</sub> emissions inventories and to adjust modeled PM<sub>2.5</sub> concentrations. In a June 2010 report (EPA-COUNCIL-10-002), the AQMS recommended that the use and application of the Modeled Attainment Test Software (MATS) for the PM<sub>2.5</sub> adjustments be more transparent and comprehensively described. In response to the Council's request, the Agency prepared additional documentation on the adjustment procedures and results. The purpose of the August teleconference was to evaluate this additional information and offer advice on its clarity and appropriateness for the Second Prospective Study.

The AQMS was provided a memorandum (dated June 14, 2010) that described the process used to adjust the primary PM<sub>2.5</sub> estimates and the outputs from the Community Scale Air Quality Model (CMAQ), as well as application of MATS to adjust CMAQ outputs using monitoring data. In addition, the memorandum included 3 attachments showing adjustments to underlying data (from the 1990 National Emissions Inventory), and stacked bar graphs showing total and speciated PM<sub>2.5</sub> concentrations estimated by CMAQ and after application of MATS.

The AQMS found the set of four memoranda to be a clear and concise description of the PM<sub>2.5</sub> adjustments, and provided the desired information. We compliment the Agency on the approaches taken to deal with the data processing issues identified previously, and their responsiveness to our concerns. Given the significant contribution of PM<sub>2.5</sub> to the overall estimates of benefits from the Clean Air Act, it is especially important to clearly document the

steps leading up to the estimates of PM<sub>2.5</sub> concentrations in the various scenarios. These memoranda are a valuable contribution to the record, and will provide the Council with a more complete foundation for their review of the Second Prospective Study.

Two issues were identified during the August 11 teleconference. First, AQMS members identified some results from the MATS-processed CMAQ particulate matter concentration simulations (e.g., crustal material concentrations for Tucson, Miami, and Philadelphia) that were not readily explained, and could use further discussion. Second, the air quality modeling-MATS system is very complex, and its application introduces a number of uncertainties. The Section 812 report should provide a comprehensive explanation of such uncertainties, with particular attention to the air quality modeling results for PM<sub>2.5</sub>. In particular, the stacked bar charts should provide a sense of which PM<sub>2.5</sub> components are more/less certain, and this sense of uncertainty should be carried over to the discussion of benefits. For example, the crustal material has a relatively large uncertainty compared to sulfate, but if the health impacts are more associated with non-crustal components, this should be noted in the 812 report.

The AQMS appreciates the information contained in the set of four memoranda from Agency contractors, but recommends that a single cover memorandum be prepared by the Agency to summarize the content of the four memoranda, explain why they were prepared, and discuss the related uncertainties in the process and results. This Agency cover memorandum (and the four contractor memoranda reviewed here) should be referenced in the integrated 812 report, as well as linked to the CMAQ air quality modeling report that was reviewed previously by the AQMS. These steps would ensure that future readers of the 812 technical reports have a more comprehensive understanding of the air quality modeling process and the results. Further, it would document the emissions processing error and how it was corrected.

Sincerely,

*/Signed/*

Dr. James K. Hammitt, Chair  
Advisory Council on Clean Air  
Compliance Analysis

*/Signed/*

Dr. Armistead Russell, Chair  
Air Quality Modeling Subcommittee

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