



**Welcome to the 2024
National Ambient Air Quality
Monitoring Conference!**

QA Training Session

QA Training – Morning Session



8:30 AM – 9:00 AM	Welcome and QA 101	Greg Noah, USEPA, OAQPS
9:00 AM – 10:00 AM	Data Validation and AQS Coding	Keith Hoffman, USEPA, Region 3
10:00 AM – 10:30 AM	Break	
10:30 AM – 11:00 AM	Weight of Evidence Explanation and Examples	Brannon Seay, USEPA, OAQPS
11:00 AM – 12:00 PM	Reviewing and Assessing NATTS/PAMS Data	Shannon Hammaker, Battelle
12:00 PM – 1:30 PM	Lunch	

National Ambient Air Monitoring Conference, New Orleans, August 2024

QA Training – Afternoon Session



1:30 PM – 2:30 PM	PM Rule Changes for QA (Appendices A, B, and E)	Greg Noah, USEPA, OAQPS
2:30 PM – 3:00 PM	New Quality Assurance Project Plan Standard	Verena Joerger, USEPA, Region 3
3:00 PM – 3:30 PM	Break	
3:30 PM – 4:30 PM	Ozone Transfer Standard Guidance Training	Scott Hamilton, USEPA, Region 5 Allison Smalley, USEPA, Region 5
4:30 PM – 5:00 PM	Developing a Training Plan	Rene Bermudez, South Coast Air Quality Monitoring District
5:00 PM – 5:30 PM	Questions and Discussion	All Trainers and Participants

National Ambient Air Monitoring Conference, New Orleans, August 2024



We want to answer your questions!

Three ways to ask and get answers...

- There *should* be time following each presentation to ask questions to the presenter.
- Post a question under the session in the Whova app. The training team will answer them over the course of the session.
- We have half an hour at the session for Q&A if you want to save it.
- Or, catch your favorite presenter following the session or later during the conference. **Warning: Don't get in between me and a bowl of gumbo for dinner! 😊**

QA Training – QA Poster



Ambient Air Monitoring Group – Quality Assurance

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

Quality Assurance:

- The primary purpose of a QA program is to ensure that monitoring data are accurate, reliable, and consistent.
- Ensures a clear, consistent, and uniform approach to the type and quality of data collected for the use.
- It ensures a data user at a decision point will be able to trust the data and that data are available to the user.

National QA Programs (NATQP):

Quality Assurance Project Plans (QAPPs):

- QAPPs are developed and approved by the EPA, and they describe the QA activities that will be used.
- All states and tribes that have the responsibility of monitoring air quality are required to have an approved QAPP for each monitoring site.
- The QAPP requirements apply to all monitoring sites, regardless of the type of monitoring data collected, including real-time data, high resolution data, and other data.
- QAPPs are developed in consultation with the EPA, and they describe the QA activities that will be used.

Technical Systems Audits (TSAs):

- A TSA is an on-site audit of the monitoring system to ensure that the system is operating properly and that the data are accurate and reliable.
- TSAs are conducted by EPA, and they describe the QA activities that will be used.

Data Certification:

- Monitoring agencies are required to submit data for certification to EPA.
- EPA will review the data and determine if they are accurate and reliable.
- EPA will issue a certification letter to the monitoring agency.

EPA QA Contacts:

