Message

From: McGrath, Jesse [mcgrath.jesse@epa.gov]
Sent: 3/3/2015 5:33:20 PM
To: R5 ARD-ATAB-AMAS [R5_ARDATABAMAS@epa.gov]
Subject: slides from discussion
Attachments: data validation v0.3.pptx

Here are the slides from the meeting today. The last half is citations.

Message

From: Qazzaz, Bilal [qazzaz.bilal@epa.gov]
Sent: 11/16/2015 7:55:34 PM
To: WICKER, JOHN [JWICKER@idem.IN.gov]; Hamilton, Scott [hamilton.scott@epa.gov]
CC: Burks, Michael [MBurks@idem.IN.gov]; Compher, Michael [compher.michael@epa.gov]
Subject: RE: Dec. QA Meeting

John,

I think the topic you suggested is an important one. It will be interesting to hear how IDEM and others interpret and apply the CFR and validation templates.
We do have data validation slated on the second day though this topic I suspect will garner a lot of discussion over both days.

I'd also like to hear more about the criteria you're using for span checks. It sounds like your using the last span drift percent difference as the reference point for the
next span check and as long as your within 7% of the latest check, you consider this a passing span check. My take is different though we can discuss this at the meeting.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Monday, November 16, 2015 12:47 PM
To: Qazzaz, Bilal <qazzaz.bilal@epa.gov>; Hamilton, Scott <hamilton.scott@epa.gov>
Cc: Burks, Michael <MBurks@idem.IN.gov>
Subject: Dec. QA Meeting

Gentlemen. For the QA meeting I think a good item to talk about are the required percent differences and how everyone believes they should be applied as it pertains to validating data. Or is this part of the data validation on the second day?

For example;
One Point QC Check Single Analyzer for ozone:
In 40 CFR part 58 App A Sec. 2.3.1.2 it states "Measurement Uncertainty for Automated Ozone Methods. The goal for acceptable measurement uncertainty is defined for precision as an upper 90 percent confidence limit for the coefficient variation (CV) of 7 percent and for bias as an upper 95 percent confidence limit for the absolute bias of 7 percent".
Based on our TSA we have been told one point percent difference of 7% to determine data validity and not a statistical analysis.

Span drift for ozone: $\leq \pm 7\%$ for a 2 weeks period. Based on this I would not invalidate data if my span check was over 7% for a single point. For example, if the start of a 2 week span check showed the analyzer 3% low I would be allowed up to 10% low and still have valid data since the drift is 7% or less. I do think going over 15% but still being less than 7% drift then the data is invalid but I can't see that situation every happening.

It still seems unusual to me if a QA group goes in and does an ozone accuracy audit and is allowed 15% for valid data but the site operator who runs a one point QC check has to be within 7% for that single check or data is invalid. All of the ozone calibrators used for these checks are most likely a level 3 and have been verified under the same level 2 standard.

Usually meeting these limits is not an issue. But if the condition does occur then why throw out data that has value?

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch

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Indiana Department of Environmental Management

Message

From: Hamilton, Scott [hamilton.scott@epa.gov]
Sent: 2/13/2015 6:30:41 PM
To: Compher, Michael [compher.michael@epa.gov]
Subject: RE: Precision question

Thanks Mike! I wasn't sure on the timing. I send a quick note to John.

I do know that AQS accepts the 10 levels now so really they are effective.

From: Compher, Michael
Sent: Friday, February 13, 2015 12:15 PM
To: Hamilton, Scott
Subject: RE: Precision question

I think the monitoring revisions proposed last fall won't be finalized until late summer. Effective dates are not clear yet. For some, it could be upon publication, others may be some period after published in FR, or a specific date.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Hamilton, Scott
Sent: Friday, February 13, 2015 11:57 AM
To: WICKER, JOHN; Qazzaz, Bilal
Cc: Compher, Michael; SHERRILL, JAMES
Subject: RE: Precision question

The 10 levels are the new levels and what will be in the revised CFR.

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Cc: Compher, Michael; SHERRILL, JAMES
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Or is the table below, which has the 5 audit levels, and in the current CFR just not updated yet?

We are ordering some direct CO cylinder gases for quarterly accuracy audits so I want to make sure the ranges will be correct.

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3	0.11-0.20	0.02-0.10	0.006-0.10	1.50-4.00
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(b) An additional 4th level is encouraged for those monitors that have the potential for exceeding the concentration ranges described by the initial three selected.

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Michael/B, note the reference **(in red)** to a potential topic for our calls.

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To: Qazzaz, Bilal; Hamilton, Scott
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Section Chief
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From: Kilmer, Susan (DEQ) [mailto:KILMERS@michigan.gov]
Sent: Thursday, February 12, 2015 10:42 AM
To: WICKER, JOHN
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Hi John
I think that is an excellent question for a regional call. I remember having a discussion about it during the training, it sounded like most of us void data when it's outside of the acceptance criteria.

Susan Kilmer
Quality Assurance Coordinator
Michigan Dept of Environmental Quality
Air Quality Division – Air Monitoring Unit
Kilmers@Michigan.gov
517-284-6752

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I just don't recall using the precision for data validity back in the old days. Obviously if the validation is say 10% and the precision if 30% out, I would most likely flag the data since there is something wrong.

Appreciate the info. Thanks

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The criteria for the annual audit is broader, 15% however I would be concerned if it was around 10%. Our audits are usually in the less than 5% zone, so much higher than that would get my attention.

Hope that helps,
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Susan. Maybe you can provide me an answer to this. When you guys run a precision point on say ozone, and it is greater than the allowable difference, which is 7% for ozone, but the span point shows the analyzer within 15%, what action do you guys take? Being old school, I always thought 0-7.5% all is good, 7.5-15% out of cal but data valid, and greater than 15% data invalid. And if the percent difference on the precision point is greater than the allowable difference it is not used in AQS? Can you provide some answers to this? Thanks

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CC: Compher, Michael [compher.michael@epa.gov]; SHERRILL, JAMES [JSHERRIL@idem.IN.gov]
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OK, thanks. When I noticed the date for the CFR and the different concentration ranges I got a little worried. They just were not updated yet.

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Sent: Wednesday, February 11, 2015 4:00 PM
To: WICKER, JOHN
Subject: RE: Precision question

Hi John;
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Take care

Susan Kilmer

Quality Assurance Coordinator
Michigan Dept of Environmental Quality
Air Quality Division – Air Monitoring Unit
Kilmers@Michigan.gov
517-284-6752

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Wednesday, February 11, 2015 3:30 PM
To: Kilmer, Susan (DEQ)
Subject: RE: Precision question

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Appreciate the info. Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

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Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

Message

From: WICKER, JOHN [JWICKER@idem.IN.gov]
Sent: 2/13/2015 5:33:25 PM
To: Hamilton, Scott [hamilton.scott@epa.gov]; Qazzaz, Bilal [qazzaz.bilal@epa.gov]
CC: Compher, Michael [compher.michael@epa.gov]; SHERRILL, JAMES [JSHERRIL@idem.IN.gov]
Subject: RE: Precision question

So just to make sure I understand this correctly, table 3, which has the 10 audit levels is now changed to the 5 audit levels I have listed below?

Or is the table below, which has the 5 audit levels, and in the current CFR just not updated yet?

We are ordering some direct CO cylinder gases for quarterly accuracy audits so I want to make sure the ranges will be correct.

Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Hamilton, Scott [mailto:hamilton.scott@epa.gov]
Sent: Friday, February 13, 2015 12:26 PM
To: WICKER, JOHN; Qazzaz, Bilal
Cc: Compher, Michael; SHERRILL, JAMES
Subject: RE: Precision question

Yes. See http://www.epa.gov/ttnamti1/files/ambient/pm25/datamang/TechMemoforPEAuditLevels.pdf

These changes will be in the newly revised Appendix A. OAQPS is in the process of responding to comments on the Appendix A proposal. The Final Appendix A should be published in 1-2 months.

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Another question. Have the quarterly accuracy ranges been modified recently? According to 40 CFR Part 58 App A,

3.2.2.1 (a) The evaluation is made by challenging the analyzer with audit gas standard of known concentration (effective concentration for open path analyzers) from at least three consecutive audit levels. The audit levels selected should represent or bracket 80 percent of ambient concentrations measured by the analyzer being evaluated:

Audit level	Concentration range, ppm			
	O_3	SO_2	NO_2	CO
1	0.02-0.05	0.0003-0.005	0.0002-0.002	0.08-0.10

2	0.06-0.10	0.006-0.01	0.003-0.005	0.50-1.00
3	0.11-0.20	0.02-0.10	0.006-0.10	1.50-4.00
4	0.21-0.30	0.11-0.40	0.11-0.30	5-15
5	0.31-0.90	0.41-0.90	0.31-0.60	20-50

(b) An additional 4th level is encouraged for those monitors that have the potential for exceeding the concentration ranges described by the initial three selected.

John Wicker
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Sent: Thursday, February 12, 2015 12:48 PM
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Cc: Compher, Michael
Subject: RE: Precision question

Thanks John! This is really good discussion.

Michael/B, note the reference **(in red)** to a potential topic for our calls.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Thursday, February 12, 2015 10:51 AM
To: Qazzaz, Bilal; Hamilton, Scott
Subject: FW: Precision question

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Sent: Thursday, February 12, 2015 10:42 AM
To: WICKER, JOHN
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Section Chief
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Indiana Department of Environmental Management

Message

From: Tyson, MaryPat [tyson.marypat@epa.gov]
Sent: 3/25/2015 6:07:59 PM
To: Compher, Michael [compher.michael@epa.gov]
Subject: RE: quick questions - data validation

Has she seen Jesse's position that you shared with me?

From: Compher, Michael
Sent: Wednesday, March 25, 2015 9:59 AM
To: Tyson, MaryPat
Subject: FW: quick questions - data validation

Mary Pat - See Anna's response, from this morning. Did you hear back from Nealson?

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Kelley, Anna [mailto:Anna.Kelley@hamilton-co.org]
Sent: Wednesday, March 25, 2015 9:18 AM
To: Compher, Michael
Subject: RE: quick questions - data validation

Good Morning Michael,

No worries in sharing this with others. I'm glad you are addressing and hopefully we can put this to rest.
Sorry for the delay in replying. I've read the questions and message twice – at separate times and concur with what Mike is saying.
Additionally, this is exactly how we run operations.
With regard to Question #3: we don't wait a long time to troubleshoot the analyzer – longest is usually 24 hours – yes even on weekends. I've been at sites where we have weekend access troubleshooting equipment. If we don't have access then it's the next day we do.

Also, I believe the procedures are consistent how other states and locals operate their equipment/operations.

Thanks –

Anna L. Kelley
Monitoring & Analysis Supervisor
Southwest Ohio Air Quality Agency
A division of the Hamilton County Department of Environmental Services

250 William Howard Taft Road
Cincinnati, Ohio 45219
p 513.946.7725
f 513.946.7778

anna.kelley@hamilton-co.org
SouthwestOhioAir.org

From: Compher, Michael [mailto:compher.michael@epa.gov]
Sent: Wednesday, March 25, 2015 7:58 AM
To: Kelley, Anna
Subject: FW: quick questions - data validation

Good morning Anna,

I've continued working to bring this data validation issue to closure. After several discussions, I narrowed down the specific questions where there are differences of approach by individuals in my group and posed those questions to Mike Papp. Could you look at my questions and Mike Papp's responses and let me know if this is consistent with your current practice at Hamilton County. Also, do you have other thoughts for clarification?

Please keep this message between you and I, since there are still opposing views on this approach among individuals in my group.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Papp, Michael
Sent: Tuesday, March 24, 2015 8:35 AM
To: Compher, Michael
Subject: RE: quick questions

1. Does the HA Handbook require the invalidation of any QC point that is outside the upper bounds of the goal for bias or precision, plus the invalidation of the concentration data back to the last QC point within bounds?

   Ans: No but they better have a really good reason not to. A QC point is critical criteria. Criteria that were deemed critical to maintaining the integrity of sample or group of samples were placed on the first table. *Observations that do not meet each and every criterion on the Critical Criteria Table should be invalidated unless there are compelling reason and justification for not doing so.* The sample or group of samples for which one or more of these criteria are not met is invalid until proven otherwise. The cause of not operating in the acceptable range for each of the violated criteria must be investigated and minimized to reduce the likelihood that additional samples will be invalidated.

   So.... I'd be looking for documentation of exactly why a QC check failed and why they kept the check and routine data AND there should not be multiple failures of the QC check if there is one failure corrective action should be documented and occur before the next check

2. If no to #1: QC points are invalidated only after routine data are invalidated.

Ans: Yes. If the routine data stays the QC check stays. There might be some flag on the failed QC even if the routine data stayed to signify what the reason was for the QC check failure and why it did not invalidate the routine data.

3. If a QC check is performed and out of spec from the validation template, many of our monitoring organizations troubleshoot (try again, use other equipment, send out another auditor, etc). If they can identify the issue and when it occurred, they will invalidate the correct portion of the data and associated QC check. Is this approach consistent with the data validation template and other QA documents?

   Ans Yes. However they should not be failing multiple weeks of data before they decide lets go out a trouble shoot. But yes… a QC check fails you find out why. If there is compelling reason to keep the data and they document it (and you can confirm this later with a TSA) then they are following good QC practice.

4. If no cause is identified, (within the monitor, operator, traceability system, etc) should the ambient concentration data (and associated failed QC check) be invalidated back to the last valid QC check? Is this a hard and fast rule, or could there be case by case situations where the answer would be different?

   Ans Yes. If there is no compelling reason we'd expect the routine data and the check to be invalidated. Why case by case; if there is no compelling reason the QC check speaks for itself

   If you want to talk more about this that's fine. However I'll be out for the rest of the week after 2:00

From: Compher, Michael
Sent: Tuesday, March 24, 2015 9:01 AM
To: Papp, Michael
Subject: quick questions

Hi Mike,

I have a few hopefully very straightforward questions for you to help me resolve internal debate. What you say is how I'm going to proceed to provide clarification for my section as well as our states/locals. I have read the QA EYE about when QC data should be removed from AQS, and totally understand that the reported QC information should reflect the valid/reported data. Part of my direction to the states will reiterate the QA Eye recommendation to "include wording in QAPPS that addresses when to retain and when to exclude QA and QC data from AQS and when to conduct replacement QA/QC checks."

1. Does the HA Handbook require the invalidation of any QC point that is outside the upper bounds of the goal for bias or precision, plus the invalidation of the concentration data back to the last QC point within bounds?
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Subject: RE: Precision question

Another question. Have the quarterly accuracy ranges been modified recently? According to 40 CFR Part 58 App A,

3.2.2.1 (a) The evaluation is made by challenging the analyzer with audit gas standard of known concentration (effective concentration for open path analyzers) from at least three consecutive audit levels. The audit levels selected should represent or bracket 80 percent of ambient concentrations measured by the analyzer being evaluated:

Audit level	Concentration range, ppm			
	O_3	SO_2	NO_2	CO
1	0.02-0.05	0.0003-0.005	0.0002-0.002	0.08-0.10
2	0.06-0.10	0.006-0.01	0.003-0.005	0.50-1.00
3	0.11-0.20	0.02-0.10	0.006-0.10	1.50-4.00
4	0.21-0.30	0.11-0.40	0.11-0.30	5-15
5	0.31-0.90	0.41-0.90	0.31-0.60	20-50

(b) An additional 4th level is encouraged for those monitors that have the potential for exceeding the concentration ranges described by the initial three selected.

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Hamilton, Scott [mailto:hamilton.scott@epa.gov]
Sent: Thursday, February 12, 2015 12:48 PM
To: WICKER, JOHN; Qazzaz, Bilal
Cc: Compher, Michael
Subject: RE: Precision question

Thanks John! This is really good discussion.

Michael/B, note the reference **(in red)** to a potential topic for our calls.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Thursday, February 12, 2015 10:51 AM
To: Qazzaz, Bilal; Hamilton, Scott
Subject: FW: Precision question

Gentlemen. Just some discussion Susan and I have had over audits and precision/span points. Since you guys oversee Region V maybe you can send out a question and just see how everyone is treating data based on the precision as well as the QA quarterly accuracy audit? Being old school I am trying to see how things are handled in the 21st century.

John Wicker
Section Chief
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Air Monitoring Branch
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From: Kilmer, Susan (DEQ) [mailto:KILMERS@michigan.gov]
Sent: Thursday, February 12, 2015 10:42 AM
To: WICKER, JOHN
Subject: RE: Precision question

Hi John
I think that is an excellent question for a regional call. I remember having a discussion about it during the training, it sounded like most of us void data when it's outside of the acceptance criteria.

Susan Kilmer
Quality Assurance Coordinator
Michigan Dept of Environmental Quality
Air Quality Division – Air Monitoring Unit
Kilmers@Michigan.gov
517-284-6752

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Thursday, February 12, 2015 10:29 AM
To: Kilmer, Susan (DEQ)
Subject: RE: Precision question

Susan. Thanks for your info. I am reading our QAPP for 2012 (which is due for rewrite this year) as well as any EPA documents. The 15% on the quarterly accuracy audit sounds pretty much set. My only unanswered questions is how everyone is treating data when is goes outside the limit for span and precision points.

