

Executive Summary

An enlarged continuous PM monitoring network will improve public data reporting and mapping, support air pollution studies more fully by providing continuous (i.e., hourly) particulate measurements, and decrease the resource requirements of operating a large network of nearly 1200 filter-based particulate samplers. This document provides recommended directional guidance to move forward in deploying a valued continuous PM monitoring program operated by State and local agencies and tribal governments. A range of topics are addressed, including relationships between continuous and filter-based measurements, performance analyses of collocated continuous and filter based samplers, recommended performance criteria, regulatory modifications, and identification of outstanding technical issues and actions to be taken in the near future.

This plan proposes a hybrid network of filter based and continuous mass samplers. The hybrid network would include a reduced number of existing FRM samplers for direct comparison to the NAAQS and continuous samplers that meet specified performance criteria related to their ability to produce sound comparisons to FRM data. Two approaches for integrating continuous mass monitors are proposed to maximize flexibility for agencies; an expanded use of Correlated Acceptable Continuous Monitors (CAC), and a new Regional Equivalent Monitor (REM) program. The CAC approach would enable agencies to address any monitoring objective, other than *direct* comparisons to NAAQS for attainment and non-attainment designations, while the REM approach would serve any monitoring objective.

In either approach, if data produced by a continuous monitor differ from that produced by the filter-based method, then monitoring agencies should seek to optimize the continuous method to reduce those differences. If all established means to optimize the continuous method have been exhausted, and the differences in data from the filter-based method and continuous monitor are still not acceptable, then the continuous data should be adjusted to be more comparable to that of the filter-based method. Only simple adjustments will be allowed for the REM whereas any type of adjustment will be allowed for the CAC. At sites operating a continuous instrument that is not collocated with a filter-based instrument, assumptions will have to be made about the adjustment that is appropriate to produce data that is comparable to a filter-based sampler. The general approach proposed in this document is to determine geographical regions within which one adjustment is appropriate for all of the continuous measurements. There is flexibility in the adjustments and regions associated with a CAC, whereas the adjustments and regions associated with the REM will be restricted and subject to an independent review through EPA's Office of Research and Development or a similar entity.

Two performance criteria are proposed to determine whether the adjusted continuous measurements are sufficiently comparable to be integrated into the PM_{2.5} network. These criteria are bias (relative to a filter-based method) between -10% and +10% and precision less than 20% coefficient of variance (CV). These criteria are the result of a data quality objective (DQO) analysis that is based on data from the existing PM_{2.5} network and based on the assumption that the annual

PM_{2.5} air quality standard is the principal decision driver. Also, the DQO result is conservative in that the goals guarantee decision error rates for the “worst case” scenarios. In cases that are not “worst,” the DQO approach allows for additional flexibility beyond the stated bias and precision goals. These performance criteria preferably would be demonstrated by monitoring agency staff under actual operational conditions, a departure from the very tightly controlled approach used for national equivalency demonstration, and validated periodically in recognition of changing aerosol composition and instrument performance.

Recommended changes in the PM monitoring regulations are proposed that will reduce the number of required FRM samplers nationally, a divestment needed to generate operational resources to stimulate deployment of continuous mass samplers.

Many of the proposals in this document require additional work before formal guidance can be completed. Some of the additional work includes increasing the number of sites with collocated FRM and continuous samplers in order to characterize relationships between sampling methods and the spatial extent of those relationships. Such characterization is necessary for initial and ongoing integration of the continuous monitors into the entire PM_{2.5} mass network. The final section of this document lists the areas requiring additional work.