



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

JUL 27 2016

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: National Performance Audit Program, PM_{2.5}, PM_{10-2.5}, and Lead Performance Evaluation Program Implementation Decision Memorandum for Calendar Year 2017

FROM: Richard A. Wayland, Director *Richard A. Wayland*
Air Quality Assessment Division (C304-02)

TO: Air Division Directors

This is notification to the Air Division Directors concerning the implementation of the PM_{2.5} Performance Evaluation Program (PM_{2.5}-PEP), the PM_{10-2.5} Performance Evaluation Program (PM_{10-2.5}-PEP), the Lead Performance Evaluation Program (Pb-PEP) and the National Performance Audit Program (NPAP). This memorandum is our annual follow-up to provide monitoring organizations time to make an informed decision whether to implement these performance evaluations or to approve a redirection of a State and Tribal Assistance Grant (STAG) to the U.S. Environmental Protection Agency. If redirection is chosen, the EPA will implement these audit activities as associated program support.

There are two options for satisfying this requirement: self-implementation of adequate and independent audits or the EPA-implementation of PM_{2.5}-PEP, PM_{10-2.5}-PEP, Pb-PEP and/or NPAP using STAG grant funds. We request that each monitoring organization under your jurisdiction decide by September 9, 2016, for the following calendar year (CY) 2017 implementation:

- whether they will implement the PM_{2.5}-PEP themselves,
- whether they will implement the Pb-PEP themselves, and
- whether they will implement the NPAP themselves.

A "no" to any answer will indicate that the monitoring organization, for CY 2017, approves the redirection of fiscal year (FY) 2017 STAG funds to the EPA for federal implementation for the program marked "no." Attachment 1 provides more background on the programs and their costs. The attachment does not contain all the details of the programs but provides the highlights. Monitoring organizations considering implementation of these programs should review the program guidance found on the specific PM_{2.5}-PEP, PM_{10-2.5}-PEP, Pb-PEP and NPAP links on the Ambient Monitoring Technical Information Center (AMTIC)¹. In addition, the NPAP attachment has been revised to include language that distinguishes the NPAP audit from the annual performance evaluation in order to ensure one audit is not substituted for the other. The NPAP audit and the annual performance evaluation are two distinct programs in the ambient air quality assurance regulations (40 CFR Part 58 Appendix A).

¹ website: <https://www3.epa.gov/ttn/amtic/npepqa.html>

Although the quality assurance (QA) requirements for PM_{10-2.5} were removed from the Appendix A regulation in 2016, EPA will continue to perform a percentage of PM_{10-2.5}-PEP at NCore sites when the sites are visited for a PM_{2.5} PEP audit. Since the PM_{10-2.5} will be implemented primarily at the NCore sites, and the PEP must audit all PM_{2.5} sites in a primary quality assurance organization (PQAO) minimally every 6 years, audits of PM_{10-2.5} will occur at a minimal frequency. In addition, since the PM_{10-2.5}-PEP audit can also count for a PM_{2.5}-PEP audit, the cost of the PM_{10-2.5}-PEP audit will be reduced (see Table 1) to account for multiple uses and the fact that many of the implementation expenses can be shared. It is also not included in Attachment 2 for monitoring organization self-implementation decisions.

Attachment 2 provides the information we would like to obtain from each monitoring organization. Please have your monitoring organizations fill out Attachment 2 and return to your regional monitoring staff.

NOTE: As part of the grant allocation process, the OAQPS will propose that 2017 STAG funds be redirected to OAQPS for all monitoring organizations that did not self-implement the PEP or NPAP programs in CY 2016. This includes those organizations who, by September 9, 2016, declare their intent to perform the work in CY 2017. If those monitoring organizations demonstrate their capability to implement the PM_{2.5}-PEP, Pb-PEP and NPAP to the EPA Region by October 1, 2016, the redirected funds will be distributed back to the monitoring organization. This process will ensure that the PEP and NPAP programs will be federally-implemented for those organizations planning on implementing the PEP and NPAP but, for some reason, have encountered implementation delays.