John Wicker
Section Chief
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Air Monitoring Branch
Office of Air Quality
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From: Kilmer, Susan (DEQ) [mailto:KILMERS@michigan.gov]
Sent: Wednesday, February 11, 2015 4:00 PM
To: WICKER, JOHN
Subject: RE: Precision question

Hi John;
If the 2-week check fails or the audit fails, we would most likely void the data. We would investigate the cause and could potentially flag some data depending on what we find. When we void, it is usually back to the last good check. Depending on what we find, we may keep or flag some of that data depending on what we find on closer inspection. For example, if a precision check fails – and when we look back at the instrument readings, we see that 2 days prior something weird like the lamp died or something clearly went wild.. we would void the last 2 days and probably keep or flag the rest back to the previous check. For ozone, our sites are set up to do nightly zero and precision checks so that

helps us keep an eye on performance. (not sure all of our other gas sites are doing nightly precision, NCore do but I don't think our near-road sites do that)

I don't think I have seen a case where the precision point was in and the span was way out. Where it would get tricky a little is if the precision is 7% and the span is 8%. We would probably still treat that as a failed check. We tend to void data if there is a question. I think Jesse McGrath feels differently, he wants the data set to remain intact even if a check or audit fails. This concept would be an interesting one to study/talk about in a STL call or data validation type workshop.

Take care

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From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Wednesday, February 11, 2015 3:30 PM
To: Kilmer, Susan (DEQ)
Subject: RE: Precision question

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I just don't recall using the precision for data validity back in the old days. Obviously if the validation is say 10% and the precision if 30% out, I would most likely flag the data since there is something wrong.

Appreciate the info. Thanks

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The criteria for the annual audit is broader, 15% however I would be concerned if it was around 10%. Our audits are usually in the less than 5% zone, so much higher than that would get my attention.

Hope that helps,
Susan

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From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Wednesday, February 11, 2015 2:08 PM
To: Kilmer, Susan (DEQ)
Subject: Precision question

Susan. Maybe you can provide me an answer to this. When you guys run a precision point on say ozone, and it is greater than the allowable difference, which is 7% for ozone, but the span point shows the analyzer within 15%, what action do you guys take? Being old school, I always thought 0-7.5% all is good, 7.5-15% out of cal but data valid, and greater than 15% data invalid. And if the percent difference on the precision point is greater than the allowable difference it is not used in AQS? Can you provide some answers to this? Thanks

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Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

Message

From: Hamilton, Scott [hamilton.scott@epa.gov]
Sent: 2/12/2015 5:48:27 PM
To: WICKER, JOHN [JWICKER@idem.IN.gov]; Qazzaz, Bilal [qazzaz.bilal@epa.gov]
CC: Compher, Michael [compher.michael@epa.gov]
Subject: RE: Precision question

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Section Chief
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Air Monitoring Branch
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Indiana Department of Environmental Management

Message

From: Papp, Michael [Papp.Michael@epa.gov]
Sent: 3/11/2015 1:30:01 PM
To: McGrath, Jesse [mcgrath.jesse@epa.gov]
CC: Compher, Michael [compher.michael@epa.gov]; Coats, Robert [Coats.Robert@epa.gov]
Subject: RE: QC check completeness unforeseen issues and possible QC call topic

Hi Jessie.

I'm sure this happens occasionally across all Regions. One thing we also need to keep in mind is if data is invalidated and a one point QC check is invalidated then there can be legitimate "spacing" between checks. In the case of the 1-point QC this is OK since we've made it clear we don't want QC checks that are unacceptable that might have revealed a problem that caused invalidation of routine data, to be reported to AQS since they don't represent the data collected. Therefore AQS needs to be smart enough to know whether there is routine data for at time period. I'm not sure whether this gets too complicated for AQS programing.

From: McGrath, Jesse
Sent: Tuesday, March 10, 2015 4:19 PM
To: Papp, Michael
Cc: Compher, Michael; Coats, Robert
Subject: RE: QC check completeness unforeseen issues and possible QC call topic

'Uncredited check' is a term I made up for this email -- borrowing from the PM2.5 creditable samples.
In PM2.5 creditable samples are included for completeness and calculating the mean or 98th percentile.
Non-creditable samples are not included in completeness but are still used to calculate the mean and 98th percentile.

I believe, and have not confirmed, that QC checks which aren't counted towards completeness are also not counted towards calculating the bias, precision, or 95% UCLs of that stats.

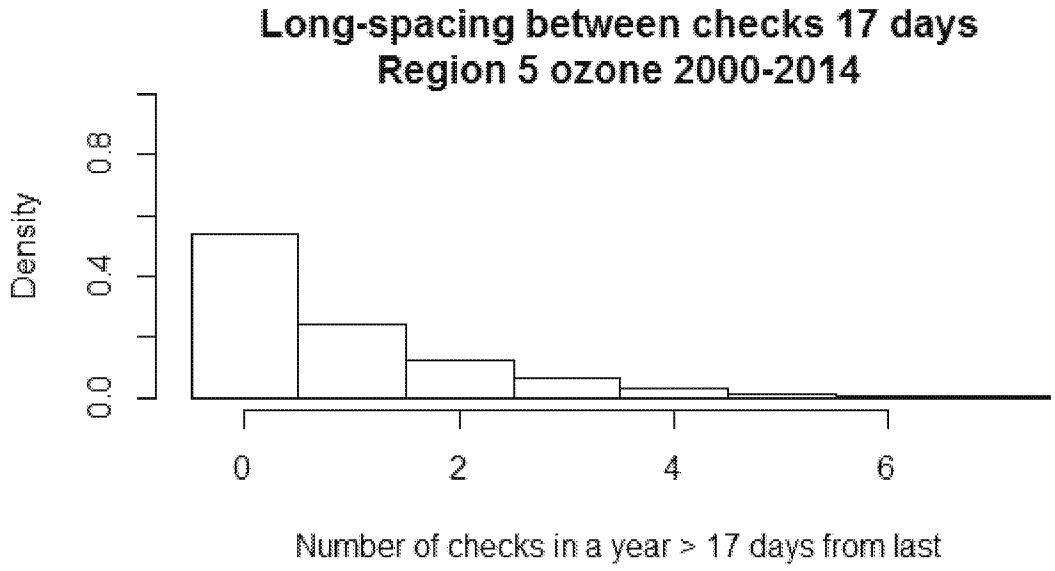
On alternates -- It looks like requiring 5 or 6 checks in a quarter will effectively require the checks to be within 21 or 17 days respectively

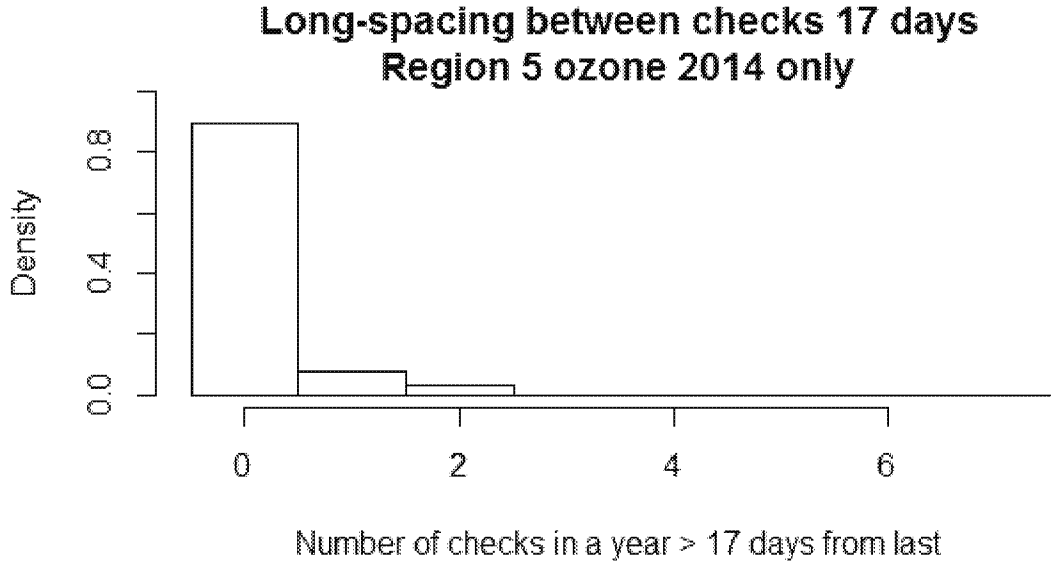
I checked how many checks were done greater than 17 or 21 days from the last for all ozone checks in region 5 from 2000-2014.
The histograms are the number of times a check was done more than 17 or 21 days after the last – so if it was done 18 days or 30 it's just counted once. This is the frequency of lapses – not the extremity of the lapse.
About 55% of the checks are done within 17 days of each other.
About 70% are done within 21 days of each other.

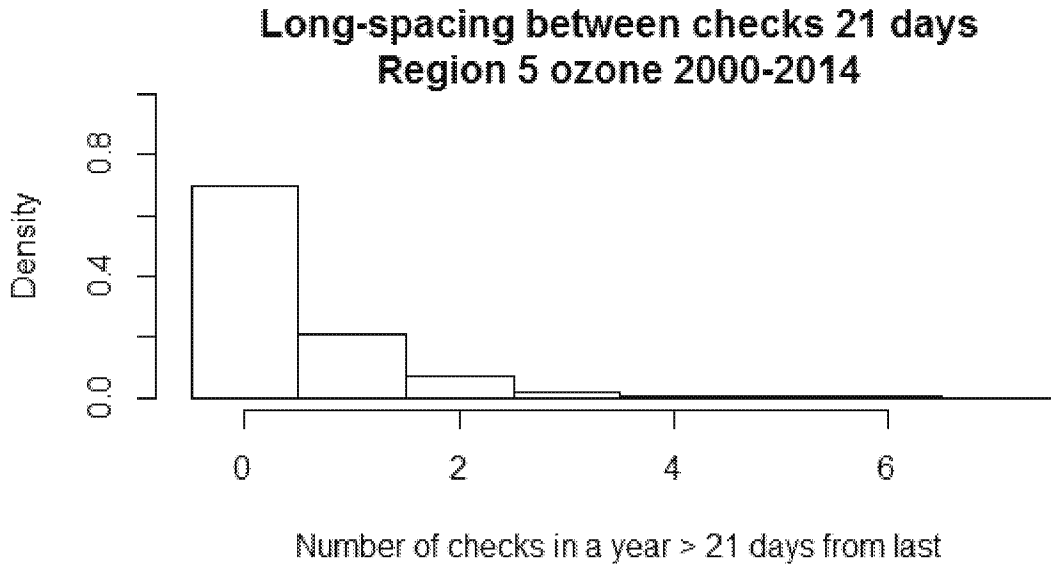
Looking at just 2014 those are closer to 90-95%. Multiple lapses are rare, but I think tend to be from the same agencies.
So from a high-level 6 checks a quarter not more than 17 days apart seems to meet the intention of the checks, identify piling or other issues, offer leeway, and not raise false alarms.

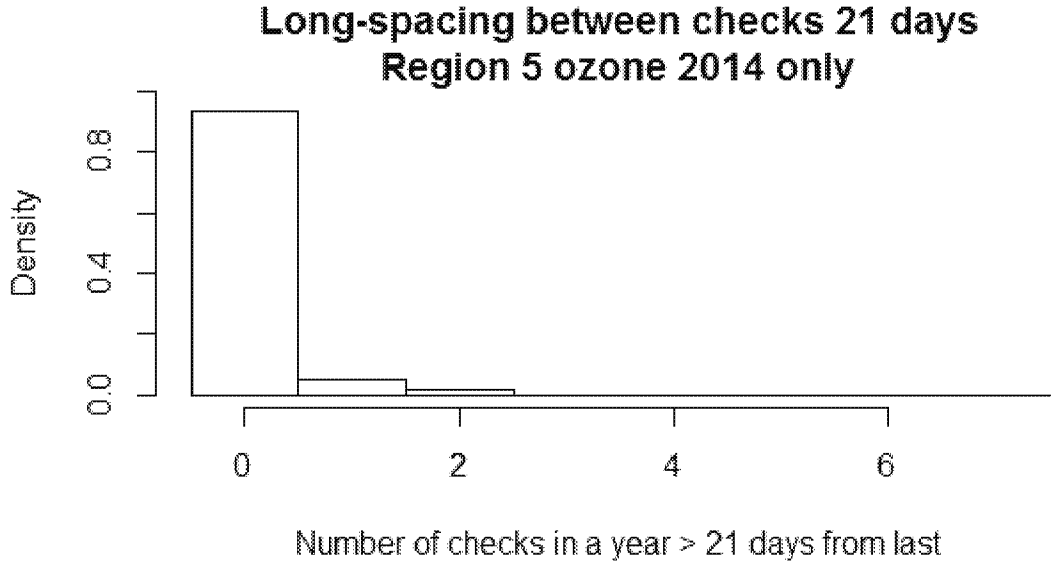
What plausible special cases would break this?

I'm going to run this by the states that have brought it up to me to see if they can identify problems with that scheme.
Have other regions run into this?


Long-spacing between checks 17 days
Region 5 ozone 2000-2014
Density
0.0
0.4
0.8
0
2
4
6
Number of checks in a year > 17 days from last


Long-spacing between checks 17 days
Region 5 ozone 2014 only
Density
0.0
0.4
0.8
0
2
4
6
Number of checks in a year > 17 days from last





Thank you,
Jesse

-----Original Message-----
From: Papp, Michael
Sent: Tuesday, March 10, 2015 11:16 AM
To: McGrath, Jesse
Cc: Compher, Michael; Coats, Robert
Subject: RE: QC check completeness unforeseen issues and possible QC call topic

We can make something work that is less concerning to the monitoring agencies but provides some back stop for piling on at the end of the year. I like option 3 but maybe something like at least 5 checks in a quarter and at least a check every 17 days (little more than 14 but a little less than 21). I was not aware of what is called uncredited checks. May need to talk to Robert about this.

-----Original Message-----

From: McGrath, Jesse
Sent: Tuesday, March 10, 2015 10:42 AM
To: Papp, Michael
Cc: Compher, Michael
Subject: QC check completeness unforeseen issues and possible QC call topic

Hi Mike,

The QC check completeness calculation was changed to a blocked design in response to a comment I made about an agency performing many QC checks near the end of the year to meet the 26 total requirement.

The blocked scheme does cover those issues, but also under-credits agencies when they perform their checks very near the edges of the blocks; slight variations in the check day can result in the check not being counted even though the frequency is OK.

I'm loathe to ask for another change to AQS but Robert says he can do it I talk to the QA team..
I'd like to talk to you about options for handling this for 2014 certification and moving on.

Options on how to handle for 2014.
1. Unless the checks are unreasonably spaced use the certification flagging and commenting system 2. For agencies that do daily precision checks but don't submit them all, allow a random portion to be submitted to meet completeness -- or submit all daily checks if possible.
3. Turn off this calculation for pre-2014. Robert said he'd need your concurrence for this.

Options on how to handle for 2015 on.
1. Leave it as-is and use operational changes to avoid problems. Specifically, aim for the middle of the block, not the edge.
2. Use the previous by-year system. This makes it harder to find oddly-spaced checks, but is easy to implement. Also needs concurrence.
3. Refine the calculation. Needs concurrence. I didn't expect any ill side-effects with the blocked design change so we might want to test what effect any proposed change would have. I'd like this to be simple. Some proposals are:
    a. At least 5 checks in a quarter and 26 in a year.
    b. Checks not more than 21 days (3 weeks) apart.
4. Another issue is that uncredited checks appear to be dropped from the bias and precision calculation. Regardless of whether they're credited for completeness they should be included those calculations.

Thanks,
Jesse

Message

From: Kelley, Anna [Anna.Kelley@hamilton-co.org]
Sent: 3/25/2015 2:17:56 PM
To: Compher, Michael [compher.michael@epa.gov]
Subject: RE: quick questions - data validation
Attachments: removed.txt

Good Morning Michael,

No worries in sharing this with others. I'm glad you are addressing and hopefully we can put this to rest.
Sorry for the delay in replying. I've read the questions and message twice – at separate times and concur with what Mike is saying.
Additionally, this is exactly how we run operations.
With regard to Question #3: we don't wait a long time to troubleshoot the analyzer – longest is usually 24 hours – yes even on weekends. I've been at sites where we have weekend access troubleshooting equipment. If we don't have access then it's the next day we do.

Also, I believe the procedures are consistent how other states and locals operate their equipment/operations.

Thanks –

Anna L. Kelley
Monitoring & Analysis Supervisor
Southwest Ohio Air Quality Agency
A division of the Hamilton County Department of Environmental Services

250 William Howard Taft Road
Cincinnati, Ohio 45219
p 513.946.7725
f 513.946.7778

anna.kelley@hamilton-co.org
SouthwestOhioAir.org

From: Compher, Michael [mailto:compher.michael@epa.gov]
Sent: Wednesday, March 25, 2015 7:58 AM
To: Kelley, Anna
Subject: FW: quick questions - data validation

Good morning Anna,

I've continued working to bring this data validation issue to closure. After several discussions, I narrowed down the specific questions where there are differences of approach by individuals in my group and posed those questions to Mike Papp. Could you look at my questions and Mike Papp's responses and let me know if this is consistent with your current practice at Hamilton County. Also, do you have other thoughts for clarification?

