AIR MONITORING ORGANIZATION QUARTERLY AQS DATA REVIEW BY AN EPA REGIONAL OFFICE

EPA Region 1 Perspective

What Will Be Covered?

- Why perform quarterly AQS data reviews?
- What data quality parameters are evaluated?
- What AQS reports are run for the review?
- How are the data review findings summarized and communicated to the monitoring organization?
- What are the benefits of doing these reviews?

Why perform quarterly data reviews?

- EPA's Annual Commitment System (ACS) and National Program Manager (NPM) guidance "obligates" the EPA Regions to review data submitted to AQS.

FY 2017 Performance Measures

Each year, the OAR National Program Guidance identifies measures that EPA headquarters and regions use to track progress on key activities. Selected measures have specific performance targets while other measures are indicators without specific targets; both measure types track program implementation. For FY 2017, the OAR program offices, working closely with regional partners, refined its set of ACS measures for tracking air program implementation. As part of the measures review, OAR revised 12 measures, deleted two measures and created three new measures for FY 2017.

OAQPS M11	Revised	Percent of primary quality assurance organizations submitting NAAQS pollutant data, PAMS, and QA data to AQS directly or indirectly through another organization according to schedule in 40 CFR Part 58. Result is the percentage of PQAO submitting data in accordance with 40 CFR Part 58.	No	100%
OAQPS M12	Revised	Percentage of AQS quarterly data reviews completed.	No	100%

- In Region 1, this is also part of our Performance Partnership Agreements (PPA).
- 40 CFR Part 58.16 obligates States to submit this information. Its our job to ensure States meet CFR requirements.

Why perform quarterly data reviews (cont'd)?

- Provides opportunity for EPA to work with the monitoring organizations to ensure complete and high quality data are being reported.
- Provides a complete data quality summary that can be utilized during TSAs, which reduces preparation time.
- Assists us in our evaluation of annual data certifications due May 1st of each year allowing a "quick" concurrence/ nonconcurrence in AQS.

What pollutants do we review?

- Criteria pollutants: ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), lead (Pb), $PM_{2.5}$ and PM_{10}
- NOy and 5 minute SO_2

As time allows:

- PAMS and air toxics

What data quality parameters are evaluated?

- Data Completeness
- Accuracy Audits
- Precision QC Checks
- Flow Rate Verifications ($PM_{2.5}$, PM_{10})

As time allows:

- QC Control Points (Zero/Span Check)
- Multipoint Calibration Frequency
- Field Blanks ($PM_{2.5}$)

What AQS reports are run for the review?

- AMP430 (Data Completeness Report)
  - Data Completeness
- AMP251 and AMP256 (QA Raw Assessment Report, QA Data Quality Indicator Report)
  - Accuracy Audits
  - Precision QC Checks
  - Flow Rate Verifications
- AMP600 (Data Certification Report- at least once per year, in the April review, prior to May 1 cert. date)

As needed:

- AMP 350 (Raw Data Report)
  - QC Control Points (zero/span check) Frequency
  - Multipoint Calibration Frequency
- AMP 503 (Extract Sample Blank Data)
  - $PM_{2.5}$ Field Blanks

How are the data review findings summarized and communicated to the monitoring organization?

- Summary report prepared quarterly by EPA Regional Air Monitoring Team member responsible for given monitoring organization with a copy to Team Leader/ Manager. (examples to follow.)
- Report submitted to monitoring organization via email within 10 days of the end of each quarter for the previous quarter. (i.e., 4th data quarter review completed by April 10th, 10 days after State was required to put data into AQS.)
- EPA and monitoring organization discuss findings via phone call/ email.

Quarterly Report Summary Example

NITROGEN DIOXIDE
(Parameter Code 42602)

Data Completeness

Rockefeller Library: This monitor operates all year.

2015 Q1 – 95% Q2 – 96% Q3 – 97% Q4 – 90%

Accuracy Audits (*every site 1/year 25% of sites quarterly; audit levels 3-10 ≤ ± 15%, audit levels 1&2 ±1.5 ppb difference or ±15% whichever is greater*) ***EPA recommended concentrations: audit point 1 for method 574 at 0.3 ppb; method 74 at 3 ppb, audit point 2 at 38.1 ppb, and audit point 3 at 100 ppb***

Rockefeller Library: Operates all year.

- Q1 audit performed on 3/2/15 and all three audit levels (level 5-34.4 ppb, level 6-56.8 ppb, and level 7-110.2 ppb) were ≤ 15%.

AMP256 Report Annual Performance Evaluation, confidence limit for network:
Q1: lower = -4.54% upper = 3.32%

Precision QC Check (*once every two weeks; ≤ ±15%*)

Rockefeller Library: Operates all year. ***For method 74 EPA recommends a concentration of 80 ppb, if using a lower concentration continue.***

- Q1 P-checks (58.7 – 63.0 ppb) were performed within two weeks, typically every week. The precision data were all ≤ 15%; AMP256 Report 1-Point Quality Control CV = 3.25%, Bias = 2.79%

AMP256 Report 1-Point Quality Control for network:
Q1: CV = 3.23%, Bias = ±2.61%

Summary Example

Annual Certification Report (AMP600):

Only 1 of the 2 required annual flowrate checks for $PM_{2.5}$ were completed for:

09-001-1123-1
09-009-2123-2
09-009-2123-1
09-009-0027-1

Precision (AMP 251):