If you have any questions on the PEP or NPAP programs, please contact Dennis Crumpler, PM-PEP coordinator (919) 541-0871, Mark Shanis, NPAP coordinator (919) 541-1323, or Greg Noah Pb-PEP coordinator (919) 541-2771.

Attachments (2)

Attachment 1

Background

The PM_{2.5}-PEP, Pb-PEP and NPAP are performance evaluations, which are a type of audit where quantitative data are collected independently in order to evaluate the proficiency of an analyst, monitoring instrument or laboratory. The programs:

- Allow one to determine data comparability and usability across sites, networks, instruments and laboratories.
- Provide a level of confidence that monitoring systems are operating within an acceptable level of data quality so data users can make decisions with acceptable levels of certainty.
- Verify the precision and bias estimates reported by the monitoring organizations.
- Assure the public of non-biased assessments of data quality.
- Provide a quantitative mechanism for the EPA to defend the quality of data.
- Provide information to monitoring organizations on how they compare with the rest of the nation, in relation to the acceptance limits, and to assist in corrective actions and/or data improvements.

PM_{2.5}-PEP Definitions of Adequate and Independent

PM_{2.5}-PEP definitions of adequate and independent, and the consequential implementation requirements, have been previously provided in a memorandum sent to the Regional Air Program Managers for Ambient Monitoring and Air Monitoring Quality Assurance Contacts. The attachment provided detailed guidance for determining the independence and adequacy of monitoring organization programs proposing to assume their PM_{2.5}-PEP responsibilities and can be found on AMTIC¹. The following major elements are summarized below.

Adequate - Adequate for the PM_{2.5}-PEP is described in 40 CFR Part 58 Appendix A Section 3.2.4.

Primary quality assurance organizations (PQAO) with 5 or less PM_{2.5} monitoring sites are required to have 5 valid audits per year distributed across the 4 quarters; PQAO with greater than 5 sites would be required to have 8 valid audits per year distributed across the 4 quarters. The EPA requires:

- One hundred (100) percent completeness (meaning whatever it takes to get 5 or 8 valid samples).
- All samplers subject to an audit within 6 years.

Independent - The following definition comes directly from the 1998 PEP Implementation Plan, found on AMTIC at <http://www.epa.gov/ttn/amtic/pmpep.html>.

***Independent assessment** - An assessment performed by a qualified individual, group, or organization that is not part of the organization directly performing and accountable for the work being assessed. This auditing organization must not be involved with the generation of the routine ambient air monitoring data. An organization can conduct the PEP if it can meet the above definition and has a*

¹ <http://www.epa.gov/ttn/amtic/pmpep.html> posted 7/25/08

management structure that, at a minimum, will allow for the separation of its routine sampling personnel from its auditing personnel by two levels of management. In addition, the pre- and post-sample weighing of audit filters must be performed by a separate laboratory facility using separate laboratory equipment. Field and laboratory personnel would be required to meet the PEP field and laboratory training and certification requirements. The auditing organizations are also asked to consider participating in the centralized field and laboratory standards certification process.

Comparable - 40 CFR Part 58 Appendix A Section 3.2.4 makes reference to the fact that the monitoring organizations are responsible for performing the evaluations “...under the PEP or a comparable program.” We interpret this to mean that any PEP program that is assumed by a state, local or tribal (STL) monitoring organization will be run similarly to the federal PEP, as set out in the attachment, and will periodically be subject to performance evaluations with the federal PEP conducted within its respective EPA Region.

PM_{10-2.5}-PEP Definitions of Adequate and Independent

Adequate – following a similar pattern to the collocation requirements for PM_{10-2.5}, the PM_{10-2.5}-PEP will be implemented at a national level of aggregation by auditing 15 percent of the PM_{10-2.5} sites each year so that all sites would be audited in approximately 6 years. Most of the network is being implemented at NCore sites. However, OAQPS will include all the State and Local Air Monitoring Stations (SLAMS) monitoring sites monitoring for PM_{10-2.5} in the list for PM_{10-2.5}-PEP audits.

