



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Office of Air Quality Planning and Standards  
Research Triangle Park, North Carolina 27711

May 18, 1998

MEMORANDUM

SUBJECT: PM<sub>2.5</sub> Site Types and Sampling Frequency During CY-99

FROM: William F. Hunt Jr. /s/ David Mobley for William F. Hunt, Jr.  
Director, Emissions, Monitoring,  
and Analysis Division (MD-14)

TO: Acting Director, Office of Environmental Measurement and Evaluation, Region I  
Director, Division of Environmental Planning and Protection, Region II  
Director, Environmental Services Division, Region III  
Director, Air, Pesticides, and Toxics Management Division, Region IV  
Director, Air and Radiation Division, Region V  
Acting Director, Multimedia Planning and Permitting Division, Region VI  
Director, Environmental Services Division, Region VII  
Director, Air Program, Region VIII  
Director, Air Division, Region IX  
Director, Office of Air Quality, Region X

In my April 9, 1998 memorandum to you, I outlined the initial EPA guidance on daily PM<sub>2.5</sub> sampling frequency. Although the nominal sampling requirement for all other SLAMS is once in 3 days, several Regions have expressed interest in allowing their States to sample less frequently at some sites through CY-99. This follow-up memo will address the sites which may sample less than once in 3 days during 1998 and 1999.<sup>1</sup> In order to address this issue, it is helpful to review a few basic points regarding the accelerated deployment of the PM<sub>2.5</sub> network, and the minimum regulatory requirements for SLAMS. This discussion is first presented in a question and answer format and is then summarized in a convenient table. The bottom line is that the vast majority of sites deployed during 1998 are intended for compliance monitoring; they will have PM<sub>2.5</sub> FRMs and be called SLAMS, and they must sample a minimum of once in 3 days through CY-99. Some FRM sites, however, may be called special purpose monitors (SPM) and they can

---

<sup>1</sup>This document contains EPA guidance and, therefore, does not of itself establish or affect legal rights or obligations. It does not establish a binding norm and it is not finally determinative of the issues addressed. The preliminary interpretations contained herein will not become binding until the Agency takes final action through rulemaking applying this guidance in particular cases.

sample less frequently. The details are presented in the Questions and Answers. You will find this information useful for your review and approval of the PM monitoring network description.

During the middle part of 1999, our office will issue revised guidance on PM<sub>2.5</sub> sampling frequency which will be based on an evaluation of all available measurement data and operational experience from the PM<sub>2.5</sub> monitoring network. The Regional Offices can then work with the States to assess the appropriate SLAMS or SPM site types and PM<sub>2.5</sub> sampling frequency for subsequent years, in accordance with the monitoring regulations.

If you have any questions, you may contact Neil Frank at (919) 541-5560.

#### Attachments

cc: Deputy Director, Office of Ecosystem Protection, Region I  
Director, Division of Environmental Science and Assessment, Region II  
Director, Air Protection Division, Region III  
Director, Science & Ecosystems Support Division, Region IV  
Director, Air, RCRA, and Toxics Division, Region VII  
Director, Office of Environmental Assessment, Region X  
Regional Office PM Monitoring Contacts  
J. Bachmann  
L. Byrd  
T. Curran  
N. Frank  
D. Guinnup  
B. Harnett  
K. Martin  
D. Mobley  
R. Ossias, OGC  
J. Paisie  
M. Prosper, OGC  
R. Scheffe  
J. Seitz  
S. Shaver  
I. Spons  
J. Vandenberg (NHEERL)  
J. Vickery (NERL)  
L. Wegman

## **Questions and Answers about PM<sub>2.5</sub> Site Types and Sampling Frequency Through CY-99**

### **1. What types of monitoring sites will be established during 1998?**

Compliance monitoring is the principal purpose for sites deployed during 1998. These sites will begin operation on or before December 31, 1998 to obtain a full year of regulatory data collection during calendar year 1999. Most monitors will be established at core sites, along with some monitoring at population-oriented hot spot locations. "Hot-spot" monitoring generally refers to those sites that are placed in locations that may have potential violations of the 24-hour NAAQS. States that are planning to use a spatial averaging approach should deploy additional sites as early as possible in their network. The next priority includes sites to depict regional transport/background concentrations, chemical speciation, hourly concentrations, and other special purpose monitoring.