Please keep this message between you and I, since there are still opposing views on this approach among individuals in my group.

Michael Compher
Chief, Air Monitoring and Analysis Section

Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Papp, Michael
Sent: Tuesday, March 24, 2015 8:35 AM
To: Compher, Michael
Subject: RE: quick questions

1. Does the HA Handbook require the invalidation of any QC point that is outside the upper bounds of the goal for bias or precision, plus the invalidation of the concentration data back to the last QC point within bounds?

   Ans: No but they better have a really good reason not to. A QC point is critical criteria. Criteria that were deemed critical to maintaining the integrity of sample or group of samples were placed on the first table. *Observations that do not meet each and every criterion on the Critical Criteria Table should be invalidated unless there are compelling reason and justification for not doing so.* The sample or group of samples for which one or more of these criteria are not met is invalid until proven otherwise. The cause of not operating in the acceptable range for each of the violated criteria must be investigated and minimized to reduce the likelihood that additional samples will be invalidated.

   So.... I'd be looking for documentation of exactly why a QC check failed and why they kept the check and routine data AND there should not be multiple failures of the QC check if there is one failure corrective action should be documented and occur before the next check

2. If no to #1: QC points are invalidated only after routine data are invalidated.

   Ans: Yes. If the routine data stays the QC check stays. There might be some flag on the failed QC even if the routine data stayed to signify what the reason was for the QC check failure and why it did not invalidate the routine data.

3. If a QC check is performed and out of spec from the validation template, many of our monitoring organizations troubleshoot (try again, use other equipment, send out another auditor, etc). If they can identify the issue and when it occurred, they will invalidate the correct portion of the data and associated QC check. Is this approach consistent with the data validation template and other QA documents?

   Ans Yes. However they should not be failing multiple weeks of data before they decide lets go out a trouble shoot. But yes... a QC check fails you find out why. If there is compelling reason to keep the data and they document it (and you can confirm this later with a TSA) then they are following good QC practice.

4. If no cause is identified, (within the monitor, operator, traceability system, etc) should the ambient concentration data (and associated failed QC check) be invalidated back to the last valid QC check? Is this a hard and fast rule, or could there be case by case situations where the answer would be different?

   Ans Yes. If there is no compelling reason we'd expect the routine data and the check to be invalidated. Why case by case; if there is no compelling reason the QC check speaks for itself

   If you want to talk more about this that's fine. However I'll be out for the rest of the week after 2:00

From: Compher, Michael
Sent: Tuesday, March 24, 2015 9:01 AM

To: Papp, Michael
Subject: quick questions

Hi Mike,

I have a few hopefully very straightforward questions for you to help me resolve internal debate. What you say is how I'm going to proceed to provide clarification for my section as well as our states/locals. I have read the QA EYE about when QC data should be removed from AQS, and totally understand that the reported QC information should reflect the valid/reported data. Part of my direction to the states will reiterate the QA Eye recommendation to "include wording in QAPPS that addresses when to retain and when to exclude QA and QC data from AQS and when to conduct replacement QA/QC checks."

1. Does the HA Handbook require the invalidation of any QC point that is outside the upper bounds of the goal for bias or precision, plus the invalidation of the concentration data back to the last QC point within bounds?
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Thanks for your help on this.

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Message

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   Ans Yes. However they should not be failing multiple weeks of data before they decide lets go out a trouble shoot. But yes... a QC check fails you find out why. If there is compelling reason to keep the data and they document it (and you can confirm this later with a TSA) then they are following good QC practice.

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   Ans Yes. If there is no compelling reason we'd expect the routine data and the check to be invalidated. Why case by case; if there is no compelling reason the QC check speaks for itself

   If you want to talk more about this that's fine. However I'll be out for the rest of the week after 2:00

From: Compher, Michael
Sent: Tuesday, March 24, 2015 9:01 AM
To: Papp, Michael
Subject: quick questions

Hi Mike,

I have a few hopefully very straightforward questions for you to help me resolve internal debate. What you say is how I'm going to proceed to provide clarification for my section as well as our states/locals. I have read the QA EYE about when QC data should be removed from AQS, and totally understand that the reported QC information should reflect the valid/reported data. Part of my direction to the states will reiterate the QA Eye recommendation to "include wording in QAPPS that addresses when to retain and when to exclude QA and QC data from AQS and when to conduct replacement QA/QC checks."

1. Does the HA Handbook require the invalidation of any QC point that is outside the upper bounds of the goal for bias or precision, plus the invalidation of the concentration data back to the last QC point within bounds?
2. If no to #1: QC points are invalidated only after routine data are invalidated.
3. If a QC check is performed and out of spec from the validation template, many of our monitoring organizations troubleshoot (try again, use other equipment, send out another auditor, etc). If they can identify the issue and when it occurred, they will invalidate the correct portion of the data and associated QC check. Is this approach consistent with the data validation template and other QA documents?
4. If no cause is identified, (within the monitor, operator, traceability system, etc) should the ambient concentration data (and associated failed QC check) be invalidated back to the last valid QC check? Is this a hard and fast rule, or could there be case by case situations where the answer would be different?

Thanks for your help on this.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

Message

From: Qazzaz, Bilal [qazzaz.bilal@epa.gov]
Sent: 2/27/2015 12:47:36 PM
To: Hamilton, Scott [hamilton.scott@epa.gov]; Ross, Anthony [ross.anthony@epa.gov]; McEvoy, Chad [mcevoy.chad@epa.gov]
CC: Compher, Michael [compher.michael@epa.gov]
Subject: FW: State, Local, and Tribal Monthly Conference Call

Follow-up email from Jason Treutel of WDNR.

From: Treutel, Jason A - DNR [mailto:Jason.Treutel@wisconsin.gov]
Sent: Thursday, February 26, 2015 3:21 PM
To: Compher, Michael
Cc: Qazzaz, Bilal; McGrath, Jesse
Subject: RE: State, Local, and Tribal Monthly Conference Call

Thank you Michael, I do appreciate it. I do have concerns with the resources I have to implement Jesse's approach even if I do agree with some of the principles. I was having particular trouble yesterday with the consistency of the message I was hearing.

In answer to your question I am referring to failed routine QC checks that exceed due to instrument drift or soft failures where the data still looks normal. It happens a few times each year for our network.

- It is extremely rare for us to fail the 10% criteria we had been using for ozone precision checks, typically 0 times a year. Exceeding the 7% criteria stated in the may have occurred a few times in 2014 across our network because we were using 10% as the control limit (7% was our action limit).

- We typically get one or two QC failures for NO2/SO2/CO analyzers in our network in a year. The one NO2 issue I mentioned is the only one for 2014 that I recall.

- Continuous analyzer QC failures would typically affect two weeks or less of data and we are sometimes are able to justify using our nightly span checks to bracket the data and shorten this period of invalidated data. Invalidating a two week period or less does not itself drop our completion percentage below 75% for the quarter.

- I will add that we typically have one or two monthly flow check QC failures for our particulate sampling network in a year. This is a much more significant problem since it drops sites below 75% data completion when it fails if we invalidate the bracketed data (we typically do). I don't think I've ever heard an EPA official or seen a document that says it's okay to have a flow check off over 6% as long as your population of checks is under 4%. I would think the treatment being suggested for continuous samplers would be applied to discrete samplers as well based on the argument that was being made. Because of particle cut size being dependent on flow I would be reluctant to say this would be a good route to take.

In any case, I feel that we would have to have a more robust statistical analysis of our QC checks and data review than we have currently to move away from using the Validation Template critical criteria as validation criteria for routine checks and the associated data. Thank you for hearing me out. Any information you can provide would be helpful, even though I am concerned with our resource availability to implement significant changes in the near future.

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Jason Treutel
Air Monitoring Quality Assurance Coordinator – Bureau of Air Management
Wisconsin Department of Natural Resources
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Cell Phone: (608) 220-0247
Fax: (608) 267-0560
Jason.Treutel@wisconsin.gov

dnr.wi.gov

From: Compher, Michael [mailto:compher.michael@epa.gov]
Sent: Thursday, February 26, 2015 7:53 AM
To: Treutel, Jason A - DNR
Cc: Qazzaz, Bilal; McGrath, Jesse
Subject: FW: State, Local, and Tribal Monthly Conference Call

Good morning Jason,

Thank you for providing this feedback to us. We will work out an approach within the Region in consultation with OAQPS and provide clarification for you.

I am interested in knowing, generally for WDNR's monitoring program, how frequently failed QC checks result in invalidation of any data.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Treutel, Jason A - DNR [mailto:Jason.Treutel@wisconsin.gov]
Sent: Wednesday, February 25, 2015 4:11 PM
To: Qazzaz, Bilal; McGrath, Jesse
Subject: RE: State, Local, and Tribal Monthly Conference Call

Good afternoon Bilal and Jesse. I just wanted to recap the validation conversation and the way I am interpreting it:

From the QA Handbook

Criteria that were deemed critical to maintaining the integrity of a sample or group of samples were placed on the first table. Observations that do not meet each and every criterion on the **Critical Criteria Table** should be invalidated unless there are compelling reason and justification for not doing so. The sample or group of samples for which one or more of these criteria are not met is invalid until proven otherwise. The cause of not operating in the acceptable range for each of the violated criteria must be investigated and minimized to reduce the likelihood that additional samples will be invalidated.

Example from ozone validation template

1) Requirement (O_3)	2) Frequency	3) Acceptance Criteria	Information /Action

One Point QC Check	***Single analyzer 1/ 2 weeks***	< +7% (percent difference	1 and 2) 40 CFR Part 58 App A Sec 3.2 3) Recommendation based on DQO in 40 CFR Part 58 App A Sec 2.3.1.2. QC Check Conc range 0.01 - 0.10 ppm, relative to routine concentrations

My interpretation of the QA Handbook (and perhaps Anna Kelly's as well): If the one point QC check is >7% the Critical criteria has been violated and the observations should be invalidated. We don't like invalidating data so we make sure that the violating check is confirmed potentially with a repeat measurement, alternative calibration equipment, or even an expert operator. If the criteria violation is confirmed we invalidate the associated data and do not report the check to AQS.

Feedback from Bilal on the call: Seemed to agree that this was an acceptable if not appropriate approach

Feedback from Jesse: This is absolutely the wrong approach to use for invalidating data because the criteria is in relation to the statistical analysis of the population of the checks, not the individual check. This is not very clear to me in the QA Handbook Validation tables which due to time constraints I've relied on more than the text of the remainder of the document.

I apologize for venting here, but what I heard today seemed contradictory on the EPA side. Even though I am starting to agree philosophically with the approach Jesse recapped, I am very concerned with developing and implementing the processes necessary to adopt that approach.

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We rarely exceed the validation template criteria for a single validation point where there is not a hard failure of the instrument. There was one occurrence I will be revisiting as we move on to data certification. I had invalidated a block of NOx data based on a single check that was not addressed properly until the next biweekly check. This had caused a month of data to be invalidated and will cause the parameter to not meet completion percent requirements for Q1. Based on today's information it sounds like the data can and should be revalidated since the check exceeded by only a little and will not cause the population to exceed the criteria. I will also need to submit this check.

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From: Qazzaz, Bilal [mailto:qazzaz.bilal@epa.gov]
Sent: Monday, February 23, 2015 8:03 AM
To: abaird@oneidanation.org; aboetcher@nhbpi.com; Adam.Blundell@hamilton-co.org; air@lldrm.org; airquality@badriver-nsn.gov; Alexander Jackson; Allen, Mark K - DNR; bfrazier@piic.org; brettmc@chegnet.net; Rodger, Bruce C - DNR; Laude, Bryan T - DNR; Burt Mechenbar; Cashman, John; ccharwood@redlakenation.org; charlie.lippert@millelacsband.com; charliel.millelacsojibwe@gmail.com; Chris.Harrison@hamilton-co.org; Christina Wieg; christina.boss@hamilton-co.org; Cindy.Charles@epa.state.oh.us; cjlippert@hotmail.com; cspruce@kbic-nsn.gov; dallasr@uppersiouxcommunity-nsn.gov; Nickolie, Daniel W - DNR; darrell.pennington@epa.state.oh.us; ddtyrolt@chegnet.net; deb.dirlam@lowersioux.com; Deborah Stone (Environmental Control); dtan@cantonhealth.org; Desmond.berry@gtbindians.com; dwights@itcmi.org; dzeiler@idem.in.gov; carol.eggert@toledo.oh.gov; gary.engler@epa.state.oh.us; Fenlon, Dennis (MPCA); 'fitznerc@michigan.gov'; Giwojna, Benjamin; Good, Gail - DNR; Hetherington, Grant D - DNR; Greg.bunker@mohican-nsn.gov; gshubel@itcmi.org; randy.hock@epa.state.oh.us; hooverb2003@yahoo.com; jhupp@cantonhealth.org; jane.rohl@gtbindians.com; Treutel, Jason A - DNR; jesse.anderson@lowersioux.com; jlyons@mitw.org; jmears@oneidanation.org; Joe.Cebe@fcpotawatomi-nsn.gov; Jonathan Knight; joywiecks@fdlrez.com; jrodwan@nhbpi.com; kaleel@ladco.org; Karen Moore-Wright (Environmental Control); kari.palmer@state.mn.us; katies@stcroixtribalcenter.com; kbrosemer@saulttribe.net; Anna.Kelley@hamilton-co.org; kellie.gavin@pca.state.mn.us; kenski@ladco.org; kgunderson@ho-chunk.com; kjomac2000@yahoo.com; kmackety@nhbpi.com; Lacka, Monika; land@ccsmdc.org; Lengerich, Steve; lmorckel@cantonhealth.org; linda.katchenago@mohican-nsn.gov; Lynn Schmitt (Environmental Control); Mertes, Mary - DNR; Mayo, Kathleen; mctwg@arvig.net; meloneemontano@hotmail.com; Meyer, Cynthia; Moran, Eileen; mrogers@city.cleveland.oh.us; natalene.cummings@fcpotawatomi-nsn.gov; PARKS, JAMES; chris.price@illinois.gov; Rick Strassman; Robinson, Amy (DEQ); srubens@schd.org; skniffen@sagchip.org; soberg@boreal.org; stan.ellison@shakopeedakota.org; Steve Blaser; nathan.stroup@hamilton-co.org; kilmers@michigan.gov; Tara Cioffi; tdzienis@cantonhealth.org; terry.sanner@epa.state.oh.us; Thomas Shepard; thurlow.mcclellan@gtbindians.com; tmaki@itcmi.org; tomf@stcroixtribalcenter.com; travismaki906@gmail.com; twarner@kbic-nsn.gov; Tyson, MaryPat; whitmava@rapca.org; waynedupuis@fdlrez.com; wrc4pres@yahoo.com; yvettec@boreal.org; R5 ARD-ATAB-AMAS; Molnar, Eve; Worsham, Luke R - DNR; Helen.Waquiu@state.mn.us; cassie.mcmahon@state.mn.us; JOHN WICKER (JWICKER@idem.IN.gov); Bloomberg, David E.; Compher, Michael; Kevin Schnoes (Environmental Control) (Kevin.Schnoes@cookcountyil.gov)
Cc: Ross, Anthony; Fuoco, Marta; McEvoy, Chad; Caudill, Motria; Engler, Gary; Rodger, Bruce C - DNR; Delisio, Edward; Hamilton, Scott; McGrath, Jesse; Scott Wold
Subject: State, Local, and Tribal Monthly Conference Call

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Date: 2-25-15
Time: 1-2 (CST)
Where: 1813A

Call in number: 877-226-9607

Conference Code: 5770738038

Region 5 Items

-Phase 3 Near Road Update
-AQS Update
-Update on Ozone Traceability Best Practices
-Poll of those who are conducting Ultra-Fine Particle (UFP) monitoring

SLT Items

-MDEQ would like to discuss how other states are documenting the extended certifications of their cylinders
-IDEM would like to discuss how other states are validating their data
-Information sharing with SWOAQA and CCDEC

Bilal Qazzaz
Air & Radiation Division
Air Monitoring & Analysis Section
US EPA Region 5
(312) 353-2325

Message

From: Treutel, Jason A - DNR [Jason.Treutel@wisconsin.gov]
Sent: 2/26/2015 9:21:14 PM
To: Compher, Michael [compher.michael@epa.gov]
CC: Qazzaz, Bilal [qazzaz.bilal@epa.gov]; McGrath, Jesse [mcgrath.jesse@epa.gov]
Subject: RE: State, Local, and Tribal Monthly Conference Call

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Jason Treutel
Air Monitoring Quality Assurance Coordinator – Bureau of Air Management
Wisconsin Department of Natural Resources
Phone: (608) 264-8596
Cell Phone: (608) 220-0247
Fax: (608) 267-0560
Jason.Treutel@wisconsin.gov