<p>QAOPS</p> <ul style="list-style-type: none"> • Dong Huh, QA Program Lead, QAOPS, EPA, RTP, NC • Tom Huh, QA Program Lead, QAOPS, EPA, RTP, NC • Tom Huh, QA Program Lead, QAOPS, EPA, RTP, NC • Tom Huh, QA Program Lead, QAOPS, EPA, RTP, NC • Tom Huh, QA Program Lead, QAOPS, EPA, RTP, NC 	<p>R2</p> <ul style="list-style-type: none"> • Virginia: Michael, NHEA, NHEA, EPA, EPA, EPA • Iowa: NHEA, NHEA, NHEA, EPA, EPA, EPA • Michigan: NHEA, NHEA, NHEA, EPA, EPA, EPA • Minnesota: NHEA, NHEA, NHEA, EPA, EPA, EPA • North Dakota: NHEA, NHEA, NHEA, EPA, EPA, EPA • South Dakota: NHEA, NHEA, NHEA, EPA, EPA, EPA • Wisconsin: NHEA, NHEA, NHEA, EPA, EPA, EPA • Montana: NHEA, NHEA, NHEA, EPA, EPA, EPA • Wyoming: NHEA, NHEA, NHEA, EPA, EPA, EPA • Alaska: NHEA, NHEA, NHEA, EPA, EPA, EPA • Hawaii: NHEA, NHEA, NHEA, EPA, EPA, EPA 	<p>R3</p> <ul style="list-style-type: none"> • Nevada: NHEA, NHEA, NHEA, EPA, EPA, EPA • Arizona: NHEA, NHEA, NHEA, EPA, EPA, EPA • New Mexico: NHEA, NHEA, NHEA, EPA, EPA, EPA • Colorado: NHEA, NHEA, NHEA, EPA, EPA, EPA • Utah: NHEA, NHEA, NHEA, EPA, EPA, EPA • Idaho: NHEA, NHEA, NHEA, EPA, EPA, EPA • Oregon: NHEA, NHEA, NHEA, EPA, EPA, EPA • California: NHEA, NHEA, NHEA, EPA, EPA, EPA • Washington: NHEA, NHEA, NHEA, EPA, EPA, EPA • Oregon: NHEA, NHEA, NHEA, EPA, EPA, EPA • California: NHEA, NHEA, NHEA, EPA, EPA, EPA 	<p>R4</p> <ul style="list-style-type: none"> • Texas: NHEA, NHEA, NHEA, EPA, EPA, EPA • Oklahoma: NHEA, NHEA, NHEA, EPA, EPA, EPA • Kansas: NHEA, NHEA, NHEA, EPA, EPA, EPA • Nebraska: NHEA, NHEA, NHEA, EPA, EPA, EPA • Missouri: NHEA, NHEA, NHEA, EPA, EPA, EPA • Arkansas: NHEA, NHEA, NHEA, EPA, EPA, EPA • Louisiana: NHEA, NHEA, NHEA, EPA, EPA, EPA • Mississippi: NHEA, NHEA, NHEA, EPA, EPA, EPA • Alabama: NHEA, NHEA, NHEA, EPA, EPA, EPA • Georgia: NHEA, NHEA, NHEA, EPA, EPA, EPA • Florida: NHEA, NHEA, NHEA, EPA, EPA, EPA 	<p>R5</p> <ul style="list-style-type: none"> • Vermont: NHEA, NHEA, NHEA, EPA, EPA, EPA • New Hampshire: NHEA, NHEA, NHEA, EPA, 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National Performance Evaluation

Program Audit:

- The purpose of a program audit is to evaluate the overall performance of a monitoring system.
- The audit is conducted by EPA, and it describes the QA activities that will be used.

Standard Reference Photometer (SRP):

- The SRP is used to measure the concentration of particulate matter in the air.
- The SRP is used to ensure that the data are accurate and reliable.

Proficiency Testing (PT):

- PT is used to ensure that the data are accurate and reliable.
- PT is conducted by EPA, and it describes the QA activities that will be used.

TSAs:

- TSAs are used to ensure that the data are accurate and reliable.
- TSAs are conducted by EPA, and they describe the QA activities that will be used.

Guidance Documents and Training:

- EPA provides guidance documents and training to ensure that the data are accurate and reliable.
- EPA provides guidance documents and training to ensure that the data are accurate and reliable.

Last Updated 06/20/2024

Summary of EPA National QA Programs

- Program Summaries
- Program Documentation (Regulations, SOPs, TADs)
- National and Regional Contacts
- Scan the QR Code to Access, or
- Follow the link below:
[QA Summary Poster](#)

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QA 101



Quality Assurance 101

Greg Noah
US EPA, OAQPS
Ambient Air Monitoring Group



National Ambient Air Monitoring Conference, New Orleans, August 2024

QA 101 – Why are we here?