Independent - The following definition comes directly from the 1998 PEP Implementation Plan, found on AMTIC at <http://www.epa.gov/ttn/amtic/pmpep.html>.

***Independent assessment** - An assessment performed by a qualified individual, group, or organization that is not part of the organization directly performing and accountable for the work being assessed. This auditing organization must not be involved with the generation of the routine ambient air monitoring data. An organization can conduct the PEP if it can meet the above definition and has a management structure that, at a minimum, will allow for the separation of its routine sampling personnel from its auditing personnel by two levels of management. In addition, the pre- and post-sample weighing of audit filters must be performed by a separate laboratory facility using separate laboratory equipment. Field and laboratory personnel would be required to meet the PEP field and laboratory training and certification requirements. The auditing organizations are also asked to consider participating in the centralized field and laboratory standards certification process.*

Comparable - 40 CFR Part 58 Appendix A Section 3.2.4 makes reference to the fact that the monitoring organizations are responsible for performing the evaluations “...under the NPEP... or a comparable program.” We interpret this to mean that any PEP program that is assumed by a state, local or tribal monitoring organization will be run similarly to the federal PEP, as set out in the attachment, and will periodically be subject to performance evaluations with the federal PEP conducted within its respective EPA Region.

Pb-PEP Definitions of Adequate and Independent

Pb-PEP definitions of adequate and independent are very similar to the PM_{2.5}-PEP. The following major elements have not changed and are summarized below.

Adequate - Each year, one performance evaluation audit, as described in Section 3.4.7 of this appendix, must be performed at one Total Suspended Particulate (TSP) Pb or PM₁₀ Pb site in each PQAQ that has less than or equal to five sites and two audits at PQAQ with greater than five sites. In addition, each year, four collocated samples from PQAQ with less than or equal to five sites and six collocated samples at PQAQ with greater than five sites must be sent to an independent laboratory, the same laboratory as the performance evaluation audit, for analysis. Low volume PM₁₀ Pb-PEP was developed based on Pb-monitoring at non-source NCore sites. In 2016, the requirement for Pb monitoring at non-source NCore sites was removed and therefore low volume PM₁₀ Pb-PEP will no longer be implemented on a national level. However, any state, local or tribal organization that sets-up a low volume PM₁₀ Pb site (apart from NCore) can include that site into the 6-year rotation with high volume TSP Pb sites. The EPA requires:

- One hundred (100) percent completeness (meaning whatever it takes to get 5 or 8 valid samples).
- All samplers subject to an audit within 6 years.

More details on the criteria are found in the Pb-PEP Implementation Plan.²

Independent - The following definition comes directly from the 2009 Pb-PEP Implementation Plan, found on AMTIC.

***Independent assessment** - An assessment performed by a qualified individual, group, or organization that is not part of the organization directly performing and accountable for the work being assessed. This auditing organization must not be involved with the generation of the routine ambient air monitoring data. An organization can conduct the Pb-PEP if it can meet this definition and has a management structure that, at a minimum, will allow for the separation of its routine sampling personnel from its auditing personnel by two levels of management, as illustrated below. In addition, the sample analysis of audit filters must be performed by a separate laboratory facility using separate laboratory equipment. Field and laboratory personnel would be required to meet the Pb-PEP audit field and laboratory training and certification requirements. The monitoring organizations will be required to participate in the centralized field and laboratory standards certification and comparison processes to establish comparability to federally implemented programs.*

Comparable - 40 CFR Part 58 Appendix A Section 3.4.7 makes reference to the fact that the monitoring organizations are responsible for performing the evaluations “...under the NPEP... or a comparable program.” We interpret this to mean that any Pb-PEP program that is assumed by a state, local or tribal monitoring organization will be run similarly to the federal Pb-PEP, as set out in the attachment, and will periodically be subject to performance evaluations with the federal Pb-PEP conducted within its respective EPA Region.