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Sent: Monday, February 23, 2015 8:03 AM
To: abaird@oneidanation.org; aboetcher@nhbpi.com; Adam.Blundell@hamilton-co.org; air@lldrm.org;

airquality@badriver-nsn.gov; Alexander Jackson; Allen, Mark K - DNR; bfrazier@piic.org; brettmc@chegnet.net; Rodger, Bruce C - DNR; Laude, Bryan T - DNR; Burt Mechenbar; Cashman, John; ccharwood@redlakenation.org; charlie.lippert@millelacsband.com; charliel.millelacsojibwe@gmail.com; Chris.Harrison@hamilton-co.org; Christina Wieg; christina.boss@hamilton-co.org; Cindy.Charles@epa.state.oh.us; cjlippert@hotmail.com; cspruce@kbic-nsn.gov; dallasr@uppersiouxcommunity-nsn.gov; Nickolie, Daniel W - DNR; darrell.pennington@epa.state.oh.us; ddtyrolt@chegnet.net; deb.dirlam@lowersioux.com; Deborah Stone (Environmental Control); dtan@cantonhealth.org; Desmond.berry@gtbindians.com; dwights@itcmi.org; dzeiler@idem.in.gov; carol.eggert@toledo.oh.gov; gary.engler@epa.state.oh.us; Fenlon, Dennis (MPCA); 'fitznerc@michigan.gov'; Giwojna, Benjamin; Good, Gail - DNR; Hetherington, Grant D - DNR; Greg.bunker@mohican-nsn.gov; gshubel@itcmi.org; randy.hock@epa.state.oh.us; hooverb2003@yahoo.com; jhupp@cantonhealth.org; jane.rohl@gtbindians.com; Treutel, Jason A - DNR; jesse.anderson@lowersioux.com; jlyons@mitw.org; jmears@oneidanation.org; Joe.Cebe@fcpotawatomi-nsn.gov; Jonathan Knight; joywiecks@fdlrez.com; jrodwan@nhbpi.com; kaleel@ladco.org; Karen Moore-Wright (Environmental Control); kari.palmer@state.mn.us; katies@stcroixtribalcenter.com; kbrosemer@saulttribe.net; Anna.Kelley@hamilton-co.org; kellie.gavin@pca.state.mn.us; kenski@ladco.org; kgunderson@ho-chunk.com; kjomac2000@yahoo.com; kmackety@nhbpi.com; Lacka, Monika; land@ccsmdc.org; Lengerich, Steve; lmorckel@cantonhealth.org; linda.katchenago@mohican-nsn.gov; Lynn Schmitt (Environmental Control); Mertes, Mary - DNR; Mayo, Kathleen; mctwg@arvig.net; meloneemontano@hotmail.com; Meyer, Cynthia; Moran, Eileen; mrogers@city.cleveland.oh.us; natalene.cummings@fcpotawatomi-nsn.gov; PARKS, JAMES; chris.price@illinois.gov; Rick Strassman; Robinson, Amy (DEQ); srubens@schd.org; skniffen@sagchip.org; soberg@boreal.org; stan.ellison@shakopeedakota.org; Steve Blaser; nathan.stroup@hamilton-co.org; kilmers@michigan.gov; Tara Cioffi; tdzienis@cantonhealth.org; terry.sanner@epa.state.oh.us; Thomas Shepard; thurlow.mcciellan@gtbindians.com; tmaki@itcmi.org; tomf@stcroixtribalcenter.com; travismaki906@gmail.com; twarner@kbic-nsn.gov; Tyson, MaryPat; whitmava@rapca.org; waynedupuis@fdlrez.com; wrc4pres@yahoo.com; yvettec@boreal.org; R5 ARD-ATAB-AMAS; Molnar, Eve; Worsham, Luke R - DNR; Helen.Waquiu@state.mn.us; cassie.mcmahon@state.mn.us; JOHN WICKER (JWICKER@idem.IN.gov); Bloomberg, David E.; Compher, Michael; Kevin Schnoes (Environmental Control) (Kevin.Schnoes@cookcountyil.gov)
Cc: Ross, Anthony; Fuoco, Marta; McEvoy, Chad; Caudill, Motria; Engler, Gary; Rodger, Bruce C - DNR; Delisio, Edward; Hamilton, Scott; McGrath, Jesse; Scott Wold
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-IDEM would like to discuss how other states are validating their data
-Information sharing with SWOAQA and CCDEC

Bilal Qazzaz
Air & Radiation Division
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(312) 353-2325

John Wicker--IDEM

One thing I would like to see some discussion on is the percent differences for data validity. I am still somewhat cautious on applying a 7% one point percent difference for ozone. Here is my reasoning. If QA and Ambient have calibrators that are verified by the same primary standard, why is QA allowed 15% but ambient is allowed only 7%? This does not make sense to me. Based on my 25+ years of air monitoring I am seeing data validity limits as follows:

QA – 15%

Ambient span – allowed 10% drift based on specific time period. If more than 10% data investigation. If greater than 15% invalid data.

Ambient 1 pt – 7% but this is a statistical average over a specific time period. Failing 7% would indicate data investigation. Daily span as well as QA results help determine data validation.

This is just my take on what the requirements should be. There does seem to be some open interpretation in the CFR.

Mike Burk--IDEM

I'm not sure if this meeting is the right forum or not, but I'd like to get a feel for how our neighboring states are handling their audit data and reporting. We currently use an oracle database application that was designed in the late '90s/2000's and is well past its useful life. It's great in serving as a repository for our instruments, certifications, calibrations and audits, but not so great on the reporting side. We're currently in the preliminary stages of coming up with a replacement, and would love to get some specifics on how the other Region 5 states are doing things; what's working, what isn't, etc.

Dennis Fenlon--MPCA

1. Some Black carbon analyzers are capable of generating 7 channels of data. However, there doesn't seem to be any parameter codes in AQS for any black carbon data other than UV (BC1) and black carbon (BC6). How are other agencies reporting those additional channels of data?
2. Furthermore, is black carbon to be reported to AQS in local or standard conditions?
3. Are there any agencies in R5 collecting ultrafine particle data? Once again, there seems to be no applicable parameter codes for that data. How are others reporting that data to AQS?
4. Due to temperature and humidity control problems in our TSP/PM10 gravimetric weighing room, we have decided to move the actual weighing (equalization & weighing only) of both of those parameters into our PM2.5 weighing clean room. Is this an acceptable practice?
5. We have found that our NOy audits take several hours to complete, specifically due to slow zero stabilization. Do other agencies have these same slow responses?

Message

From: Qazzaz, Bilal [qazzaz.bilal@epa.gov]
Sent: 2/26/2015 3:38:56 PM
To: Compher, Michael [compher.michael@epa.gov]
Subject: QA Eye Issue 13
Attachments: qanews13.pdf

Michael,

Look to page 6 for the article about when QC data should be removed from AQS.

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EPA OFICE OF AIR QUALITY PLANNING AND STANDARDS

The QA EYE

ISSUE 13 AUGUST, 2012

SPECIAL POINTS OF INTEREST:

- National Air Quality Conference Presentations on AMTIC

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National Air Quality Conference Well Attended

When all was said and done, over 500 people attended the Ambient Air Quality Conference the week of May 14 in Denver Colorado. The meeting packed in one day of training and two and one half days of plenary and concurrent technical sessions. Forty five vendors attended the conference and overall the attendees seemed happy with the venue and the sessions. Those attending received a follow-up email requesting additional feedback on the conference. We received 114 responses to the survey and the information will help us plan for future meetings.

QA Activities at the Conference

On Monday, a half day training course was provided on the 40 CFR Part 58 Appendix A QA Regulations. The session co-chaired by Donovan Rafferty, WA Dept of Ecology and Mike Papp, OAQPS. The session had trainers representing the States (Donovan Rafferty), Tribes (Melinda Ronca-Battista, Tribal Air Monitoring Support Center), the EPA Regions (Mathew Plate, R9 and Greg Noah, R4) and OAQPS (Dennis Crumpler, Mark Shanis, and Mike Papp). There was a lot of material covered in the 4 hours and although 80 people signed up for the session the 150 seat room was standing room only at the end of the day. Training slides are posted at the conference site on AMTIC. Survey responses on the training session were positive.

On Wednesday morning there was a breakout session on monitoring regulation changes. The session was more of a "let it all hang out" session where ideas were brought to the table to spur conversations and get initial impressions. Mike Papp, OAQPS talked about potential changes to the 40 CFR Part 58 Appendix A regulations. Prior to the conference, Mike asked for feedback from the monitoring community, via the QA Strategy Workgroup, on areas they thought needed changing in Appendix A. Mike is maintaining a table of these changes and is accepting any additional comments.

Wednesday also included a half-day QA technical session co-chaired by Yousaf Hameed, Clark County and Dennis Crumpler and Mark Shanis, OAQPS. There were many interesting papers at the session which was well attended. Presentations are posted at the conference site on AMTIC. http://www.epa.gov/ttn/amtic/naamc.html

Much of this Newsletter will be devoted to issues or discussions that came up during the conference.

Pb Analysis Audits- Questions about Concentration Ranges and Reporting.

Many people refer to the Pb analysis audits as the Pb audit strips. However, with the advent of Pb-PM_{10}, analysis audits need to be available for teflon filters with analysis either by XRF or by approved FEM methods. The following information is provided to help explain the concentration ranges that are considered acceptable.

	Current Regulation		
Level	Pb Conc (µg/strip)	Ambient Air Conc (µg/m³)	Conc Percentage of NAAQS
1	9 - 30	0.04 - 0.15	30-100%
2	60 - 90	0.30 - 0.45	200-300%

Pb Strips

These strips can either be developed by EPA (ordering on a annual basis), by a third party, or by the analytical laboratory performing the analysis. Standard operating procedures for the development of the strips are on AMTIC http://www.epa.gov/ttn/amtic/pb-monitoring.html. QA EYE Newsletters 8 and 9 have additional information about these strips. The current requirement in Appendix A for the concentrations for the Pb analysis audits are 30-100% of the NAQQS for level one and 200-300% of the NAAQS for level two. The reporting units for the data are in ug/strip (AQS units code 077) and are not converted to concentration (ug/m³).

NAAQS-0.15 ug/m3	Sampler Flow 1.7 m³/min			
	Level 1		Level 2	
	30%	100%	200%	300%
ug/m3	0.045	0.15	0.3	0.45
ug/strip (3/4" strips)	9.18	30.6	61.2	91.8
ug/strip 1" strips	12.24	40.8	81.6	122.4

	Sampler Flow 1.1 m³/min			
	Level 1		Level 2	
	30%	100%	200%	300%
ug/m3	0.045	0.15	0.3	0.45
ug/strip (3/4" strips)	5.94	19.8	39.6	59.4
ug/strip 1" strips	7.92	26.4	52.8	79.2

	Pb-TSP by extraction			
For AMP255	Level 1		Level 2	
	Min	Max	Min	Max
	5.9	40	45	125

The equivalent ambient Pb concentration in ug/m³ is based on sampling at a 1.7 m³/min flow rate for 24 hours on a 20.3 cmX25.4 cm (8X10 inch) glass fiber filter where one twelfth of the filter (3/4 inch strip) is used. EPA has received comments that monitoring organizations are using different filter strip sizes and different flow rates in the samplers so when they calculate the concentrations they need for the filter strip, it is outside the limits provided in the "Pb Conc" column of the table above and AQS identifies the concentration as not meeting the acceptance criteria. In some cases AQS did not allow the data to be reported.

Since the acceptable flow volumes for the TSP monitors are 1.1 to 1.7 m³/min and the Pb strips are made at ¾ to 1 inch widths, the calculations to the left were performed. The data illustrate that based upon what size strip and volume is used, the concentration limits can extend from 6- 40 ug/strip for audit level 1 and 40- 123 ug/strip for audit level 2. Although EPA would prefer that monitoring organization develop the Pb analysis audits within the 9-30 and 60-90 ug/strip range, in 2012 AQS will accept values at 4- 40 ug/strip for level 1 and 45- 170 ug/strip for level 2. **In 2013 we will be revising the ranges to 4-40 ug/strip for level 1 and 45-125 ug/strip for level 2.**

	PM10 Teflon by extraction			
	Level 1		Level 2	
	30%	100%	200%	300%
ug/m3	0.045	0.15	0.3	0.45
ug/filter	1.08	3.60	7.20	10.80

	PM10 Teflon by XRF			
	Level 1		Level 2	
	30%	100%	200%	300%
ug/m3	0.045	0.15	0.3	0.45
ug/filter	1.08	3.60	7.20	10.80
ug/cm2	0.09	0.30	0.61	0.91

Pb-PM10 (Teflon)

For the Pb-PM_{10} Teflon filters it is more straight forward since the filter size and the flow rates do not vary. The table to the left provides the appropriate ranges for the Teflon in units of ug/filter of 1.0 - 4.0 ug for Level 1 and 7.0 to 11.0 ug for level 2. The ranges are calculated by dividing the concentration (ug/filter) by the 24 hour sample volume which is 24 m³. Since some XRF analysis is reported in ug/cm², a conversion using the area of the filter of 11.86 cm² (as defined in 40 CFR part 50 App Q sect 2.1) is used. Since EPA has had some difficulty preparing/acquiring audits at the appropriate ranges, AQS is currently accepting 1.0 - 4.0 ug for Level 1 and 5.0 to 11.0 ug for level 2.

Reporting the Pb Analysis Audit Data– Replicate Analysis Results

Since some monitoring organizations are using contractors to analyze their filters, there has been some issues concerning what Pb analysis audit data to report. At a minimum, 6 analysis audit values (three low concentration and three high concentration) should be reported each quarter. Some contractors may run the audits within the quarter on different days, and some may run the audits all on the same day. It's preferred that they run on different days but it's not a requirement. However, the laboratories may also be providing the monitoring organizations with replicate analysis. For TSP strips this means that they are analyzing the extract a number of times and providing the results of this multiple analysis to the monitoring organization. In the case of XRF analysis, the laboratory may be running XRF on different portions of the same filter and providing the results of this analysis to the monitoring organizations. For purposes of AQS reporting, EPA requires only the mean of the replicates reported. Some laboratories may be running the XRF audit filters more often then required. These additional results provide more information about the quality of the laboratories results and can be reported to AQS.

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Annual PEs and Bracketing 80% of Ambient Air Concentrations... How's it calculated

For the annual performance evaluation requirements for the gaseous pollutants, EPA has received a fair number of questions on how to handle the suggestion that: "*The audit levels selected should represent or bracket 80 percent of ambient concentrations measured by the analyzer being evaluated*".

This intent of this suggestion is to implement audits at concentrations normally measured by the routine monitor so the assessment represents an estimate of uncertainty around routine concentration levels. Monitoring organizations trying to perform these assessments have asked EPA for the best method to represent or bracket their data. EPA did not get specific on this criteria in order to provide the monitoring organizations some flexibility in this approach. However, due to the popularity of this question some suggestions follow.

One could perform the 80% bracketing on a site level or on an aggregation of all sites within the monitoring organization.

All sites combined-

1) Take 3 years of hourly data from all sites, find the 80th percentile and use that as a starting point to find appropriate audit levels. Each year add a new year to create a rolling 3-year average. You could then use the same audit concentration levels for each site in the network.

2) Take the most current valid year of hourly data from all sites, find the 80th percentile and use that as a starting point to find appropriate audit levels. Each year use the most current year to provide an estimate. You could then use the same audit concentration levels for each site in the network.

Single Sites-

Perform the same estimate in #1 or #2 using individual sites for the development of site specific audit levels.

Protecting the NAAQS.

A comment that we've heard from monitoring organizations is that they like to audit in a manner that ensures the monitor is accurate at the NAAQS level. If this is the case, there are two acceptable solutions: 1) audit a fourth point around the level of the NAAQS or 2) use one of the three required audit points for this audit level. Since the audit levels do not need to be consecutive, either approach is acceptable.

Any of the techniques discussed above will provide audit levels that more closely match the routine concentrations at the site. There are probably other approaches that would be deemed acceptable by EPA, so check with your Region. Your QAPP should define how your organization will implement the requirement.

National Toxics Trends Site Network Assessment Presented at National Air Monitoring Conference

The NATTS Network collects ambient air monitoring data on air toxics as part of the Urban Air Toxic Strategy, which addresses air toxics in urban areas. Air toxics include hazardous air pollutants or HAPs, which are pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. Data generated by each NATTS site are quality assured and submitted to the national Air Quality System (AQS), EPA's repository of ambient air data. These quality-assured data can then be used for purposes such as:

- Identifying trends in ambient air toxic concentrations to facilitate tracking progress toward emission and risk reduction goals.
- Directly evaluating public exposure and environmental impacts in the vicinity of monitoring sites.
- Assessing the effects of specific emission reduction activities both locally and nationally.
- Providing quality assured air toxics data for risk characterization.
- Evaluating and subsequently improving air toxics emission inventories and model performance.
- Identifying additional monitoring needs (e.g., new sites or additional methods).

EPA conducted its NATTS Network Assessment as part of the Air Toxics Component of its overall National Monitoring Strategy, which requires that the NATTS Network be evaluated and modified every 6 years. EPA's assessment can be divided into two portions: quantitative and qualitative. The quantitative portion examined the pollutant datasets collected by the monitoring stations and evaluates the quality of those datasets in terms of suitability for assessing trends. EPA used the suitable datasets to identify trends of air toxic concentrations over the 6-year period 2005 - 2010, as well as to identify national trends of air toxics at individual sites. The qualitative portion examined issues such as whether the network design is appropriate to achieve the network's goals and objectives and whether changes to the sites, pollutants, or means of measurement are needed to refine the network. OAQPS staff presented the summary of the NATTS Network Assessment at the National Air Monitoring Conference in May 2012. A copy of the draft NATTS Network Assessment is available upon request. Please contact David Shelow @ shelow.david@epa.gov or Dennis Mikel at mikel.dennisk@epa.gov to request a copy.

