OAQPS QA Program Update

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- Pb PEP

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- NPAP
- SRP
- Air Toxics
- PAMS
- Data Certification

Doug Jager
- PM2.5 CSN
- PGVP
- Data Assessment

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- AIRS Support
- Sensors

Greg Noah
- QA Budgets
- Technical Systems Audits
- NAAQS Pollutants
- Guidance and Regulations
To ALL of you involved in QA

- The past three years have been a test for with the COVID restrictions, remote work, and unpredictability of staff.
- We all have had to be innovative with our approach to getting the work done
- Thanks to your staff and the EPA staff and contractors for continuing to march forward and find ways to get the job done.
AA-PGVP Updates

Annual Survey System
- Historically difficult to get a high participation rate from SLTs
- Challenging to merge survey results with SLT data in AQS
- Working to migrate all functionality to AQS (phasing in through Aug 2023)
- AQS is ready to track cylinder metadata

NO$_2$ as EPA Protocol Gas Standards
- Stability Concerns for NO$_2$ (February Clarification Memo)
- ORD actively developing revised assay methodology so NO$_2$ can be designated as an EPA Protocol Gas standard
- EPA is working with NIST, VSL, BIPM, & specialty gas producers to expedite the development of new assay techniques for reactive standards like NO$_2$
Regional Assay Verification Labs (RAVL)
- Currently operating with only Region 7
- Spooling up capability in Region 4 to replace Region 2

NIST Standard Reference Materials (SRM)
- Many of the NIST SRMs we need for the AA-PGVP are currently out of stock at NIST
- AA-PGVP is not able to verify low concentration cylinder standards until this is resolved
CSN Updates

Working to Improve Flowrate Verifications Submissions to AQS

- Prior to 2015: <10% of CSN sites reported flowrate QC to AQS
- By 2016: reporting improved to ~20% of CSN sites
- 2017-2021: QC Data Completeness has plateaued:
  - URG: ~50% QC data completeness
  - SASS: ~35% QC data completeness

Updating of CSN Metadata needed

- Updating & reconciling metadata for “Sampler-ID” and “Channel #”
- AQS Fields for “Sampler-ID” and “Channel #” needed for loading flowrate verifications and associating field QC checks to analytes

Completed AQS metadata corrections needed for AQS QA-collocation records
PM$_{2.5}$ and Pb PEP - Background

- 40 CFR Part 58 appendix A; Sections 2.4; 3.3.4; and 3.4.7
- Independent assessment of Network Bias (Pb is partially independent)
  - Collects 24-hour integrated filter samples of PM$_{2.5}$ or Pb by:
    - PEP FRM Samplers collocated with Network Samplers
    - 5 samples annually if PQAO network is 5 sites or less; 8 samples if PQAOA network is greater 5 sites.
    - Responsibility for Pb-PEP samples is shared with PQAO’s collocated sites
  - 4 if network is 5 sites; 6 if more than five sites.
    - PM$_{2.5}$ Concentrations must be > 3µ/m$^3$ for AQS to include in bias assessment; Pb: 0.002 µg/m$^3$
- 10 Regions, 4 SLT/PQAOs, and one Tribe are performing the Federal PM$_{2.5}$ PEP measurements.
- 6 Regions and 2 SLT/PQAOs are performing (1 or 2) Federal Pb measurements per PQAO.
**PM$_{2.5}$ and Pb PEP - Status**

Bar chart of PM$_{2.5}$-PEP Completeness, national level: This considers all PEP events completed, regardless of concentration level (i.e., ‘invalid’ sampling events in which concs < 3 ug/m$^3$ are included here). Further, the green bar and percentages considers what we call ‘extra’ sampling events, which count PQAO annual events exceeding the required 5 or 8.

Swarmplot of PM$_{2.5}$ bias:

Annual Bias Estimates, 2016-2020:

EPA independent (A) and SLT Collocated (B). Note the impact COVID had on EPA and not SLT Collocated. Both completeness scores were low in 2021.
PM$_{2.5}$ and Pb PEP - Improvements

- Replaced the PM$_{2.5}$ PEP sampler fleet in 2020 (during the pandemic)
- Updated our PM$_{2.5}$ PEP Field SOP 2021
- Revised our PM$_{2.5}$ PEP QAPP signed May 2022; Pb-PEP QAPP in early 2023
- September 2021 Pb-PEP lab temporarily moved to Region 4 LSASD in Athens GA
- Revised Guidance for SLT Collocated Pb Site participation in PEP 2021 and 2022
- Made a systematic series of improvements to our AIRQA Website (available to all participating Regional and SLT PEP Coordinators, contract field scientists, and SLT field participants).
- By end of August updating the “Adequacy and Independence” guidance for Self-implementing SLTs
- By end of 2022 we’ll have two 6-year reports on all PEP and network precision results and associated QA data for the PM$_{2.5}$ and Pb-PEP (2016-2021)
NPAP - Background

- 40 CFR Part 58 Appendix A Sections 2.5, 3.1.2.3, and 3.1.3
  - Performing audits of 20% of the monitoring sites per year and 100% every 6 years
  - Audit concentration gases are introduced to the probe inlet
  - Using audit gases that are verified against the NIST standard reference methods or special review procedures and validated annually for CO, SO\(_2\), and NO\(_2\), and at the beginning of each quarter of audits for O\(_3\).
- Independent Assessment defined in 40 CFR Part 58 Appendix A Section 2.4.1 and 3.1.3.4
- 10 Regions and 1 SLT/PQAO are performing the Federal NPAPs.
NPAP - Status

- Sites Audited within 6 years (2016 - 2021): 6784 out of 7880 (86%)
- All Regional Offices were able to complete at least some audits in 2020 & 2021 (during the pandemic) – not a complete loss of NPAP QA
NPAP and NATTS QAPP revised and approved – June 2021
Update to the “Adequacy and Independence” guidance for self-implementing SLTs expected by end of August 2022.
New PEAT version (PEAT 3.0.0.0) is in beta testing with some of our regional offices.
Revised and approved NPAP SOP expected before the end of CY 2022
Pd scrubbers for zero air expected to be distributed to all Regional Offices by end of September 2022
NIST SRP has been in existence since 1983

Proposed Upgrades
- New updated SRP software coming soon
- New electronic module
- 4 new temperature sensors

ISO Accreditation in Progress – will update QAPP and SOP

Cross section
- 1961 value of to $1.147 \times 10^{-17}$ cm$^2$/molecule (2.1% uncertainty) to $1.1329 \times 10^{-17}$ cm$^2$/molecule (0.31% uncertainty). New value is 1.23% lower.
- Proposed implementation January 1, 2024
- Guidance documents for various aspects such as flagging are being written

The O$_3$ TAD is forthcoming
- still conducting statistical analysis on the prediction interval
Air Toxics & PAMS

• Beginning to schedule NATTS & PAMS audits – several scheduled before end of CY22

• NATTS
  – Finalized NATTS TAD Revision 4 finalized in July 2022
    • Webinars hosted on August 10 & August 16
  – NATTS Workplan Template finalized April 2022
  – Cleared back log of NATTS audit reports
  – Support contract with Battelle successfully rebid and awarded

• PAMS
  – PAMS Model QAPP finalized March 2021

• EtO
  – Conducting technical work on EtO
    • EtO Technical Webinar (4/15/21)
    • Technical Note on EtO Canister Effect (5/25/21)
    • ORD EtO Canister Background Memo (5/7/21)
Questions?