

Comments by Philip K. Hopke  
on the Proposal for a PM<sub>10</sub> FRM for Pb

It should be noted that it is difficult to accurately specify a measurement system when the target concentrations are not well defined. Given the wide potential range of the concentration that may be chosen for the Pb NAAQS, it is difficult to fully specify the monitoring system.

In general the proposed FRM sampler for Pb in PM<sub>10</sub> is quite reasonable IF one believes the appropriate indicator is PM<sub>10</sub>. I would suggest that is still an open scientific question and thus, is likely to need to be decided as a matter of policy and not science. The PM<sub>10c</sub> sampler is well understood in terms of its sampling characteristics and would already be deployed in the network. However, ease of implementation should not be the basis for making this decision. Protection of the health of children who are particularly sensitive to lead must be the driving consideration and thus, concern remains that PM<sub>10</sub> may not be adequately protective as an indicator.

In terms of the analytical methods, I would suggest that it would be better to make ICP/MS the FRM since that eliminates all of the issues of sample inhomogeneities on the filter. Since XRF is typically looking at a 1 cm diameter spot, variability in the deposit across the filter represents a potential problem with respect to the lead determination by XRF. XRF could serve as an FEM and it might be useful to require replicate analyses of a relatively large proportion of the samples (say 25 to 33%) with the samples reoriented between runs. The FRM documents indicate two vendors of XRF, but there is a third, Spectro. In our Spectro, the filter is measured off-center so it is easy to examine two different areas of the filter by reorienting it. I am not aware of the spot location in the other two instruments. If they examine the center of the filter, then reorientation is difficult. If not, then it is easy to do and replicate analyses of a reasonable fraction of the filters would provide additional confidence in the values.