Most likely, you are responsible for implementing some part of a quality system within EPA, a State, Local, or a Tribe.

- QA Manager
- QA Staff
- Monitoring staff who wants to know more about the quality system
- Or a community member wanting to learn about EPA's Quality System

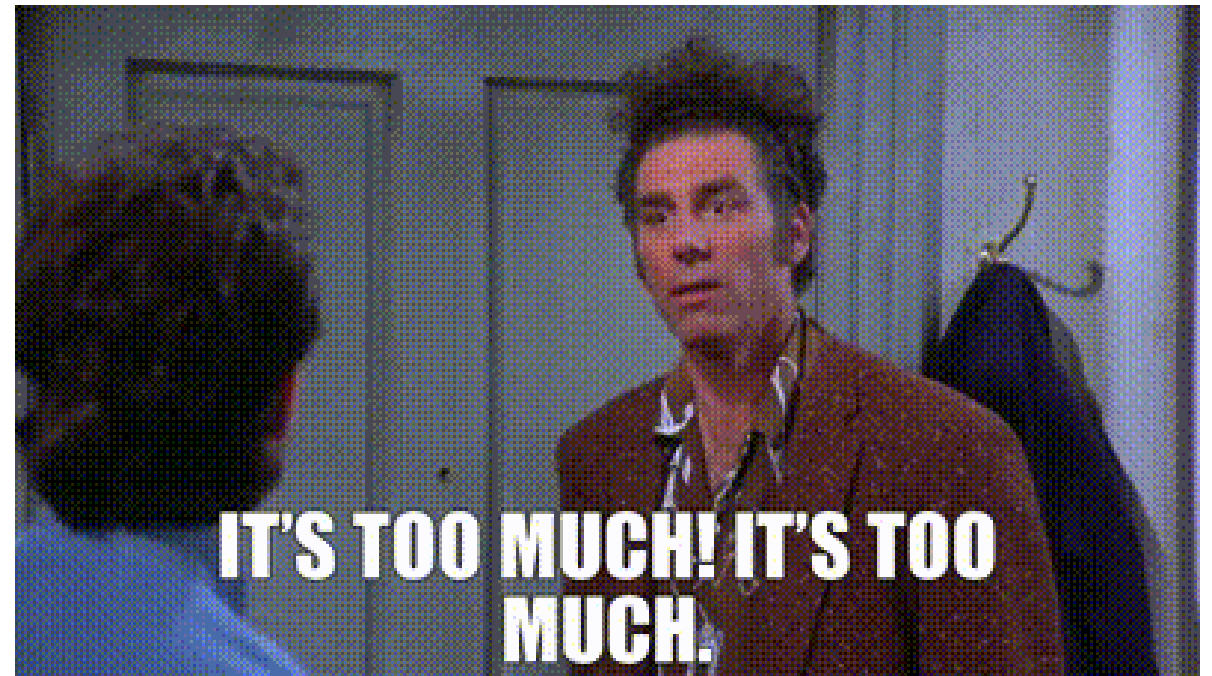


QA 101 – Summary and Key Points



Can't Cover Everything, So We'll Hit a Few Key Points

- What is QA and what are the requirements?
- Reminders on a few QA principles.
- Why is QA important?



QA 101 – Policy and Regulations



EPA Quality Policy – NEW UPDATES

[Environmental Information Quality Policy, March 20, 2024 - CIO 2105.4](#)

[Quality Assurance Project Plan \(QAPP\) Standard](#)

[Quality Management Plan \(QMP\) Standard](#)

40 CFR Part 58, Appendix A, §2.1.3

The PQAQO/monitoring organization's quality system **must** have adequate **resources** both in **personnel** and **funding** to plan, implement, assess and report on the achievement of the requirements specified in 40 CFR Part 58, Appendix A, as well as the organization's approved QAPP.