### **2. When are SLAMS sites required?**

A minimum number of sites must be identified as SLAMS for sampling in 1999.<sup>1</sup> This includes the sites that will sample everyday as described in my April 9, 1998 memorandum. All other SLAMS as required by part 58 regulations (850 nationwide) must be in operation by January 1, 2000. The States are encouraged to deploy their required SLAMS network as soon as practical.

### **3. What sites should be initially called SLAMS?**

Sites that will sample everyday (in accordance with the April 9, 1998 memorandum) should be designated as SLAMS by December 31, 1998. Other FRM monitoring sites (including those that receive the waiver) should also be initially called SLAMS, if they are believed to have potential violations of the NAAQS, or are intended to satisfy the minimum regional background or transport requirements. It is important that all sites whose data are intended for making comparisons to the NAAQS satisfy all part 58 requirements including: monitoring methodology, siting, quality assurance, and operating schedule. All other sites may be called SPMs which are not required to follow these same requirements.

During the first network review in 1999, the site-type status of all PM<sub>2.5</sub> monitoring sites should be evaluated and sites should be reclassified as needed. The required number of SLAMS must be established by the end of 1999.

### **4. What is the difference between required and supplementary sites in the site allocation tables of the FY-98 grant guidance?**

---

<sup>1</sup>Section 58.23 says within 1 year after September 16, 1997, at least one required core PM<sub>2.5</sub> SLAMS site in each MSA with population greater than 500,000, plus one site in each PAMS area must be in operation. Within 2 years after September 16, 1997 all other required SLAMS, including all required core SLAMS must be in operation. Consistent with data-collection requirements for PM NAAQS purposes, EPA interprets the term "year" to encompass a full calendar year (i.e., deadlines are December 31, 1998 and December 31, 1999).

The required core and non-core sites represent the minimum number of SLAMS as specified by the regulations. The supplemental sites are additional sites allocated to each State to supplement the minimum network. These may become SLAMS or SPMs, as agreed upon by the EPA Regional Office and the State or local agency. The 1998 site allocations, however, are not subdivided into required and supplemental sites. The States should deploy their SLAMS as soon as practical.

#### **5. What sites should be called core sites?**

If the site is representative of at least a neighborhood scale, and it is population-oriented, it should be called a core site. Population-oriented micro and middle scale sites that are each representative of many locations in the monitoring area may also be called a core site. The core designation applies to SLAMS (including NAMS) and SPMs.

#### **6. In the site allocation tables of the FY-98 grant guidance, what is the difference between “core sites” and “non-core sites”?**

The term “core sites” in these tables represent the minimum number of core SLAMS required by the regulations in metropolitan areas with a population greater than 200,000. The term “non-core sites” in these tables represent the minimum number of additional SLAMS sites required for each State. These are in addition to the one minimally required background and transport site. The “non-core sites” is somewhat of a misnomer, because these sites may be used by the State to satisfy any SLAMS monitoring objective. The preference is for these sites to be core sites, but they may also represent population-oriented hot spot locations or regional transport/background.

#### **7. What sites should sample everyday through 1999?**

The sites established in accordance with the April 9, 1998 memorandum must sample everyday through 1999.

Specifically this includes one or more core SLAMS:

- \* In each large metropolitan area (population greater than 1 million),
- \* In each medium metropolitan area (population between 500,000 and 1 million) without a PM<sub>2.5</sub> CAC analyzer,
- \* In each PAMS area, collocated with a PAMS site during June-August

and, daily sampling is encouraged at one or more SLAMS:

- \* In monitoring areas where violations of a controlling 24-hour PM<sub>2.5</sub> NAAQS are anticipated during seasons of the highest PM<sub>2.5</sub> concentration.