PM2.5 Bias Estimates Continue to Puzzle

At the 2009 Ambient Air Conference in Nashville, Dennis Crumpler reported seeing a downward trend in the bias estimates based on the $PM_{2.5}$ Performance Evaluation Program (PEP). In developing the 2008-2010 $PM_{2.5}$ QA Report, EPA was continuing to see this trend and is trying to evaluate this data in a number of ways to determine a cause. EPA, working with Sonoma Technology Inc. (STI), started evaluating 12 years of the $PM_{2.5}$ data by asking:

- What are current levels of bias?
- Has bias been changing over time?
- When did bias start trending down?
- Does bias vary by type of separator, WINS versus Very Sharp Cut Cyclone (VSCC)?
- Does bias vary by season?
- Does bias vary by $PM_{2.5}$ concentration?
- Does bias vary by region of the country?

Current Levels of Bias.

Table 1 presents the 2008-2010 bias estimates of the major methods used in the $PM_{2.5}$ network. Although we have some continuous federal equivalent methods in the network, we do not have enough PEP data to make any definitive statements of bias. Table 1 illustrates that all bias estimates are negative, meaning concentrations from samplers operated by primary quality assurance organizations (PQAO) are lower than concentrations from PEP samplers, on average

Table 1. 2008-2010 bias estimates by method

Method Number	Maker	Single Sequential	WINS VSCC	Bias (%)	90% Confidence
116	BGI	Single	WINS	-7.8 %	+/- 3 %
117	R&P	Single	WINS	-12.4 %	+/- 3 %
118	R&P	Sequential	WINS	-11.8 %	+/- 1 %
119	Andersen	Single	WINS	-10.7 %	+/- 7 %
120	Andersen	Sequential	WINS	-8.0 %	+/- 1 %
142	BGI	Single	VSCC	-2.0 %	+/- 3 %
143	R&P	Single	VSCC	-6.0 %	+/- 4 %
145	R&P	Sequential	VSCC	-5.9 %	+/- 1 %
153	Thermo	Single	VSCC	-6.1 %	+/- 2 %
155	Thermo	Sequential	VSCC	-3.7 %	+/- 7 %

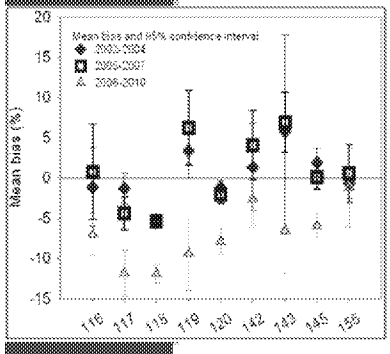

Fig 1. Bias over three, three-year periods

Has bias been changing over time?

Yes, as illustrated in Figure 1. In the 2002-2004 and 2005-2007 time periods the bias was fairly close and between methods there was no consistency which three year period was higher or lower. However, for the 2008-2010 time period, all methods are reading more negative than the other two 3-year periods.

When did bias start trending down?

It appears that the downward trend in bias, as illustrated in Figure 2 started somewhere around 2007. At this point EPA is unsure what might have been the cause for this trend. Only methods 118, 120 and 145 are shown because these three methods are used most often by the monitoring organizations. One can see that in 2011 the downward trend may have stopped but the data used in the assessment is preliminary and data validation is not complete.

Fig 2. Bias trend for methods 118, 120, and 145

Does bias vary by type of separator, WINS versus very sharp cut cyclone (VSCC)?

Yes. In general it appears that with enough information present for both method designations (WINS and VSCC) that the WINS has a more negative bias than the VSCC when operated by the monitoring organizations. Figure 3 illustrates this for the R&P sequential, and Table 2 provides the information for the other major method designations.

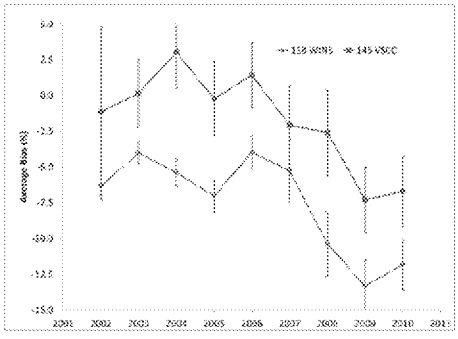

Fig 3. R&P Bias for WINS and VSCC

Table 2 Difference in Seperator by Major Method Sampler Type for SLT Samplers

Sampler Type	Method Numbers	Difference in WINS and VSCC Median Biases	Statistical Test of WINS Bias to VSCC Bias for SLT
BGI Single	116 vs 142	-7.4 %	WINS Bias < VSCC Bias
R&P Single	117 vs 143	-9.2 %	WINS Bias < VSCC Bias
R&P Sequential	118 vs 145	-4.5 %	WINS Bias < VSCC Bias
Andersen Single	119 vs 153	-8.3 %	Not significantly different.
Andersen Sequential	120 vs 155	-6.8 %	Not significantly different. Too few observations for 155.

STI also ran a similar assessment of the PEP monitors since the PEP also uses a combination of WINS and VSCC. However, the analysis did not find a significant difference between the two separators for the PEP samplers (the majority of the PEP uses the BGI audit sampler).

Continued on page 5

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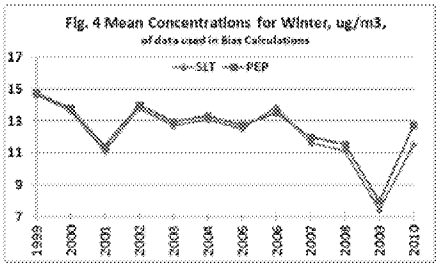
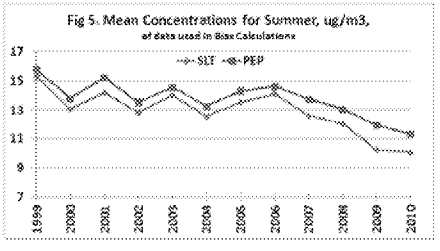
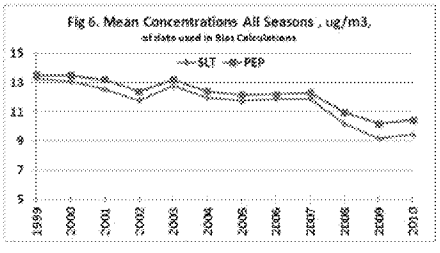
PM2.5 Bias *Continued from page 4*

Does bias vary by season?





Maybe. The trend is still downward for all seasons but in some cases it appears that the summer produces a more negative bias than other seasons. Figures 4 and 5 represent the annual mean concentrations for the PEP and State/Local/Tribal (SLT) samples for the winter and summer months respectively. There is more of a difference between the PEP and SLT concentrations during the summer which would lead to a more negative bias estimate during those periods.



Does Bias Vary by Concentration

Probably not. After looking at the season graphs and noticing the decrease in average concentrations which is better depicted in Figure 6 (representing all seasons), there was a concern whether the lower concentrations had an affect on the bias statistic since an absolute difference (i.e., 2 ug/m^3) at a lower concentration would produce a larger percent difference estimate. After some additional evaluation, we concluded lower concentrations have a limited role, if any, on the bias trend we are seeing. As illustrated in Table 3 we looked at median bias estimates over 5 different concentration ranges in the 2008 through 2010 data and did not see any significant differences although median bias estimates at concentrations > 12 ug/m^3 did show a less negative bias.

Table 3. 2008-2010 median percent Bias at concentration ranges

PEP Conc ug/m3	Median Percent Bias
0-3	-10.2
3-6	-12.6
6-9	-10.7
9-12	-11.5
>12	-6.4

Does Bias Vary by Region of the Country?

Not in any pattern. Bias estimates were generally trending down across the nation without a clear regional pattern.

So What's the Answer

We are not sure. We can't answer the question about why we see a trend but we do know that there appears to be more bias, in general, in the summer and the WINS appears to produce more negative results compared to the VSCC when the monitoring organization operates instruments with both types of separators. Some things come to mind that were also brought up at the conference.

1) Filter removal -The PEP program generally removes the filter the next morning while the routine sample can remain in the instrument for a maximum of 177 hours. The longer retrieval time allows for greater volatilization which is suggested by greater differences in summer months. However, it is not clear how this protocol could cause the downward trend in bias.
2) WINS cleaning - Since the VSCC requires less maintenance, there is a possibility that monitoring organizations are following the VSCC cleaning schedule which might mean the WINS are not cleaned as frequently (every 5 events). Some suggest that a dirty WINS might have an effect.
3) Cleaning of down tubes. Some have recently suggested that maybe there is an accumulation of particles on the down tube that is resulting in a loss of particles over time getting to the filters.
4) Aging of instruments and cassettes. A commenter at the conference wondered whether we are seeing the aging of the instruments. He also commented that there is a possibility we are getting leaks around the cassettes which may cause a change in concentration (since volume is a big part of the estimate)

Next Steps

There are a number of questions we may try and answer. They include:

- Do ambient temperatures play a role? As temperature increases, does bias becomes more negative?
- Do changes in speciation of PM2.5 play a role? As PM2.5 concentrations come down, is the volatile fraction of PM2.5 increasing?
- Do filters retrieved within 10 hours of the end of sampling have smaller bias than those retrieved after filters experience the heat of day?
- What is impact on bias based on length of time between last WINS cleaning and sample collection? Do longer times mean lower concentrations (compared to the PEP)?

Answers to some of these questions may require more in depth studies of data from monitoring organizations since some of this information is not reported to the Air Quality System (AQS).

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When Routine Data is Invalid Some QC Data Should Go

Not all App A checks fit nicely into the paradigm.

QAPPs should include wording that addresses when to retain and when to exclude QA and QC data from AQS.

The intent of the QC data that are reported to the AQS is to provide an estimate of precision and bias of the routine data collected during a particular time period. For example the 1-point QC check is performed minimally every two weeks for the gaseous pollutants and so the data from the check represents that the monitor was within acceptance specifications for that time period. Upon failure of the QC checks and subsequent invalidation of the data (should that occur) it is expected that null value codes would replace the routine data and the QC check would not be reported to AQS. Since the routine data would not be available it would not be appropriate to provide a QC value that would be used in an overall estimates of precision and bias of that site. The estimate of precision and bias for that site should represent the valid routine data being reported for the site.

It is suggested that only those QC checks that are performed on each monitor/sampler are subject to removal and only for the checks within the same time period that the routine data were invalidated. As an example if the Annual PE for ozone was performed in April, 2012 and the ozone data for Dec, 2012 were invalidated, the April 2012 PE could remain in AQS and only the 1-point QC checks for Dec. would be removed. Not all App A checks fit nicely into the paradigm. For example:

Collocated data- since they represent a PQAO and not an individual site it becomes more of a dilemma. However if routine data from a collocated site were invalidated due to a finding based on imprecision of the collocated data then one would not want to have these data represent the other sites in the PQAO.

NPAP and PEP data. Similar to the collocated data, this data represents the PQAO and is not often used to invalidate data. However, there are cases where NPAP data have been used to invalidate routine data and in that case it would not be appropriate to report the NPAP results to AQS.

Other concerns might arise in connection with the Annual PEs, or audits, mentioned above. Consistent with many agencies' Quality Assurance Project Plans (QAPPs), data will not be invalidated on the basis of an audit alone. Many agencies will verify, such as by independent tests, the results of a "failed" audit. It might not be practical in all cases to verify an audit result, immediately recalibrate the "failed" channel and schedule a second audit following the recalibration. Accordingly, excluding the audit result that discovered a problem in the first place could cause the responsible agency either to incur additional audit costs or, alternatively, be "penalized" for appearing to fail to meet the required number of audits. Many agencies would be concerned about having a less than complete audit count appear in the AMP255 at the time of annual data certification.

As suggested above, monitoring agencies should keep in mind the objective of reporting the results of QA and QC checks to AQS: The results of the reported QA/QC checks should represent the precision and bias of the reported raw data. The analysts who report these data should be mindful that precision and bias calculations can apply at the monitor level or at the PQAO level. Often, a result that falls outside criteria indicates an out-of-control situation that is subsequently corrected such as by invalidating data and recalibrating. Under other circumstances, after-the-fact review of QC checks with poor, but "passing," results might reveal a trend consistent with a problem that was only discovered by some other means.

Because of concerns such as these, it is important to consider these recommendations in the context of corrective action. It is recommended that QAPPs include wording that addresses when to retain and when to exclude QA and QC data from AQS and when to conduct replacement QA/QC checks. However, it is impossible to foresee every circumstance that might lead to a poor QA/QC result and, in some cases, it might not be obvious whether to report or exclude a result. In these cases decisions may fall to the responsible QA officers or managers. Discussions between the EPA Region and monitoring organizations might also need to occur to determine the best course of action.

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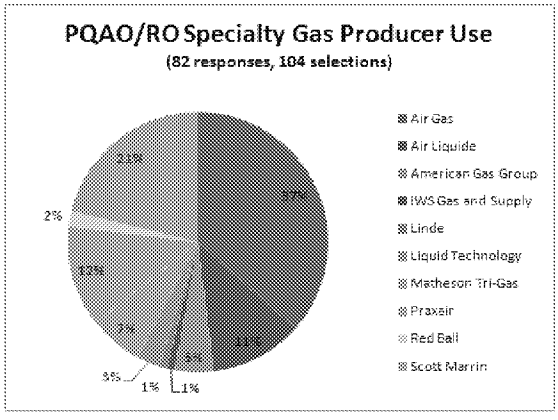
Ambient Air Protocol Gas Verification Program-2nd Report Published

A second full year of implementation of the Ambient Air Protocol Gas Verification program wrapped up December 2011. EPA provided the specialty gas producers an opportunity to review the last quarter of verification data, take any corrective action needed, and review the report prior to publication which was posted on AMTIC April, 2012.



In order to determine what specialty gas producers were being used by monitoring organizations, EPA asked each monitoring organization to complete a web-based survey. For the 2011 AA-PGVP, EPA received surveys from 82 of a possible 122 monitoring organizations, which is about a 67% response rate. This was lower than the input received from 2010 which was around 75%. The table above illustrates producer use based upon the responses received.

Of the 82 respondents, 33 either did not want to participate or were not receiving a cylinder during the year. This narrowed the participants down to 49. Of the possible participants, 15 monitoring organizations sent cylinders to EPA. EPA did not have a monitoring organization volunteer submit a cylinder from Linde, IWS, Red Ball, or Liquid Technology. EPA invited those producers to send a cylinder directly to EPA. In addition, although the monitoring organization surveys did not list, Global, Coastal or ILMO as a producer currently being used, they inquired about the program and submitted cylinders for verification. Some of these cylinders contained multiple pollutants so although 37 cylinders were sent to the RAVLs, 65 verifications were performed.

The Results

As required in 40 CFR Part 75 Appendix A, EPA Protocol Gases must have a certified uncertainty (95 percent confidence interval) that must not be greater than plus or minus (±) 2.0 percent of the certified concentration (tag value) of the gas mixture. This acceptance criterion is for the Acid Rain Program. The AA-PGVP adopted the criteria as its data quality objective and developed a quality system to allow the RAVLs to determine whether or not an individual protocol gas standard concentration was within ± 2% of the certified value. The Ambient Air Program has never identified an acceptance criterion for the protocol gases. Since the AA-PGVP has not been established to provide a statistically rigorous assessment of any specialty gas producer, the RAVLs report all valid results as analyzed but it is suggested that any difference greater than 4-5% is cause for concern.

In general, the AA-PGVP 2011 verifications have been successful. The quality system, standard operating procedures, analytical equipment and standards maintained the data quality of the program. Results show that of the 65 verifications, 64 were within the ± 4-5% AA-PGVP criteria, and 58 (89%) were within the ± 2% Acid Rain Program criteria.

Survey Improvement-

In 2010, EPA had difficulties with monitoring organizations naming production facilities. Sometimes names were mispelled or locations misrepresented. For example, a number of distribution facilities were identified that were not actually producing standards. In 2011, EPA implemented a web-based survey that allowed monitoring organizations to select (based on final 2010 data) the producers they were purchasing standards from. If the suvey list did not have a producer, the monitoring organization could supply a new name and location. The contractor who maintains the survey would provide the new producer information to EPA and if it was determined that it was a legitimate producer, the contractor would update the software so that the new producer would be included on the selection list. The new system has reduced entry errors considerably.

Program Issues– Participation EPA Needs Your Help!

Since the program is voluntary, EPA can not force participation. Due to the budget/resource issues, many monitoring organization are more resource constrained and since the AA-PGVP is optional, it is treated as a lower priority. Since the only added expense to monitoring organizations is the shipping cylinders to the RAVL, in 2011 EPA started helping monitoring organizations pay for the shipping cost. The first 2 quarters of 2012 show very light monitoring organization participation which may force EPA to invite the specialty gas producers to send cylinders directly from their facility which defeats the objective of a blind verification. Twenty five percent of last year's cylinders came directly from producers.

