July 19, 2008

To: Ted Russell
Fred Butterfield

From: Barbara Zielinska

Subject: Comments regarding Draft Federal Reference Method (FRM) for Lead in Pb-PM_{10} and Consultation of Approaches for the Development of a Low-Volume Ambient Air Monitor for Pb in Total Suspended Particulate (TSP) FRM or Federal Equivalent Method (FEM).

Charge questions regarding FRM for Lead in Pb-PM10:

1. What are your comments on the use of the low-volume PM10c FRM sampler as the Pb-PM10 FRM sampler?

As stated in my comments from March 23, 2008, regarding previous consultation on this subject, I support the use of the low-volume PM10c FRM sampler as the Pb-PM10 FRM sampler. This sampler has been well-tested, has well-defined cut-points and slopes and is readily available.

2. What are your comments on the use of XRF as the Pb-PM10 FRM analysis method?

Although XRF method has many advantages (is nondestructive, sensitive, relatively simple and inexpensive), it presents some problems related to the uniformity of material on the filter collection surface. ICP-MS method is extremely sensitive for lead, has traceable standards and the uniformity of material is not an issue. I would recommend ICP-MS as an FRM for the analysis of lead and XRF as an FEM (or one of the FEMs).

3. What are your comments on the specific analysis details of the XRF method contained in the proposed Pb-PM10 FRM analysis method description?

The XRF analysis method is well described in this document. Specific analysis details were addressed during the advisory teleconference meeting and are reflected in the lead discussants memos.

4. Do you think the XRF method precision, bias and MDL for the proposed Pb range will be adequate?

The method MDL, precision and bias seem to be adequate. However, for very low ambient concentrations of Pb, it may be challenging to achieve the required precision.

5. Are there any method interferences that we have not considered?

I am not aware of any additional interference.

Comments regarding low-volume ambient air monitor for Pb-TSP

I am not sure if a low-volume Pb-TSP sampler would be an improvement over the existing high-volume Pb-TSP sampler. "TSP" is a very imprecise term and depending on the method of sampling may correspond to different particle sizes. In other words, Pb-TSP sampled with a high-volume sampler may not be the same as Pb-TSP sampled with a low-volume sampler. If we really need Pb-TSP measurements (and I'm not sure that we do), thorough characterization of any proposed low-volume sampler should be done before its deployment.

I think that the "alternative approach" proposed by Dick Felton (to measure Pb-TSP next to sources that are known to emit large Pb particles and to monitor Pb-PM10 in a proximity of sources that potentially emit Pb in particles smaller than PM10 and for a general urban population) makes a lot of sense. The same Pb concentration standard could be used for each particle size fraction, but the network design would be flexible, as proposed by Dick.