² <http://www.epa.gov/ttn/amtic/pbpep.html>

NPAP Definitions of Adequate and Independent

Adequate - The following is a definition of adequate for NPAP program implementation as promulgated in 40 CFR part 58 Appendix A Section 3.1.3 and as detailed in this and other posted NPAP implementation guidance documents:

- Performing audits of the primary monitors at 20 percent of monitoring sites per year, and 100 percent of the sites every 6 years.
- Developing a delivery system that will allow for the audit concentration gasses to be introduced to the probe inlet where logistically feasible.
- Using audit gases that are verified against the NIST standard reference methods or special review procedures and validated annually for CO, SO₂ and NO₂, and at the beginning of each quarter of audits for O₃.
- Utilize an audit system equivalent to the federally implemented NPAP audit system and is separate from equipment used in annual performance evaluations. If this system does not generate and analyze the audit concentrations, as the national system does, its equivalence to the national system must be proven to be as accurate as the national system under a full range of appropriate and varying conditions (see validation/certification).
- Perform a whole system check by having the NPAP system tested against an independent and qualified EPA lab, or equivalent. The national systems are checked this way by Regions 2 and 7 and Research Triangle Park (RTP) at least once every 2 years.
- Evaluate the system with the EPA NPAP program through collocated auditing at an acceptable number of sites each year (at least one for an agency network of five or less sites; at least two for a network with more than five sites). The comparison tests results would have to be no greater than 5 percent different, per point, for ozone and 7 percent different, per point, for NO₂, SO₂ and CO from the EPA NPAP results.
- Incorporate the NPAP in the PQAO's quality assurance project plan.
- Be subject to review by independent, EPA-trained personnel.
- Participate in initial and update training/certification sessions documented in uniform, EPA developed checklists and written exams, and certified by EPA-NPAP trained execution-experienced EPA personnel, who have themselves been certified by participating in the latest annual training.

Independence - Independence is proposed in guidance using the PEP 1998 definition with minor wording revisions for NPAP as written below:

Independent assessment - *An assessment performed by a qualified individual, group or organization that is not part of the organization directly performing and accountable for the work being assessed. This auditing organization must not be involved with the generation of the routine ambient air monitoring data. An organization can conduct the NPAP if it can meet the definition and has a management structure that, at a minimum, will allow for the separation of its routine sampling*

personnel from its auditing personnel by two levels of management. Independent for NPAP audits also requires a second, independent set of equipment and standards. A self-implementing agency may not use the same system they use for their annual audits. The auditor must not be the same auditor who audited the site for the annual audit. The same audit must not be reported for both the annual and NPAP (national) audit for a site.

Comparable - 40 CFR Part 58 Appendix A Section 2.4 makes reference to the fact that the monitoring organizations are responsible for performing the NPAP and must meet the adequacy requirements found in the appropriate Appendix A sections (section 3.1.3). We interpret this statement to mean that any NPAP program that is assumed by a state, local or tribal monitoring organization will be run similarly to the federal NPAP and will periodically be subject to performance evaluations with the federal NPAP conducted within its respective EPA Region.

Comparability is ensured by training requirements for audit and the EPA audit oversight personnel:

Participation in annual OAQPS remote training and hands-on training at either OAQPS-sponsored or Regional-sponsored training activities. Remote sessions will be documented by remote session notes. Hands-on sessions are documented by checklists and written exams, administered and initialed by EPA-trained EPA personnel to help insure equivalence to EPA-trained auditors. The hands-on sessions can be provided to a self-implementing organization's audit staff at the annual side-by-side certifications of the state/other organization's audit systems by the EPA Regions.

Notes Related to the 20 Percent Auditing Requirement

Note 1: The number, 20 percent, is based on the approximate total number of sites in the United States with ozone monitors. The EPA assumed that since ozone was the largest gaseous criteria pollutant monitoring network, estimating resources needed to audit 20 percent of this network would allow for successful auditing of the other three gaseous pollutants. As of about 4-5 years ago, the total number of ozone monitors was about 1,000. Our program implementation record has proven that we can audit 1,000 sites in about 5 years, despite having audit staff from some Regions diverted from the program for national disasters, such as hurricanes, oil spills, other hazardous events, etc. As regulations and standards change, the number of sites that need to be audited may fluctuate.

