UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

MAR 3 2008

MEMORANDUM

SUBJECT: CASAC Review of Ambient Air Monitoring Options for Lead (Pb) National Ambient Air Quality Standards (NAAQS)

FROM: Lewis Weinstock
Acting Group Leader
Ambient Air Monitoring Group
Office of Air Quality Planning and Standards (D243-02)

TO: Fred Butterfield
Designated Federal Officer
Clean Air Scientific Advisory Committee
EPA Science Advisory Board Staff Office (1400F)

Attached are materials for review by the Clean Air Scientific Advisory Committee's (CASAC) Ambient Air Monitoring and Methods (AAMM) Subcommittee. These materials will be the subjects of a consultation by the AAMM Subcommittee, scheduled for a teleconference to be held on March 25, 2008. I am requesting that you forward these materials to the AAMM Subcommittee to prepare for the consultation.

This project, entitled *Lead National Ambient Air Quality Standards (NAAQS) Review: Indicator and Monitoring Issues*, has been requested by EPA's Office of Air Quality Planning and Standards (OAQPS), within EPA's Office of Air and Radiation, in anticipation of potential revisions to the Pb NAAQS. The consultation will cover the lead (Pb) National Ambient Air Quality Standards (NAAQS) indicator as well as several monitoring topics under consideration for the upcoming notice of proposed rulemaking.

The consultation on the Pb NAAQS indicator will solicit Subcommittee comments and advice on several options that have been identified that would low volume Pb in PM_{10} (Pb-PM_{10}) monitors to be used in the NAAQS surveillance monitoring network. The consultation on the draft Pb in PM_{10} Federal Reference Method (FRM) and Federal Equivalent Method (FEM) criteria will assist EPA in developing these methods for use in measuring Pb in PM_{10}. The consultation on network design options will provide Subcommittee comments and advice on how the Pb surveillance monitoring network should be structured to ensure proper monitoring coverage in areas likely to exceed the Pb NAAQS as well as provide information on typical population exposures in large urban areas. Finally, the consultation on sampling frequency will solicit Subcommittee comments on the appropriate sampling frequency in the case that the NAAQS averaging time is reduced to a monthly average. Charge questions associated with each

part of the consultation are provided below.

The upcoming consultation will support the EPA by providing scientific advice as the EPA Administrator considers potential revisions to the Pb NAAQS; a notice of proposed rulemaking is to be signed by May 1, 2008. Although this consultation does not call for a consensus statement, we are requesting each of the members provide his or her individual written comments on an expedited schedule to assist EPA in meeting the May 1, 2008 deadline for proposing the Pb NAAQS.

Following consultation, the Agency will issue a notice of proposed rulemaking with regard to our review of the Pb NAAQS, together with proposed changes to the associated monitoring requirements and the draft FRM for Pb in PM_{10}. Note that due to a court order, any monitoring requirement changes needed to implement the revised NAAQS must be promulgated at the same time as the final NAAQS standard. A peer review by the Subcommittee of the final FRM for Pb in PM_{10} may be appropriate for future consideration.

We appreciate the efforts of you and the Subcommittee to prepare for the upcoming meeting and look forward to discussing this project in detail on March 25, 2008. Questions regarding the enclosed materials should be directed to Mr. Kevin Cavender, EPA-OAQPS (phone: 919-541-2364; e-mail: cavender.kevin@epa.gov).

Documents Associated with Subcommittee's Consultation:

The purpose of the upcoming CASAC AAMM Subcommittee meeting is to provide consultation on several aspects of potential ambient air monitoring requirements for the Pb NAAQS. The attached documents summarize the aspects being considered and provide various options under consideration. The Agency requests that the Subcommittee focus on the associated charge questions as part of its review.

- **Attachment 1 – *Options for Lead NAAQS Indicator: Monitoring Implications***

  Background and Summary: Lead in total suspended particulate (TSP) is the current indicator for the lead NAAQS. Concerns have been raised regarding the quality of the data generated by the high volume TSP sampler due to perceived poor precision and an upper particle cut size that varies widely as a function of wind speed and direction. CASAC has recommended that EPA move towards the use of Pb in PM_{10} as the indicator for the Pb NAAQS. In response to CASAC's concerns and comments, the EPA is considering options which that would allow Pb in PM_{10} to be used as the indicator or to allow Pb in PM_{10} data to be used in lieu of Pb in TSP data while maintaining Pb in TSP as the indicator. The attached document discusses the options under consideration for the Pb NAAQS indicator.

  Charge Questions:

  Considering issues such as sampler performance, size cuts, operator maintenance, integration with other measurement systems, and usefulness as the measurement system for the indicator, please describe the advantages and disadvantages of sampling and analysis of

Pb-TSP versus sampling and analysis of Pb-PM_{10}.