## **8. What sites should sample at least every third day through 1999?**

All SLAMS are required to sample a minimum of every third day. Although the regulations allow the Regional Administrator to waive this requirement for SLAMS<sup>2</sup>, this waiver must be in accordance with EPA guidance. It is very difficult to issue this guidance without actual PM<sub>2.5</sub> data to show sample-to-sample variability of PM<sub>2.5</sub> concentration and operational experience of the FRMs to predict data capture. Therefore, this guidance cannot be prepared at this time, and the Regions should not waive the sampling frequency at designated SLAMS sites for sampling through 1999.

By the time the first annual network review is conducted, additional guidance on sampling frequency will be available. This will permit the Regions to evaluate sampling frequency for current or planned SLAMS sites. This guidance is likely to say that waivers will be based on recorded PM<sub>2.5</sub> data and will apply to: (a) seasons with low concentrations relative to the 24-hour NAAQS, for example, during the summer in a wood smoke area, and (b) an entire year for sites with low annual average concentrations (e.g. <10-12 µg/m<sup>3</sup>). Other considerations may include: (c) demonstration of 75% FRM data capture during all quarters to ensure calculation of a valid annual average, and (d) availability of data from a continuous analyzer with a demonstrated relationship to the collocated FRM.

## **9. What sites may sample every sixth day?**

Any SPM may sample according to any operating schedule, including those that use a FRM/FEM. A minimum schedule of once in six days is suggested to facilitate the estimation of valid quarterly averages and valid annual average concentrations. FRM/FEM sites that will sample once in six days through 1999 (including seasonal sampling) should be classified as SPMs. These can be “low concentration” sites that are expected to satisfy conditions (a) and (b) described in the answer to question 8. Regardless of site status in 1999, all population-oriented FRM sites that sample at least once in six days and produce three years of data with 75% data capture are eligible for comparison to the NAAQS. This is because one in 6-day sampling may be approved for some SLAMS in accordance with future guidance; the SPMs may satisfy the approved sampling frequency for SLAMS, or the status of these sites may be upgraded to SLAMS during the annual network review.

---

<sup>2</sup>§58.13 says that “a 24-hour sample must be taken a minimum of every third day for all other SLAMS . . . except when exempted by the Regional Administrator in accordance with forthcoming EPA guidance. During periods for which exemptions to every third day or every day sampling are allowed for core PM<sub>2.5</sub> SLAMS, a minimum frequency of one in 6-day sampling is still required. However, alternative sampling frequencies are allowed for SLAMS sites that are principally intended for comparison to the 24-hour NAAQS. Such modifications must be approved by the Regional Administrator.”

### Sampling Frequency at SLAMS and SPMs through 1999

Sampling Frequency	Types of Sites Subject to Sampling Frequency	
	As per 40 CFR § 58.13 and part 58 Appendix D	As per Guidance Memoranda Applicable until Jan 1, 2000
Daily	At least 2 core PM <sub>2.5</sub> sites in each MSA with population > 1M  ( At least 1 in 3 if collocated with continuous analyzer in priority 2 areas)	At least 1 core PM <sub>2.5</sub> site in each MSA with population > 1M  ( At least 1 in 3 if collocated with continuous analyzer in priority 2 areas)
	At least 2 core PM <sub>2.5</sub> sites in each MSA with population between 500K and 1M  (At least 1 in 3 if collocated with continuous analyzer)	At least 1 core PM <sub>2.5</sub> site in each MSA with population between 500K and 1M  (At least 1 in 3 if collocated with continuous analyzer)
	1 core PM <sub>2.5</sub> site in each PAMS area (daily sampling year round)	1 core PM <sub>2.5</sub> site in each PAMS area (Daily sampling June-Aug; at least 1 in 3 Jan-May and Sept-Dec)
	1 site in areas suspected to have conc > 24-hr PM <sub>2.5</sub> NAAQS  (daily sampling encouraged during seasons of high concentrations, otherwise at least 1 in 3)	1 site in areas suspected to have conc > 24-hr PM <sub>2.5</sub> NAAQS  (daily sampling encouraged during seasons of high concentrations, otherwise at least 1 in 3)
1 in 3	all other SLAMS	all other SLAMS
1 in 6	SLAMS with RO waiver*	SPMs**
Any	SPMs**	

\* In accordance with future EPA guidance

\*\* Status of sites is examined during annual network review