We are grateful to the following organizations that participated in last years survey and we hope that more will consider participating in 2012.

- **Arizona DEQ**
- **City of Philadelphia**
- **Mecklenburg County NC**
- **Maricopa County Air Quality Dept**
- **Minnesota Pollution Control Agency**
- **New Jersey DEP**
- **North Carolina DNR**
- **Ohio EPA (Portsmouth)**
- **Southern Ute Indian Tribe**
- **State of Delaware**
- **State of Florida**
- **Texas Commission of Environmental Quality**
- **University of Iowa State Hygienic Lab**
- **Virginia DEQ**
- **West Virginia DEP**

EPA-R5-2017-008897_0000164

Trace Gas NPAP Issues and Notes from the National Meeting

Mark Shanis has been working on a number of issues associated with NPAP activities at NCore sites. The following are some brief updates and helpful hints from his presentations at the National Ambient Air Meeting in Denver.

Zero Air Generator (ZAG) Agreement Issues

The API-701H seems to do a better job than API-701, but there is a need to control heat from the convertor, especially if you use a case-based audit system, or monitor with tightly packed instrument racks. If you are auditing or monitoring trace level CO and have an hydrocarbon (HC) convertor in your ZAG, especially if it is a 701 or 701H, you may need to have a CO convertor after the HC convertor. The HC converter will convert some, but not all, HC that goes through it into CO. If you have to add the CO convertor that API offers, it may mean more heat output from your ZAG. You may wish to check your ZAG against a good Ultra Pure Air cylinder, as the NPAP program does, to be able to independently check the performance of your ZAG.

Trace Level (TL) Calibrators

Generate the TL lower audit levels either with :

1. a lower ratio of CO/NO/SO2 in your blended gas (audit for generation) cylinder; or
2. adding 3rd lower flow rate pollutant mass flow controller (MFC) to your 100cc/min such as a 20 or 10cc/min MFC; or by increasing your dilution MFC from 10 lpm to 20 lpm, or from 20 lpm to 30 lpm (but you can only do that if you have a ZAG that is designed to and can safely go that high;

Some combination of 1 and 2 may also work. The NPAP audit trailer at RTP has a 20cc/min, 100cc/min, and 30 lpm MFC combination. We use approximately 675ppm CO, 60ppm NO, and 30ppm SO2, and we have a 2nd blend for lower levels of ppm CO/NO/SO2.

Region 2 has a 10cc/min, 100cc/min, and 20 lpm MFC combination, and have just proposed using 450ppm CO, 30ppm NO and 15ppm SO2 blend for generating audit levels.

TL calibrator's ozone generators have been observed in the past 2 years to have problems generating the lowest 1 or 2 ozone levels for GPT for NOy (or TL NO2), due to software and/or hardware design features of the generator; and/or to the ability of the auditor (or station manager) to keep a stable, correct range temperature, especially in the summer. However, newer or serviced models of at least API and Environics calibrator's ozone generators have been shown to provide 1-10ppb O3, with stability for an audit of NOy or GPT.

CO analyzer issues

Zero and 3-4 hour drift characteristics may not be as good as specified by the manufacturer. One factor causing the observed problem has been temperature variability due to limitations in AC control of the station, or the audit vehicle/container (trailer, truck, or case-based systems).

SO2 and NO analyzers seem less affected by temperature effects. Temperature control is a more important investment for trace level monitoring, and auditing. A zero of +/-15ppb for a 0-5 ppm full scale TL CO analyzer is probably as good as you may get.

NOy analyzer issues

The audit gas will have to be delivered to the sampling stations NOy convertor inlet, on top of a 10 meter tower. However, if you carry an audit NOy, the convertor does <u>not</u> have to be on a 10 meter tower for a representative audit. However, some NOy analyzer convertors' components may have a wiring problem, resulting in a convertor temperature lower than is required to do the NOy to NO conversion correctly, so be sure to see the API notice about this issue.

Since convertor efficiency is an issue for a device based on conversion of non-NO species to NO, and since the NOy technology is still relatively new, the convertor efficiency (CE) must be checked periodically, and audited. To do this, NO2 is not really sufficient, and NPN or IPN is available and must be used. NO2 only tests conversion efficiency of NO2, not NOy. Most of what will be measured will be NO2, not NOY, but if you don't check, how will you know which is present and in what proportions?

Regular range NO2 audits of NO-NOx analyzers have been shown to be accurate and reliable when based on measurement of the diluted CO from a cylinder of a gas blend of CO, SO2, and NO, followed by reaction of the diluted blend with ozone from the diluting calibration device. That is, we measure the diluted CO on our audit CO analyzer, which we calibrate at the site just before the audit, and assume the concentration of the diluted NO, based on reliance on the blend ratio (CO & NO). We use the audit station's NO-NOx response to test and calculate the sampling station's NO-NOx convertor efficiency for NO2. We call this an NO2 audit based on CO & GPT. The SOP for this procedure is in the NPAP TTP Draft Operators field SOP (7/28/2011) on AMTIC: http://www.epa.gov/ttn/amtic/npapsop.html

Reliance on this procedure for trace level NOy analyzers depends on the performance of the CO analyzer, and control of temperature and pressure. While we see that this SOP variation works, questions have been raised about the challenging the lowest audit levels.

At RTP we have developed an alternate NOy calibration and audit method, based on joint calibration of the CO & NOy analyzers with a set of NPN or IPN spans, and if needed, reliance on the NPN calibrated NOy analyzer for an audit. Initial tests appear promising. Confirmation tests are underway at RTP. If successful, the new and/or older method will be tried out in Region 4. Due to the added time for doing NOy audits by GPT, an alternate shortcut method has been proposed, will be tested around the Regions, and discussed for future use.

"the agency feels this is an appropriate use for the filters and therefore a legitimate reason for not archiving filters that fall into this category of use."

PM_{10} Filters Serving Dual Purposes and a Reprieve for Filter Archiving

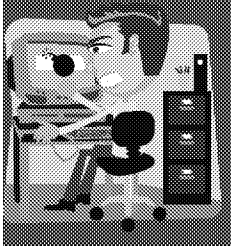
We have received questions on the use of low volume PM_{10} filters that can provide multiple measurements of PM_{10}; specifically the PM_{10} half of the $PM_{10-2.5}$ measurement, and subsequently used in the analysis of PM_{10}-Pb.

Using the same filters for both PM_{10} and Pb analysis reduces the number of samplers required at the monitoring sites and creates other efficiencies. EPA has encouraged this practice with guidance to perform PM_{10} mass measurements prior to performing Pb analysis on the same filter (QA EYE Issue 12). Now that there is an approved FEM Pb ICP-MS technique which will destroy the PM_{10} Teflon filter during sample extraction (the XRF FRM technique is non-destructive and therefore the filter can still be archived), monitoring organizations have asked whether using the PM_{10} filter for multiple uses with a destructive ICP-MS Pb FEM method is in conflict with the following 40 CFR Part 58.16 requirement that:

"The State, or where applicable, local agency shall archive all $PM_{2.5}$, PM_{10}, and $PM_{10-2.5}$ filters from manual low-volume samplers (samplers having flow rates less than 200 liters/minute) from all SLAMS sites for a minimum period of 1 year after collection."

The requirement goes on to state that the archived filters would be made available to EPA or other federal agencies, during the 1-year archive period, for supplemental analysis. Therefore, the archive requirement is to ensure that the filters are available, in a viable condition, for beneficial supplemental uses. Since the approved Pb FEM technique is available for use and EPA has encouraged multiple use of filters in order to reduce capital and resource costs, the agency feels this is an appropriate use for the filters and therefore a legitimate reason for not archiving filters that fall into this category of use.

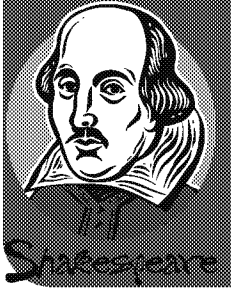
EPA Making Progress on New QA Transactions



The Ambient Air Monitoring Group and the National Air Data Group (the keepers of the AQS system) have formed a Workgroup with a number of EPA Regional and monitoring organization volunteers to review the reporting requirements for the required as well and non-required QA data that is reported to AQS. For many years we have tried to "fit" all our QA data into a precision (RP) or accuracy (RA) transaction that although functional, was not always a great fit. With the possibility of building more automated assessments and the need for additional QA data reported to AQS, this Workgroup has met three times to review the transactions and address issues arising from the review. The process was discussed during the QA Session at the May National Ambient Air Meeting in Denver and will be a topic at the August AQS Meeting.

The Workgroup has one or two meetings remaining which should get us to a stage for external review to a larger audience and programming.

Authors Contributing to the QA EYE— Have You Got Anything to Say?



We appreciate all those authors contributing to this issue. They include:

Bill Frietsche for his work on the Pb Analysis Audit (page 2)

Dennis Mikel who authored the National Toxics Summary on page 3

Shelly Eberly (Geometric Tools) and **Mike McCarthy** (STI) who provided the evaluations for the PM2.5 Bias estimate piece on pages 4 and 5

Joe Delwiche (R8) and **Chris Hall** for contributions to the data validation article on page 6, and,

Mark Shanis who authored the Trace Gas NPAP article on Page 8.

We are always looking for interesting articles for the QA EYE. Please take a few moments out of a day to write up something you feel would help the QA community .

EPA

EPA-OAQPS
C304-02
RTP, NC 27711

E-mail: papp.michael@epa.gov

The Office of Air Quality Planning and Standards is dedicated to developing a quality system to ensure that the Nation's ambient air data is of appropriate quality for informed decision making. We realize that it is only through the efforts of our EPA partners and the monitoring organizations that this data quality goal will be met. This newsletter is intended to provide up-to-date communications on changes or improvements to our quality system. Please pass a copy of this along to your peers and e-mail us with any issues you'd like discussed.

Mike Papp

Important People and Websites

Since 1998, the OAQPS QA Team has been working with the Office of Radiation and Indoor Air in Montgomery and Las Vegas and ORD in order to accomplish it's QA mission. The following personnel are listed by the major programs they implement. Since all are EPA employees, their e-mail address is: last name.first name@ epa.gov.

The **EPA Regions** are the primary contacts for the monitoring organizations and should always be informed of QA issues.

Program	Person		Affiliation
STN/IMPROVE Lab Performance Evaluations	Eric	Bozwell	ORIA- Montgomery
Tribal Air Monitoring	Emilio	Braganza	ORIA-LV
Statistics, DQOs, DQA, precision and bias	Rhonda	Thompson	OAQPS
Speciation Trends Network QA Lead	Dennis	Crumpler	OAQPS
OAQPS QA Manager	Joe	Elkins	OAQPS
Standard Reference Photometer Lead	Scott	Moore	ORD-APPCD
Speciation Trends Network/IMPROVE Field Audits	Jeff	Lantz	ORIA -LV
National Air Toxics Trend Sites QA Lead	Dennis	Mikel	OAQPS
Criteria Pollutant QA Lead	Mike	Papp	OAQPS
NPAP Lead	Mark	Shanis	OAQPS
PM2.5 and Pb PEP Lead	Dennis	Crumpler	OAQPS
STN/IMPROVE Lab PE/TSA/Special Studies	Jewell	Smiley	ORIA-Montgomery
STN/IMPROVE Lab PE/TSA/Special Studies	Steve	Taylor	ORIA-Montgomery

Websites

Website	URL	Description
EPA Quality Staff	EPA Quality System	Overall EPA QA policy and guidance
AMTIC	http://www.epa.gov/ttn/amtic/	Ambient air monitoring and QA
AMTIC QA Page	http://www.epa.gov/ttn/amtic/quality.html	Direct access to QA programs

Message

From: Qazzaz, Bilal [qazzaz.bilal@epa.gov]
Sent: 2/11/2015 4:56:24 PM
To: Compher, Michael [compher.michael@epa.gov]
CC: Hamilton, Scott [hamilton.scott@epa.gov]; McEvoy, Chad [mcevoy.chad@epa.gov]
Subject: FW: Data Validity
Attachments: February 3 2015 Annual Internal Audit of the clean room.docx

To all,

IDEM is doing an annual audit of their PM lab—see attached.

Maybe we should recommend this to the region?

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Wednesday, February 11, 2015 9:29 AM
To: Hamilton, Scott; Qazzaz, Bilal
Subject: RE: Data Validity

OK, I will go back and review the QA Manual. I know the EPA docs are a little open as to how the data can be handled.

In other news, we completed our annual audit of the PM2.5 clean room. I have attached it in case you have any feedback.

Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Hamilton, Scott [mailto:hamilton.scott@epa.gov]
Sent: Wednesday, February 11, 2015 8:31 AM
To: Qazzaz, Bilal; WICKER, JOHN
Subject: RE: Data Validity

Hey John. I would agree with B. These are judgment calls on your end.

For EPA guidance see the validation template.

1. 1-point QC and z/s are critical criteria (If criteria not met then data "should be invalidated unless there are compelling reason and justification for not doing so".)
2. Annual Performance Evaluation (aka Accuracy audit) are operational criteria (..."may be cause for invalidation"..."The decision maker should consider other QC information that may or may not indicate the data are acceptable"...)
3. If something is outside the limits look at all the available information to see what is wrong and then determine what to do with the data.
4. Have a process for actively watching analyzer drift. This will trigger warning limits when an action (such as a recalibration) could be taken.

We are happy to walk you through any examples if needed.

From: Qazzaz, Bilal
Sent: Wednesday, February 11, 2015 7:09 AM
To: WICKER, JOHN
Cc: Hamilton, Scott
Subject: RE: Data Validity

Hey John,

What does your current QAPP say about the criteria?

FYI, I'd be careful about rolling back anything Blaser put in place.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Tuesday, February 10, 2015 2:37 PM
To: Qazzaz, Bilal; Hamilton, Scott
Subject: Data Validity

Guys. We are discussing precision points and accuracy points and how it effects the data. For example, when any of the accuracy points are greater than 15% then the data is invalid. OR do all three points have to be greater than 15%? Also, looking at the precision point (say for ozone), if it is greater than 7% then is the data valid IF the daily span check and/or accuracy audit show it within 15%? Or would you consider this data invalid?

Being old school, I always thought the precision point was never used for data validity, only the upscale span (or accuracy audit). Unless the precision is so far that it indicates something is definitely wrong with the analyzer, meaning data is invalid.

We are rewriting our QAPP so please advise so we can get this correct. Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

Message

From: Hamilton, Scott [hamilton.scott@epa.gov]
Sent: 2/11/2015 1:34:34 PM
To: Compher, Michael [compher.michael@epa.gov]
CC: Qazzaz, Bilal [qazzaz.bilal@epa.gov]
Subject: FW: Data Validity

Michael, FYI.

Let me know if you think our message should be anything different than this concerning data validation.

Thanks

From: Hamilton, Scott
Sent: Wednesday, February 11, 2015 7:31 AM
To: Qazzaz, Bilal; WICKER, JOHN
Subject: RE: Data Validity

Hey John. I would agree with B. These are judgment calls on your end.

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John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

RESEARCH TRIANGLE PARK, NC 27711

MEMORANDUM

SUBJECT: Assessments of One-Point QC Data in Response to Comments on Revisions to the Ambient Air Quality Assurance Regulation contained in 40 CFR part 58 Appendix A

FROM: Lewis Weinstock and Mike Papp (OAQPS/AQAD/AAMG)

TO: Ambient Monitoring Rule Docket (EPA-HQ-OAR-2013-0619)

This memorandum discusses potential changes to quality assurance requirements in 40 CFR Part 58. As part of a proposed rule - Revisions to Ambient Monitoring Quality Assurance and Other Requirements – 79 FR 54356 - OAQPS received a number of comments related to the proposal to lower the concentrations of the one-point QC check and to require that the selection of the check concentration be based on the mean or median concentration of the measurements within the ambient air monitoring network. The comments that were received were used to revise the proposed language for the final rule to provide more flexibility for the monitoring organizations. However, EPA also performed some additional assessments of monitoring data that was used to provide some rationale for our initial decision to propose the changes in the regulations and we believe provide a framework for future changes to operational procedures in the SLAMS network. These additional details are provided below.

BACKGROUND

The EPA proposed to lower the audit concentrations (current section 3.2.1) of the one-point quality control (QC) checks to between 0.005 and 0.08 parts per million (ppm) for SO_2, NO_2, and O_3 (currently 0.01 to 0.1 ppm), and to between 0.5 and 5 ppm for CO monitors (currently 1 and 10 ppm). With the development of more sensitive monitoring instruments with lower detection limits, technical improvements in calibrators, and lower ambient air concentrations in general, the EPA felt this revision would better reflect the precision and bias of the ambient air data being measured at a majority of the sites across the network.

The majority of the comments (19 of 26 responding to the quality assurance proposal) received on appendix A related to this proposed change. Most of the commenters expressed similar technical concerns which can be categorized below:

- The SLAMS network is in place mainly for decisions related to the NAAQS therefore QC checks should be around NAAQS values.
- Some of the federal reference methods (FRM) or federal equivalent methods (FEM) that are still in use may operate acceptably at concentrations around the NAAQS but these older methods are not as sensitive at lower concentrations (i.e., mean or median concentrations) so QC checks at these lower levels are beyond the limits of the instrumentation.