CO

Precision QC Check (once every two weeks; ≤ ±10%)
(the sites and dates listed below did not met the criteria)
(p-check value = 0.400 ppm)

Q1: All sites within the acceptance criteria
Q2: All sites within the acceptance criteria
Q3: All sites within the acceptance criteria
Q4: All sites within the acceptance criteria

SO_2

Precision QC Check (once every two weeks; ≤ ±10%)
(the sites and dates listed below did not met the criteria)
(p-check value = 12 ppb)

Q1: All sites within the acceptance criteria
Q2: All sites within the acceptance criteria
Q3: All sites within the acceptance criteria
Q4: All sites within the acceptance criteria

NO_2

Precision QC Check (once every two weeks; ≤ ±15%)
(the sites and dates listed below did not met the criteria)
(p-check values approx. 27-40 ppb)

Q1: All sites within the acceptance criteria
Q2: All sites within the acceptance criteria
(checks were not completed every 2 weeks just after 5/24/15 (at 09-003-0025) and 6/29/15 (at 09-003-1003)
Q3: All sites within the acceptance criteria
Q4: All sites within the acceptance criteria

Summary Example

No data reported for IMPROVE monitors. ME DEP and EPA have already discussed this issue.

MONITORS NOT REPORTING DATA (TRIBAL)*

- 23-003-1100 – Presque Isle (8 Northern Rd.) – 42101 – CO, 42602 – NO2, 42406 - SO2 max. 5-min. avg., 42401 – SO2

*EPA to contact tribe directly.

MONITORS NOT REPORTING DATA (SLAMS)

- 23-003-0014 – Madawaska – 81102 – PM10 Total 0-10um STP **SEE TEXT BOX BELOW**
- 23-011-2005 – Gardiner – 42602 - NO2, 42406 – SO2 max 5-min. avg., 42401 – SO2 - **No Analyzers**
- 23-019-0002 – Bangor – 81102- PM10 Total 0-10um STP **Done.**

MONITORS NOT REPORTING DATA (SPM)

- 23-009-0103 – Bar Harbor (MH/ANP) – 81102 – PM10 Total 0-10um STP **Will endeavor to get that data in ASAP**
- 23-019-0002 – Bangor (KPS) – 81102 – PM10 Total 0-10um STP **Will endeavor to get that data in ASAP**

SLAMS – LOW DATA CAPTURE

- 23-001-0011 – Lewiston (CKP) – 81102- PM10 Total 0-10um STP – Nov. – 0%, Dec. – 0%, 33% for qtr. IN AQS 4/11 **Entered in AQS 4/11**
- 23-001-0011 – Lewiston (CKP) – 88101- PM2.5 – Nov. – 50%, Dec. – 50%, 63% for qtr. **Changed sampling schedule to 1 in 6 on Nov 2nd.**

Quarterly Report PM_{10} Low Vol Lead Summary Example

SLAMS Low-Volume PM_{10} Lead
(Parameter Code 85129 – Lead PM_{10} LC FRM/FEM)

Data Completeness

Francis School POC 1: R&P Model 2025 Lo-Vol PM_{10} with XRF Analysis (Method 811), 24-hour 1-in-6 day sample frequency all year

2015 Q1 – 100% Q2 – 100% Q3 – 93% Q4 – 100%

Flow Rate Accuracy Audits (based on calendar year, *every 6 months (within 5 to 7 months) audit flow rate; one-point flow rate; ± 4% of audit standard and ± 5% design flow rate*)

Francis School POC 1:

- Q1 audit performed on 3/26/15, the flow audit RPD was 1.2%. The next audit needs to be performed between 153 days (5 months) and 213 days (7 months) from 3/26/15, which would be between August 26 and October 25.

Analysis Accuracy Audits (6 filters/quarter 3 at each concentration range, 24 filters total per year (Range 1: 1.08 ug – 3.6 ug, Range 2: 7.2 ug – 10.8 ug); within 10%) AMP251 Report

- Q1 1/1/15: L1 2.5 µg (-8%), L2 8.5 µg (-4.7%)
  2/1/15: L1 2.4 µg (-4.2%), L2 8.1 µg (0%)
  3/1/15: L1 2.6 µg ***(-11.5%)***, L2 8.6 µg (-5.8%)

Precision

Only select Lead Sites in the national network have collocated samplers. E. Providence does not have a collocated sampler.

Flow Rate Verification

Francis School POC 1: R&P Model 2025 Lo-Vol PM_{10}

- Q1 flow checks were performed on 1/30, 2/27 and 3/31 and had % differences of 0.5%, -0.3% and 0.8%, respectively.

Lead Audit Strip Analysis (ME DEP XRF)

- Q1 25 were analyzed, Bias = -8.9% (AMP256)

General Comments

RI Reponses

What are the benefits of doing these reviews?

- Monitoring organizations become aware EPA is performing a thorough data review quarterly.
- Able to identify incorrect or missing data entries.
- Identify data quality issues early and work with monitoring organizations to correct them.
- Determine if the appropriate accuracy audit levels concentrations and P-check concentrations are being used at the PQAO or site level.
- Improve AMP600 certifications; meet ACS commitments on behalf of the RA to the Administrator; and PPA commitments.

What are the benefits of doing these reviews?

- Most importantly…

EPA makes important decisions based on this air quality data, affecting nonattainment/ attainment decisions, and assessing the quality of the air impacting every citizen of the United States. Its our job.

Questions?

Bob Judge

Judge.robert@EPA.GOV

617-918-8387