Is it appropriate to monitor for Pb-PM_{10} near Pb sources? And if so, under what conditions?

One indicator option suggests using scaling Pb-PM_{10} monitoring data up to an equivalent Pb-TSP level in lieu of Pb-TSP monitoring data. Under what circumstances would it be appropriate to scale data (e.g., non-source oriented sites, low concentration sites) and when would it not be appropriate to scale data?

We have limited data collocated Pb-PM_{10} and Pb-TSP monitoring data. What types and "scaling factors" are appropriate to create using this data (e.g., non-source oriented, source oriented)? What levels are appropriate for the types of scaling factors identified in the white paper?

- **Attachment 2 – *Draft Federal Reference Method (FRM) and Federal Equivalent Method (FEM) Criteria for Lead in PM10 (Pb-PM10)***

Background and Summary: In order for monitoring data to be used in determination of attainment with the NAAQS, the data must be collected with a FRM or FEM. A number of options under consideration for the Pb NAAQS indicator would require the EPA to develop a FRM and FEM criteria for the measurement of Pb in PM_{10}. The EPA has drafted language for a FRM for Pb in PM_{10} based on the existing FRM sampler for low volume PM_{10c} in Appendix O to Part 50 of the Code of Federal Regulations (CFR) coupled with analysis by x-ray fluorescence (XRF). In addition, minor changes to the FEM criteria for Pb methods have been drafted to make these requirements consistent with the draft FRM for Pb in PM_{10}. The attached document summarizes the rationale for the proposed changes and includes a draft of the FRM and FEM CFR text.

Charge Questions:

Is it appropriate to use the low-volume PM_{10c} FRM sampler as the Pb-PM_{10} FRM sampler?

What other PM_{10} samplers should be considered as either FRM or FEM for the Pb-PM_{10} FRM?

Is XRF an appropriate Pb-PM_{10} FRM analysis method?

What other analysis methods should be considered for FRM or FEM for the Pb-PM_{10} FRM?

Have we selected appropriate precision, bias, and method detection limit requirements for FEM evaluation?

- **Attachment 3 – *Lead NAAQS Ambient Air Monitoring Network: Network Design Options Under Consideration***

Background and Summary: The existing Pb-TSP network has decreased substantially over

the last few decades. In 1980 there were over 900 Pb-TSP sites, this number has been reduced to approximately 200 sites. Several states have no Pb-TSP samplers resulting in large portions of the country with no data on current ambient Pb-TSP concentrations. In addition, many of the largest Pb emitting sources in the country do not have nearby samplers, and there is substantial uncertainty about ambient air Pb levels resulting from historic Pb deposits near roadways. As a result, the existing network and network requirements may not be adequate to support a lower Pb NAAQS. The attached document identifies a number of network design options under consideration.

Charge Questions:

What types of monitoring sites should be emphasized in the network design (e.g., source oriented monitors, population monitors, near roadway monitors)?

We are considering proposing requirements for monitoring near sources exceeding an emissions threshold and discuss a number of options for determining this threshold in the white paper. What options should be considered in establishing an emissions threshold?

We are considering proposing requirements for non-source oriented monitoring in large urban areas to provide additional information on ambient air concentrations in urban areas. Considering other monitoring priorities and a potential requirement for Pb monitoring near sources, what size of a non-source oriented Pb network is appropriate?

What factors should we base non-source oriented monitoring requirements on (e.g., population, design value)?

We are considering proposing requirements for Pb monitoring near roadways and interstates. Is it appropriate to include separate monitoring requirements for near roadway monitoring, or should near roadway monitors be a part of the non-source oriented monitoring requirement?

Under what conditions would it be appropriate to waive the monitoring requirements for either source or non-source oriented monitors?

- **Attachment 4 – *Lead NAAQS Ambient Air Monitoring Network: Sampling Frequency Options Under Consideration***

Background and Summary: The current Pb sampling frequency requirement is for one 24-hour sample every six days. For the current NAAQS, which is based on a quarterly average, the 1-in-6 sampling schedule yields 15 samples per quarter on average with 100% completeness, or 12 samples with 75% completeness. A change to a monthly averaging period would result in between 4 and 6 samples per month at the current sampling frequency with 100% completeness, or between 3 and 5 samples with 75% completeness. If we change the averaging time to a monthly average, we may need to increase the sampling frequency to better reflect ambient Pb concentrations during the averaging period. The attached document

describes several options we are considering which would increase the sampling frequency.

Charge Questions:

What sampling frequency would be appropriate if the Pb NAAQS is based on a monthly average?

Is it appropriate to relax the sampling frequency in areas of low Pb concentration? If so, at what percent of the Pb NAAQS?

Is it appropriate to relax the sampling frequency in areas considerably higher than the NAAQS? If so, at what percent of the Pb NAAQS?

Attachments

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