



Ambient Air Monitoring Group – Quality Assurance

Office of Air Quality Planning and Standards, Air Quality Assessment Division, U.S. EPA, RTP, NC



Quality Assurance:

- An integrated system of management activities involving planning, implementation, documentation, assessment, reporting, and quality improvement.
- Ensures a process, product, or service is of the type and quality needed and expected by the user.
- It ensures a data user or decision maker will be able to make the right decision with an acceptable degree of confidence and that data and decisions can be defended.

National QA Programs (AMTIC):

Quality Assurance Project Plans (QAPPs):

- Integrates all technical and quality aspects of a project, including planning, implementation, and assessment, and how specific QA and QC activities will be applied.
- All work funded by EPA that involves the acquisition of environmental data generated from direct measurement activities, collected from other sources, or compiled from computerized data bases and information systems is required to have an approved QAPP before work on a project can commence.
- The QAPP requirements apply to all environmental programs or projects funded by EPA that acquire, generate, or compile environmental data including work performed through contracts, work assignments, delivery orders, task orders, cooperative agreements, interagency agreements, State EPA agreements, State, local and Tribal Financial Assistance/Grants, Research Grants, and in response to statutory or regulatory requirements and consent agreements.

Technical Systems Audits (TSAs):

- A systematic and objective examination of an organization's program to assess its compliance with established regulations and the organization's QAPP governing the collection, analysis, validation, and reporting of ambient air quality data.
- Opportunity to highlight areas within an organization where it has shown innovation and improvement, identify areas where programs can be strengthened, and provide feedback.
- Could include:
 - Document Reviews
 - Data and Validation Review
 - Interviews
 - Observations
 - Site Evaluations
 - Analytical Laboratories
 - Maintenance and Repair Shops
 - Quality Assurance Team, Lab, and/or Equipment

Data Certification:

- Monitoring agencies are required to submit per [40 CFR §58.15](#) every May 1st for the previous years data.
- Only data collected by Federal Reference Methods (FRM), Federal Equivalent Methods (FEM), and Approved Regional Methods (ARM) monitors at SLAMS and SPM monitoring stations that meet 40 CFR Part 58 Appendix A must be certified. This refers to data for CO, NO₂, SO₂ (hourly and 5-minute), O₃, Pb, PM₁₀, PM_{10-2.5}, and PM_{2.5}.
- Certification indicates that the monitoring agency has loaded all its data (ambient/raw data, quality control data, and quality assurance data) for the year, the validation process was completed, and the data is complete and accurate to the best of their knowledge.



National Performance Evaluation

Program (NPEP):

- Independent assessment to estimate total measurement system bias and help EPA evaluate data comparability among Primary Quality Assurance Organizations (PQAOs).
- Quantitative data are obtained independently and compared with routinely obtained data to evaluate the proficiency of an analyst or a laboratory and to evaluate instrument performance.
- Includes:
 - [National Performance Audit Program \(NPAP\) – Gaseous \(SO₂, NO₂, CO, O₃\)](#)
 - [PM_{2.5} Performance Evaluation Program \(PEP\)](#)
 - [Pb PEP](#)
 - [Pb Analysis Audits](#)

Standard Reference Photometer (SRP):

- Used to certify the State, Local, and Tribal (SLT) monitoring organizations' ozone primary and transfer standards to provide quality and comparability for the data.
- Establishes traceability among the ozone standards with NIST.

Protocol Gas Verification Program (PGVP):

- Independent verification program of gas standards sold by Specialty Gas Producers that are used in the national ambient air monitoring networks. This program allows EPA to assess the accuracy of the gas standards used for NAAQS compliance monitoring.
- These gases are used in quality control activities (e.g., calibrations, audits, etc.) to ensure ambient air measurements of CO, SO₂, NO, and NO₂ are traceable to the International System of Units (SI).
- A service provided by the EPA to help state, local, and tribal monitoring agencies judge the quality of the calibration gases used in their networks.

Proficiency Testing (PT):

- Proficiency testing serves as an independent assessment for evaluating systematic measurement bias.
- Proficiency testing is a component of the following EPA programs: NATTS, PAMS, PM_{2.5} CSN ([Mega PE](#), [Round Robin](#)).

CFR References:

- [40 CFR Part 58 Appendix A – Ambient Air Monitoring Quality Assurance Requirements](#)
- [40 CFR Part 58 Appendix E – Probe and Monitoring Path Siting Criteria](#)
- [40 CFR Part 50 Appendix D – Standard Reference Photometer \(SRP\) for O₃](#)

Guidance Documents and Training:

- [General QA Training: APTI-470/AMBM208-SI/SI-470](#)
- [AQS](#)
- [QA Handbook Vol II & Validation Templates & T640/T640x](#)
- [Conducting TSAs Guidance Document, PM TSA Checklists \(MetOne BAM 1020, MetOne BAM 1022, Thermo TEOM-FDMS, Teledyne T640/T640x\)](#)
- [O₃ Transfer Standards Technical Assistance Document \(TAD\)](#)
- [Best Practices for Review and Validation of Ambient Air Monitoring Data, Data Verification and Validation Checklist](#)
- [QAPP Standard/Requirements, QAPP Guidance, QAPP Writing Guide, QAPP Checklist, QAPP Development Tool, SOP Guidance, NATTS Model QAPP, PAMS Model QAPP](#)
- [Ambient Air Monitoring Assessments \(Dashboards\), PAMS Dashboard, Single Point Precision and Bias Report](#)
- [Quality Indicator Assessment Reports including 504 QA Data Assessment Tool & DASC](#)
- [Data Analysis and Reporting Tool \(DART\)](#)
- [Residence Time Determination Worksheet](#)

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