Note 2: The Code of Federal Regulations (CFR) has two separate performance evaluation assessment requirements, not just one. They are in 40 CFR Part 58 Appendix A Section 3.1.2, the Annual Performance Evaluation and the NPAP program, 40 CFR Part 58 Appendix A Section 3.1.3 and should not be construed as the same program.

Program Costs

The OAQPS has consulted with each EPA Regional PEP/NPAP Program Lead to evaluate program costs. In the past, the EPA used national estimates developed in the implementation plans to derive per-site costs. Due to differences in labor rates and travel requirements in each Region, these cost estimates were not always equitable. In addition, the costs never included depreciation of equipment or included all of the fixed costs needed by OAQPS to keep the program operating. The equipment in the PM_{2.5}-PEP program is now old enough that attrition must be addressed on an annual basis. The PM_{2.5}-PEP and Pb-PEP program will include a \$600 per sampler depreciation cost (10-year depreciation). This cost will then be distributed across the number of sites for auditing in each Region. An OAQPS fixed cost of

\$17,600 per Region³ will also be assessed for the technical documentation and data management support provided by the QA contractor, recertification of NIST-traceable parameter check standards, shipping and analytical services. For NPAP, the Through-the-Probe depreciation costs will be \$6,000 and the OAQPS fixed costs will be \$2,000. Table 1 represents the per-audit costs associated with each program.

Table 1 Regional Per-Audit Cost Estimates

Region	NPAP	PM_{2.5} PEP	PM_{10-2.5} PEP	Pb PEP	Comments
1*	400	2800	1400	2800	Fed Imp of NPAP
2*	400	2500	1250	2500	Fed Imp of NPAP
3	2400	2400	1200	2400	
4	1860	2200	1100	2200	
5	2000	2400	1200	2400	
6	2805	2600	1300	2600	
7	2500	2400	1200	2400	
8	2500	3000	1500	3000	
9	3000	3000	1500	3000	
10	2500	3200	1600	3200	

*NPAP costs for Regions 1 and 2 appear lower than other Regions because they are implemented by the EPA staff.

³ Costs include training, data reporting, guidance and SOP revision/development, data quality assessment and reporting, data base development/maintenance, quality control standard certifications and sample shipping.

Attachment 2

Performance Evaluation Program (PEP) and National Performance Audit Program (NPAP) Reporting Organization Implementation Decision Form for Calendar Year 2017

EPA Region	State #	State Abbreviation	PQAO

PQAO Responsible Official	
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Number of PM _{2.5} SLAMS/PAMS/SPM Sites		Number of Gaseous SLAMS/PAMS/SPM Sites; Please ID NCore Sites	
Number of Pb SLAMS/PAMS/SPM Sites		Number of PM _{10-2.5} SLAMS/PAMS/SPM Sites; Please ID Non-NCore Sites	
Number of PM ₁₀ -Pb SLAMS/PAMS/SPM Sites Please ID Non-NCore Sites			

PM _{2.5} PEP Question	(Yes or No) ³	NPAP Question	(Yes or No) ³
Do you plan to implement ¹ an adequate/independent PM _{2.5} PEP in 2017? ²		Do you plan to implement ¹ an adequate/independent NPAP in 2017? ²	

Pb-PEP Question	(Yes or No) ³
Do you plan to implement ¹ an adequate/independent Pb-PEP in 2017? ²	

1. This means the monitoring organization could implement their own adequate/independent program or participate in some other state, local or consortium-run adequate/independent program.

2. Regions must approve capability by October 1, 2016.

3. A “no” will indicate that the monitoring organization, for CY 2017, approves redirection of FY 2017 STAG funds to the EPA for federal implementation.