QA 101 – Policy and Regulations



40 CFR Part 58, Appendix A, §2.1

All PQAOs must develop a **quality system** that is **described and approved** in quality management plans (**QMPs**) and quality assurance project plans (**QAPPs**) to ensure that the monitoring results:

- Meet a well-defined need, use, or purpose;
- Provide data of adequate quality for the intended monitoring objectives;
- Satisfy stakeholder expectations;
- Comply with applicable standards specifications;
- Comply with statutory (and other legal) requirements; and,
- Reflect consideration of cost and economics.

QA 101 – QA Gives Us Consistency



Many resources are developed to ensure consistency...

- CFR Regulations
- Quality Policy
- Guidance Documents
- Field and Analytical Methods
- QAPPs
- SOPs

Following standardized methods, policies, and requirements allows for measurements to be representative anywhere they are made.

QA 101 – QA Is a Circular Process



Planning

Methods
QAPP
Training

Reports and Corrective Actions

Improvements based on
Data Quality Assessments
QA Reports
Audit Reports



Implementation

QAPP Implementation
Internal QC
QC Reporting

Assessments

Systems Audits
Network Reviews
Performance
Evaluations

QA 101 – Corrective Action



Corrective action is CRITICAL to the QA Process... and probably the TOUGHEST component!

Corrective action re-triggers the “plan” portion of the process again; this is continuous improvement. QA does not end.

Difficult because it requires collaboration between auditor and organization. Be persistent!

Why audit or conduct QA if we aren't going to follow-up? Imagine what that would look like...

QA 101 – Independence



For the QA Process to work successfully, QA Independence is MANDATORY!

40 CFR Part 58, Appendix A, §2.2

The QA management function **must** have sufficient technical expertise and management authority to conduct **independent oversight** and assure the implementation of the organization's quality system relative to the ambient air quality monitoring program.

Independence in QA can be difficult in small organizations; the keys are to delegate QA responsibilities to avoid conflicts of interest.

QA 101 – Who Does QA?



Only QA Staff “does QA”, true or false?

- Station operators – Level 1 data review, documentation
- Maintenance staff – Calibrations, repair, FEM/FRM compliance
- QA Auditors – TSAs, ADQs, corrective action
- Data Reviewers – Data assessments, AQS coding
- Quality Assurance Manager – Quality document development, oversight of QA program
- Monitoring Manager- Providing resources, implementing corrective action

QA 101 – Documentation



The 5 W's of Documentation

Who is performing the work? (signed and dated)

What pollutant, procedure, analyzer, calibrator? (IDs, makes/models/(Traceability!))

When is the activity occurring? (Time and date)

Where is the data being collected? (location of the site/data acquisition)

Why is the activity needed? (Be specific! Details are vital for data validation)

For example: Is it time for an annual recalibration per the SOP, or has an instrument malfunctioned? **Explain.** If the latter, what was the **specific** malfunction?

QA 101 – Documentation



One last comment on documentation...

If it's not
documented, it
didn't happen!



QA 101 – Why is QA So Important



The Success of ANY Program Starts and Ends with QA

Final Rulemaking: 40 CFR 50, Appendix F, and the Federal Implementation Plan (FEDIP) for the Final Rule: Multi-Emissions Standards for Particulate Matter

Below are the
Reference for
the Atmosphere



FEDI

On this page:

Making a Plan

- [Quality Assurance Project Plans \(QAPPs\)](#)
- [QAPP Guidance and Templates](#)

[Fact Sheet](#)
[Principle a](#)
(136.9 KB)

Final Rule: Multi-Emissions Standards for Particulate Matter Years 2027 and Later Light-Duty and Medium-Duty Vehicles

A Rule by the Environmental Protection Agency on 07/15/2015



QA 101 – When QA Fails



4. Mars Climate Orbiter

6. Amazon's AWS outage

9. Boeing 737 Max crashes

10. Lehman Brothers

8. Spanish submarine "Isaac Peral" (S-81)

During the submarine's design, a decimal point error in the displacement calculation resulted in the vessel being 75–100 tons overweight. The magnitude of the error meant that the submarine was too heavy to float and had to be completely redesigned, causing extensive delays and costing over €2 billion.

QA 101 – Questions?



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