- The instrumentation necessary to challenge the monitors at the lower concentrations (calibrators with additional mass flow controllers or gas cylinders of lower concentrations) would be required to comply and therefore represent an added expense and burden.
- The lower concentrations affect the percent different statistic so there is more chance that the QC check will fail the acceptance requirements and therefore invalidate data that the monitoring organization feels is of acceptable quality.

DATA ANALYSIS

In order to provide some context to the proposal, EPA extracted routine data and all one-point QC data for the 4 gaseous criteria pollutants for SLAMS sites for calendar year 2013. The following evaluation provides summary information about the routine data and the one-point QC checks reported by states. It must be noted that the one-point QC regulation, prior to the proposal, stated that *" the QC check gas concentration selected should be related to the routine concentrations normally measured at sites within the monitoring network in order to appropriately reflect the precision and bias at these routine concentration ranges"*[1]. Based on the 2013 data presented below, it is evident that many monitoring organizations did not follow this recommendation and was the reason EPA formally proposed the revision to this requirement.

Nitrogen Dioxide - In Figure 1 (and similar figures for the other gaseous pollutants), the graph on the left represents the mean, 99th percentile and max value for 1-hour routine ambient air data for 43 states and territories (x-axis) reporting NO_2 data in 2013. The y-axis is concentration in ppb. The green line (80 ppb) represents the proposed upper range of the one-point QC check while the red line represents the current upper range (100 ppb) for the one-point QC check. Of the 43 states reporting hourly NO_2 data, only three states had maximum hourly values (highest value for the year) above the NAAQS (100 ppb) and 99 percent of all the states had hourly values that were below 60 ppb. The graph on the right is a frequency distribution of the one-point QC checks for 2013. 85 percent of the one-point QC checks reported for 2013 were above 99 percent of the routine data.

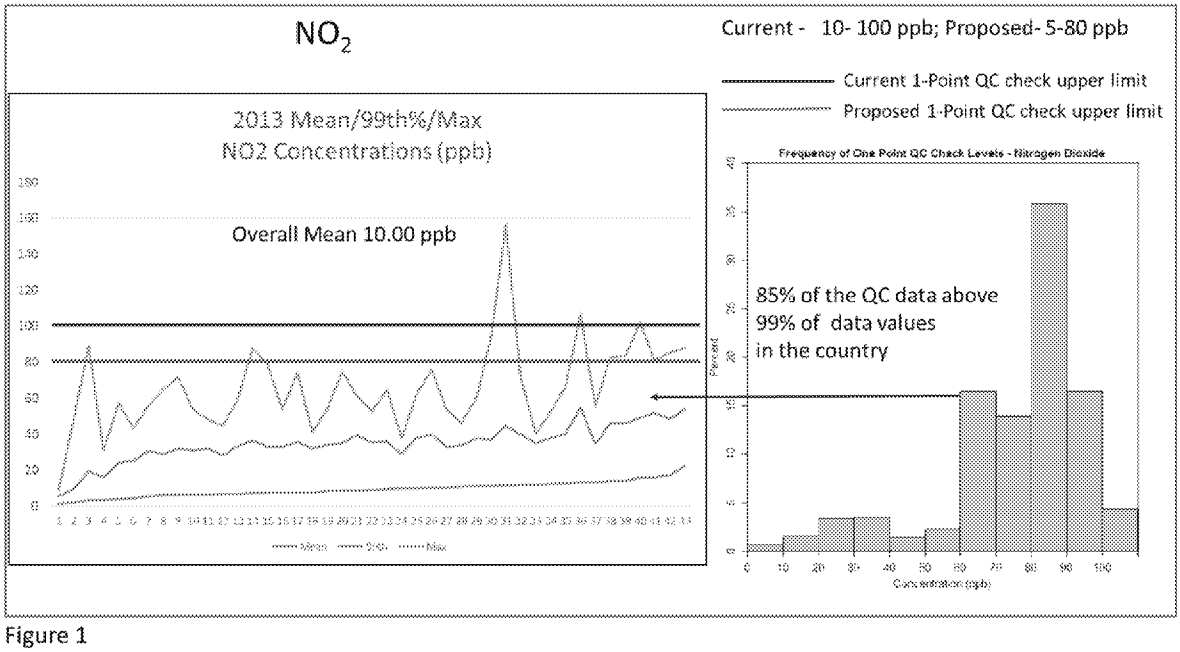

Figure 1

[1] 40 CFR Part 58 Appendix A section 3.2.1

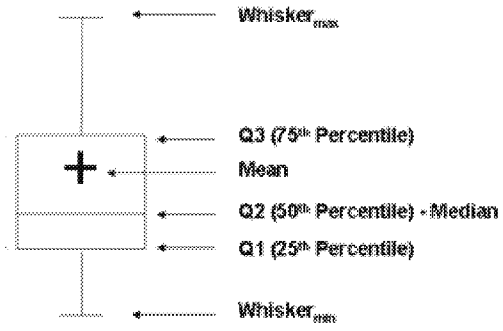

Figure 2 below (and similar figures for the other gaseous pollutants), provides an assessment of the one-point QC checks using box and whisker plots (example on left). In the figures presented below, the mean is not identified. In Figure 2, the graph on the left provides the difference between the measured value and the audit standard value; the graph on the right is the same data set but reports the percent difference which is the statistic presently in use for the gaseous pollutants[2]. The one-point QC data is segregated into 10 ppb segments (0-10 ppb, 10-20 ppb etc.) in order to evaluate whether the lower QC concentrations have an effect on the precision and bias estimates. The green vertical line on the graph on the right represents the proposed 80 ppb high QC range and the blue shaded area represents where the QC checks would be selected if monitoring organizations selected a QC concentration related to the mean or median routine air concentration. The red lines represent the current percent difference acceptance criteria (±15%)[3]. In this case, the NO_2 variability, based on the 25th – 75th percentile spread, does not appear to be significantly different at lower QC concentrations than the higher QC concentration data.

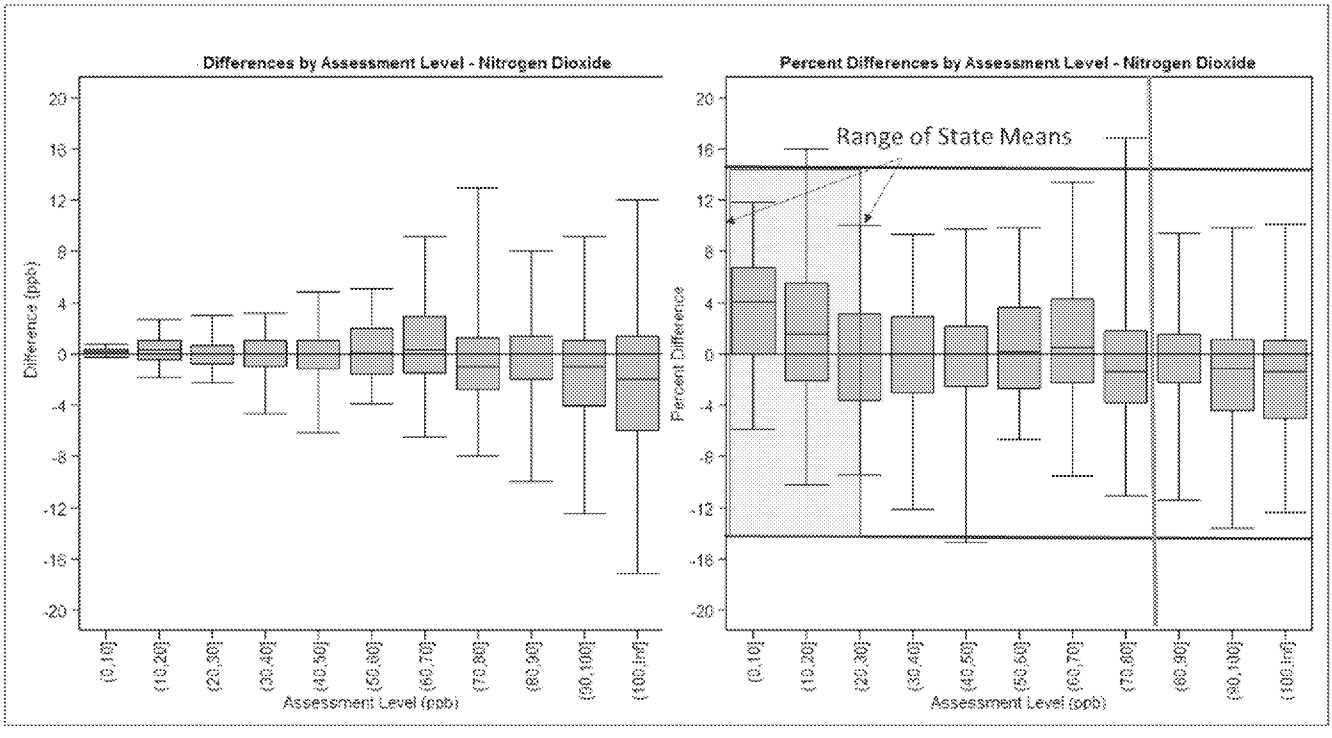

Figure 2

[2] 40 CFR Part 58 Appendix A Section 4.1.1

[3] Validation Templates in QA Handbook Volume II and on AMTIC [HYPERLINK "http://www.epa.gov/ttnamti1/qalist.html"]

Ozone (Fig. 3) - Of the 51 states and territories reporting hourly ozone data, 48 states had maximum values over the NAAQS (75 ppb) but had 99 percent of their hourly values below the NAAQS. In addition, 90 percent of the one-point QC checks were above 99 percent of the routine data.

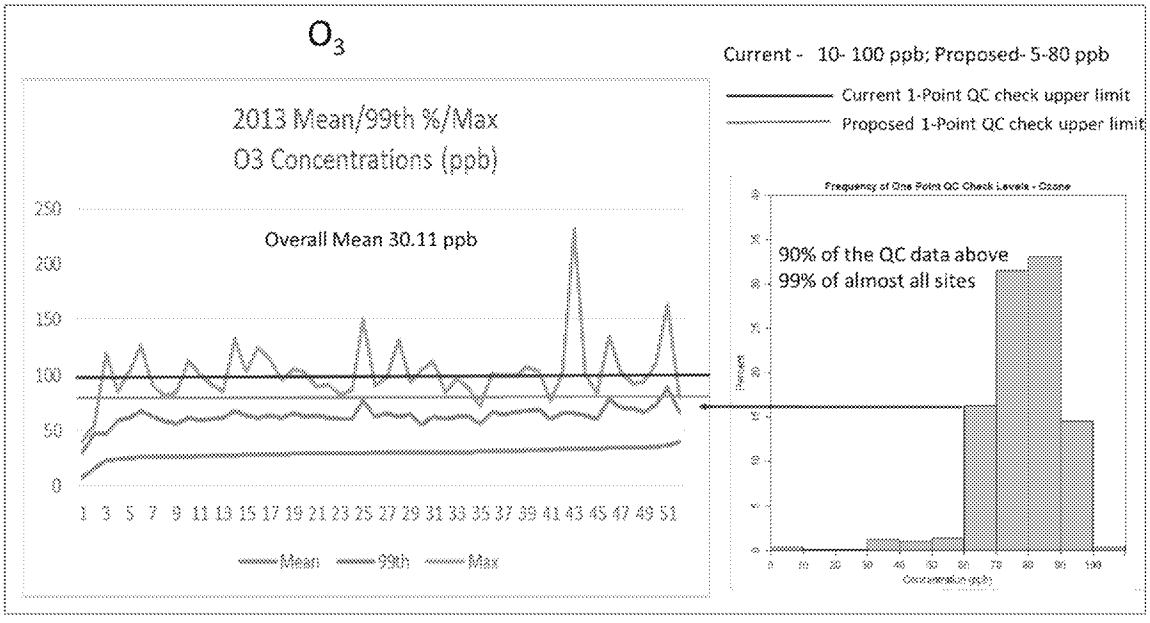

Figure 3

Similar to NO_2, Figure 4 presents the differences (left graph) and percent differences (right graph) of the one-point QC checks segregated into the ten concentration ranges. The ozone acceptance criteria is tighter than NO_2 ($\pm$7 percent difference) but the variability of the 25th – 75th percentile spread at these lower ranges does not appear to be significantly different from the one-point QC checks variability at higher concentration ranges.

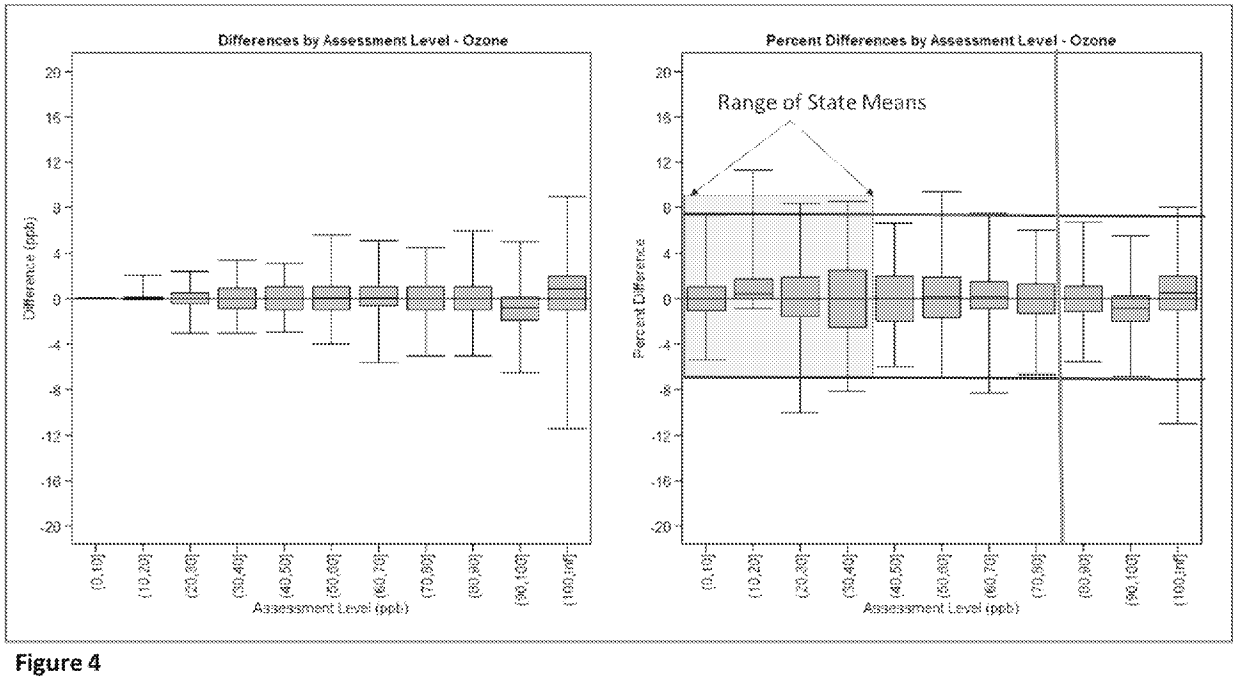

Figure 4

Sulfur Dioxide (Fig. 5) - In order to provide a readable graph, the left hand graph of Figure 5 does not include maximum values since some states did measure SO_2 values that were quite high. Of the 48 states and territories providing hourly sulfur dioxide data, 23 states had maximum values over the NAAQS (75 ppb) and 47 states had 99 percent of their values below 36 ppb. 75 percent of the one-point QC checks were above 99 percent of the routine data.

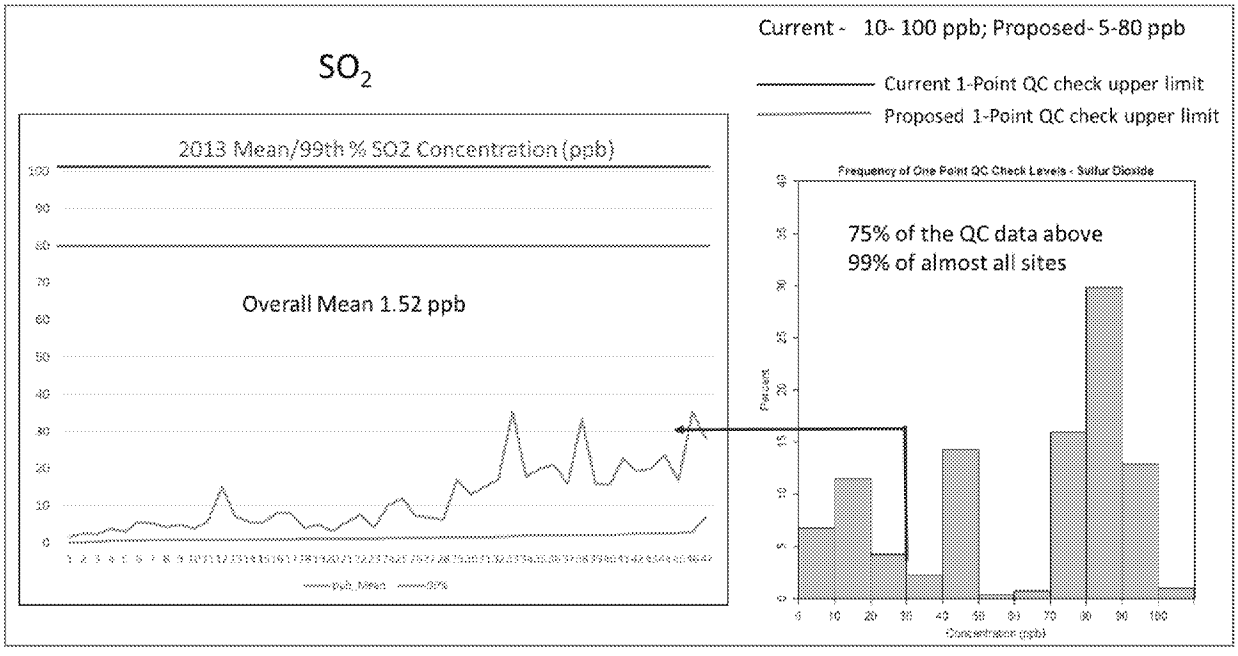

Figure 5

Figure 6 presents the differences (left graph) and percent differences (right graph) of the one-point QC checks segregated into the ten concentration ranges. The SO_2 acceptance criteria is $\pm$10% (percent difference). The variability, based on the 25th – 75th percentile spread, at these lower ranges does not appear to be significantly different from the one-point QC checks at higher concentration ranges.

