



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

July 21, 2017

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 2018

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, 2017, for the following calendar year (CY) 2018 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 2018, approves the redirection of fiscal year (FY) 2018 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 believes a limited number of PM_{10-2.5}-PEP sampling events at NCore sites each year will be useful for future assessments of data uncertainty. Consequently, each EPA region will be tasked to perform one PM_{10-2.5} PEP sampling event per year, at one of the NCore sites in their Region that are visited for a PM_{2.5} PEP audit. Since the PM_{10-2.5}-PEP audit can also count for a PM_{2.5}-PEP audit, many of the implementation expenses can be shared; therefore, the cost of the PM_{10-2.5}-PEP audit is reduced (see Table 1). Each monitoring organization that chooses to self-implement their PM_{2.5} PEP, and coincidentally has a NCore site in their primary quality assurance organizations (PQAO), shall follow the same convention, which means they should perform one PM_{10-2.5}-PEP audit within a calendar year.

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 Office of Air Quality Planning and Standards (OAQPS) will propose that 2018 STAG funds be redirected to OAQPS for all monitoring organizations that did not self-implement the PEP or NPAP programs in CY 2017. This includes those organizations who, by September 9, 2017, declare their intent to perform the work in CY 2018. 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, 2017, 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, or Greg Noah, NPAP and 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 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). See discussion on “Valid Samples” below.
- 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 participating auditing organizations are also required to participate in the centralized field and laboratory standards certification process to ensure comparability to federally implemented programs and ease of data entry into the Air Quality System (AQS).

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 - A monitoring agency that self-implements the PM_{2.5}-PEP will also perform one valid PM_{10-2.5}-PEP sampling event each year at a NCore site within its PQAQ. The PM_{10-2.5}-PEP sampling event will also provide a PM_{2.5} measurement, which can supply one of the values for the PQAQ’s PM_{2.5} PEP requirement.

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 participating auditing organizations are also required to participate in the centralized field and laboratory standards certification process to ensure comparability to federally implemented programs and ease of data entry into AQS.*

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.

Valid Audits

The improvement in air quality over the last 8 years has increased the incidence of daily measured concentrations that are equal to or less than the minimums to be considered valid for the purpose of bias assessments. Monitoring agencies may assume that they will not have to acquire more than 1 make up sample for the PM_{2.5}-PEP and one for each part of the Pb-PEP (independent and collocated). Make-up of PM_{10-2.5}-PEP events per se will not be necessary; however, the PM_{2.5} measurement will be subject to the one make-up event criteria. The EPA is developing a policy and procedure which may completely obviate the need for make-up of measurements that are not valid solely because of the concentration cut-off. Self-implementing agencies will be informed if the policy is adopted prior to the 2018 calendar year.

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 PQAO that has less than or equal to five sites, and two audits at PQAO with greater than five sites. In addition, each year, PQAO with less than or equal to five sites shall provide four samples from its collocated (precision) site(s) and PQAO with greater than five sites shall provide six samples from its collocated sites, all of which must be sent to the same laboratory for analysis as the (independent) performance evaluation audit. 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) from which an ambient Pb design value may be determined, must 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). Again, see the discussion on “Valid Samples” below.
- 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 ensure comparability to federally implemented programs and ease of data entry into AQS.*

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.
- Conducting the NPAP audits at a different time from the Annual Performance Evaluations (APE), preferably at least one week apart. The national NPAP program has little control over the scheduling of the APEs; however, PQAOs are encouraged not to schedule APEs within a week of the NPAP audits so quality assurance activities can be distributed across the year.
- 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 National Institute of Standards and Technology (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 O₃ and 7 percent different, per point, for NO₂, SO₂ and CO from the EPA NPAP results.
- Incorporate the NPAP in the PQAQ'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.

To ensure comparability of the audits, NPAP training requirements have been developed and are referenced in the NPAP Quality Assurance Project Plan (QAPP) in Section A8. Initial training and certification are described in detail for EPA staff, contractors and self-implementing PQAOs in the QAPP.

NPAP requires that 20 percent of the monitoring sites in a PQAO are audited each year. All monitoring sites across the PQAO must be audited over the course of 6 years; however, if auditing at the 20 percent rate, an entire PQAO could be audited in only 5 years. The 6-year time frame was chosen to allow time for the NPAP coordinators to target specific sites that should be audited on a more frequent basis. For example, a design value site or a site close to a design value may be audited on a more frequent basis to provide more data quality information without incurring an additional burden, in both cost and time, on the audit group.

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 maintain the programs operation. 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 \$1,000 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	2500	2600	1300	2600	
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 2018

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 2018? ²		Do you plan to implement ¹ an adequate/independent NPAP in 2018? ²	

Pb-PEP Question	(Yes or No) ³
Do you plan to implement ¹ an adequate/independent Pb-PEP in 2018? 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, 2017.

3. A "no" will indicate that the monitoring organization, for CY 2018, approves redirection of FY 2018 STAG funds to the EPA for federal implementation.