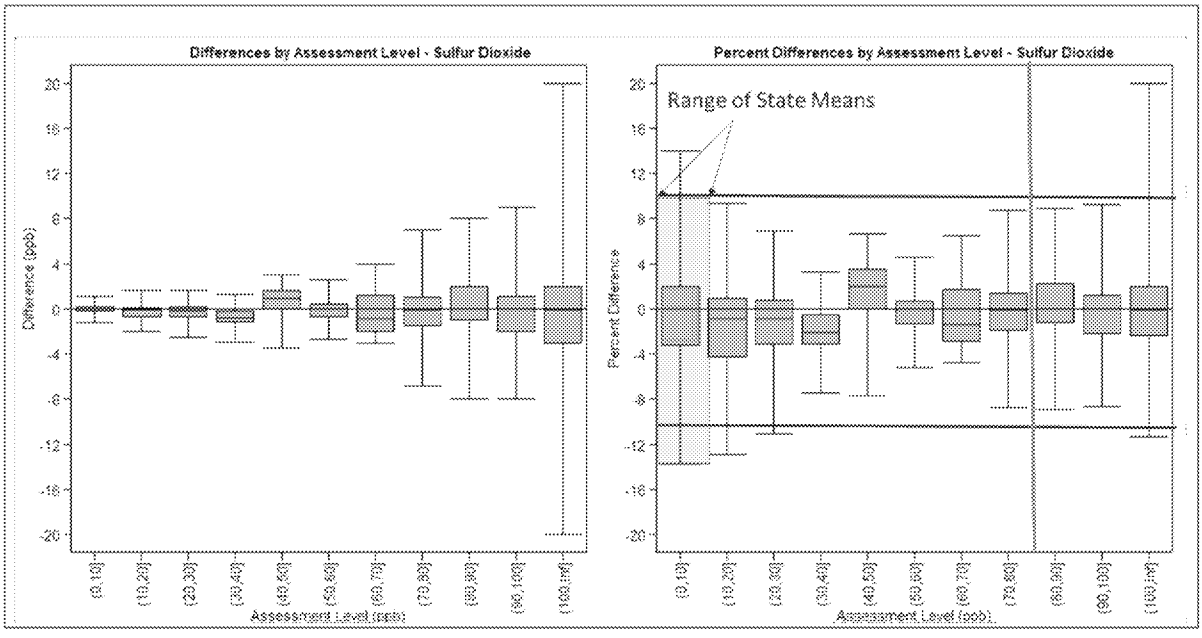

Figure 6

Carbon Monoxide (Fig. 7) - of the 51 states and territories reporting hourly carbon monoxide data, no state was reporting maximum values greater than the one-hour NAAQS (35 ppm) and only three states were reporting hourly maximum values above the eight hour NAAQS (9 ppm). In addition, 99 percent of all states hourly data was below 3.0 ppm. States were providing one-point QC values at lower ranges (graph on right) but about 60 percent of the one-point QC checks were being performed at concentrations greater than 99 percent of the routine ambient air data.

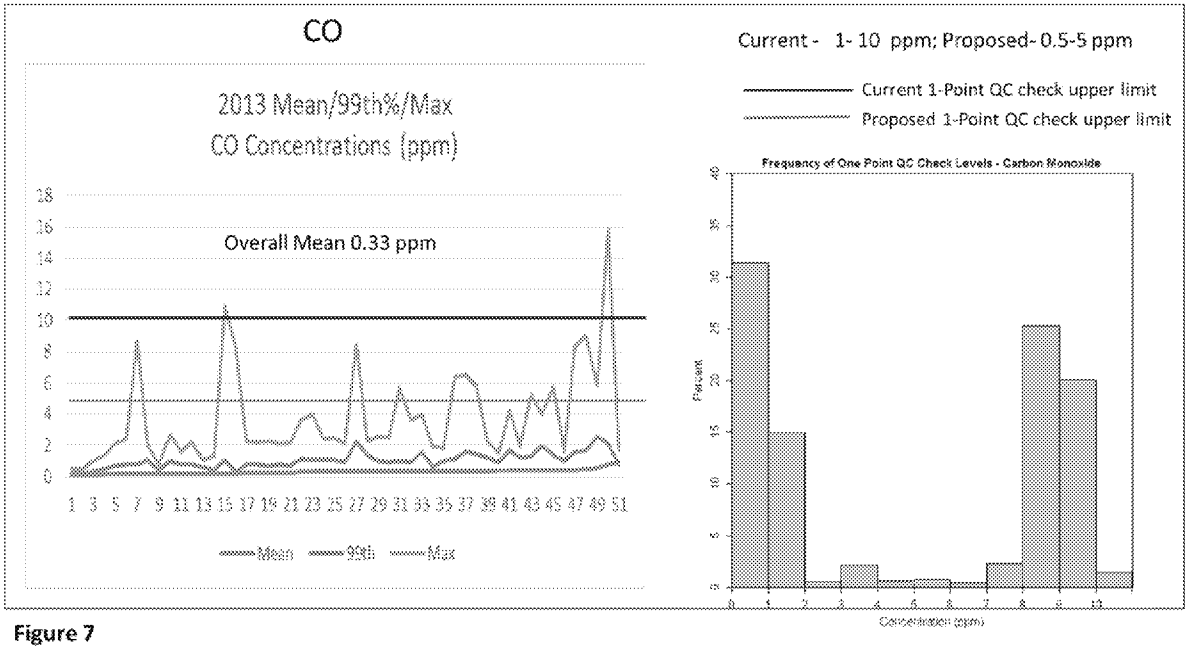

Figure 7

Similar to the other gaseous pollutants, the variability of percent differences, based on the 25th – 75th percentile spread of the box and whisker plots, does not appear to be significantly different between the higher and the lower one-point QC concentration values.

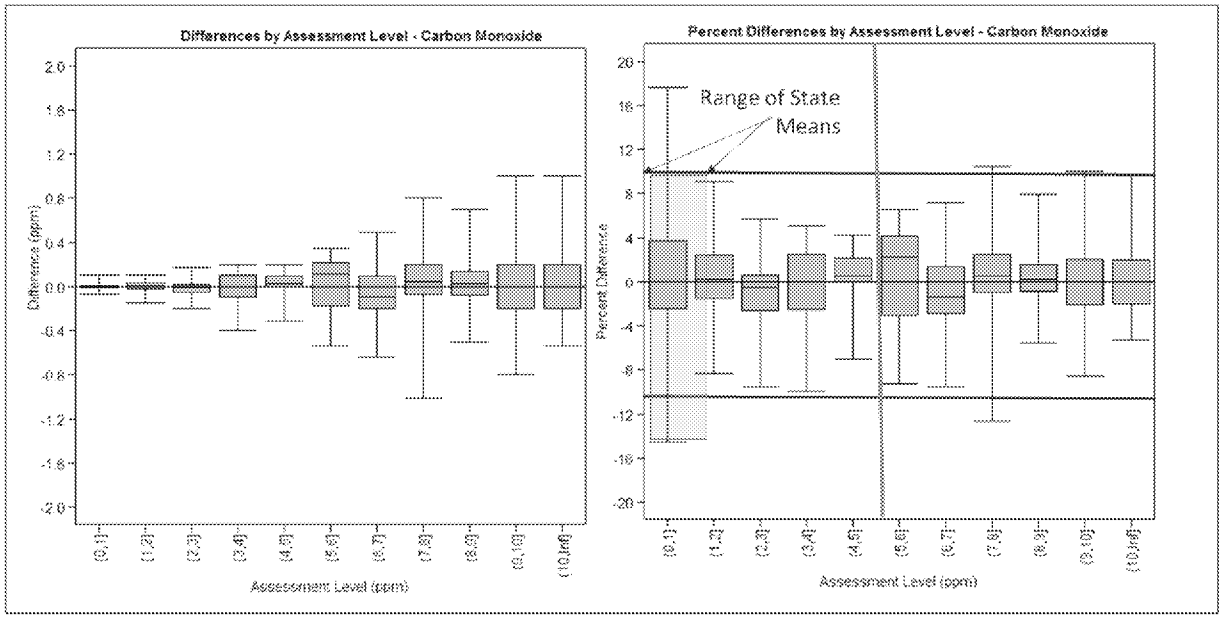

Figure 8

The 2013 data at the lower concentration levels used in this assessment may represent monitoring organizations that have invested in the technology (i.e., analyzers, calibration devices and standards at NCore sites) necessary to adequately calibrate and estimate precision and bias at the concentrations measured at ambient levels more reflective of mean concentrations. However, the data also demonstrates that the technology is available to measure and report precision and bias at mean/median ambient air concentration levels.

As indicated in these results described above, challenging ambient air analyzers with a one-point QC check at the level of the NAAQS provides an incomplete characterization of the precision and bias of the data actually reported to the AQS since, in most cases, the precision and bias estimates from the 2013 QC checks represent the uncertainty at a concentration level above 99 percent of the SLAMS data reported to AQS. These estimates may not be reflective of the precision and bias of these instruments at concentrations routinely measured.

IMPLICATIONS

Over the years, EPA has developed guidance to reflect a different paradigm for the use of a number of QC checks in the ambient air quality system. Figure 9 represents a view of the way various QC checks are currently implemented. This example chart represents data from an ozone monitor with an operating range of 500 ppb (typical operating ranges are 500 or 1000 ppb). The routine data is from a monitoring organization and represents the distribution of typical values seen in a routine monitoring organization. For the 2013 data reported above, the mean and median concentrations for all states reporting ozone was 30 ppb (lower than the 50 ppb mean reported in Fig.9).

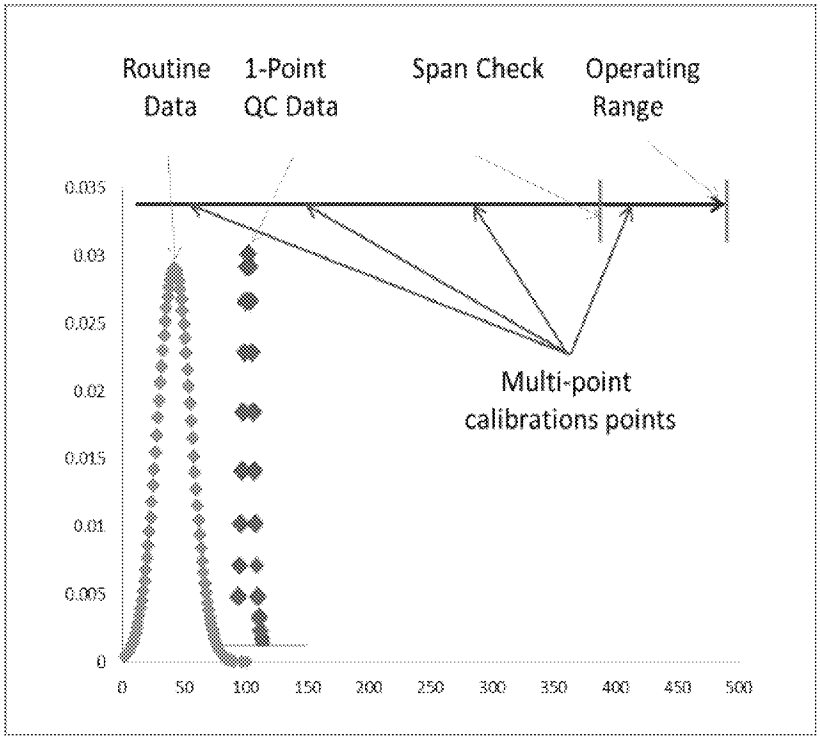

Figure 9. Current quality control paradigm

Calibrations- Multipoint calibrations were evenly spaced over the operating range (0-500 ppb).

Span Check- a span check is normally set at 80% of the operating range (in this case 400 ppb).

One-point QC check- The current one-point QC check in appendix A (prior to the proposal) had a range of 10 – 100 ppb and although the regulation suggested that the checks should represent routine concentrations, 90 percent of the checks in the 2013 data for ozone were between 60-100 ppb. Based on this scenario (Fig. 9) and the concentrations of routine data in the ambient air network, one can see that few quality control points reflect where the majority of the data are measured.

EPA has made strides, with the assistance of monitoring organizations, to develop more useful quality control information, as illustrated in Figure 10. In this case, instead of calibrating all the way to the operating range, monitoring organizations can select a calibration scale that is based on the maximum values reported at the site (or monitoring agency) or at some value just above a historical max. This allows more calibration points to be placed at concentration ranges found in routine data. The span point can still be placed at 80 percent of the calibration range but can also be selected to represent a concentration close to the NAAQS. This would eliminate the concern by commenters that the one-point QC should represent the NAAQS since the span point is implemented at the same frequency (minimally every two weeks) as the one-point precision check. The one-point QC check can then be measured in a concentration range that is more reflective of the routine concentrations.

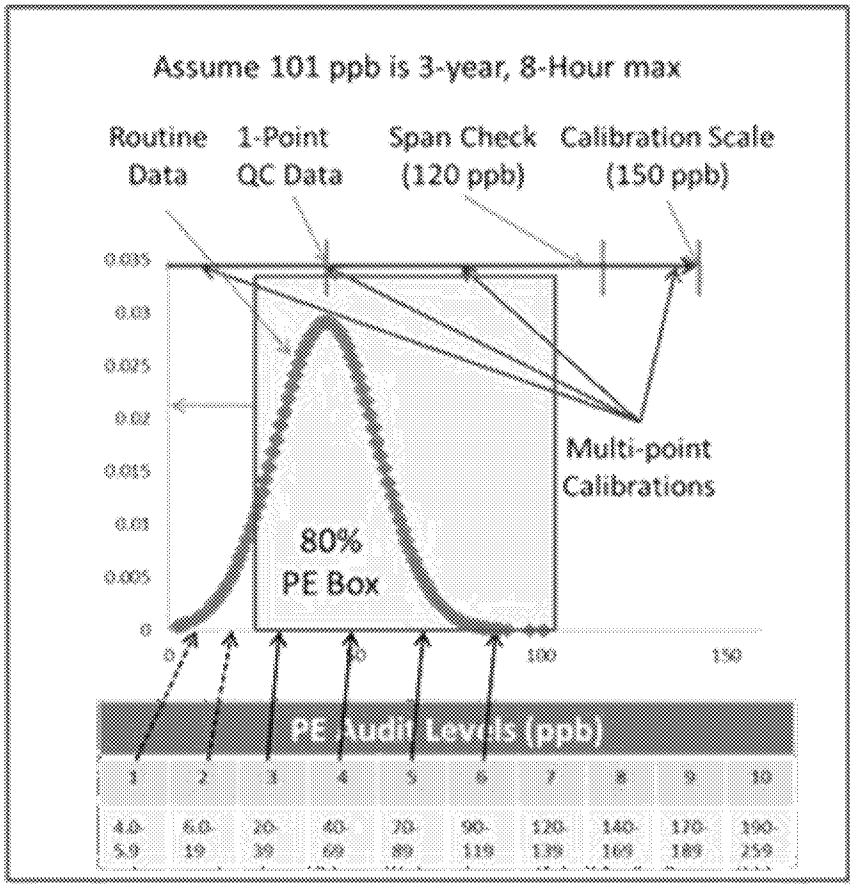

Figure 10. Current guidance on calibration, span, 1-point QC and annual PE

EPA also realizes that the distribution of routine data does not always fall as "nicely" as the ozone data in Figure 9 indicate. Figure 11 provides a national frequency distribution of the SO_2 data. This figure represents average state values for the various percentiles across all states (with the exception of Hawaii which has some very extreme SO2 values due to natural events). For example, the high value (104 ppb) is the average of the 47 state max values (not including Hawaii). What this is meant to demonstrate is that EPA will need to evaluate each pollutant in order to determine the best process to utilize the QC information so that it can reflects the precision and bias of the routine ambient air being measured as well as the precision and bias around the NAAQS.

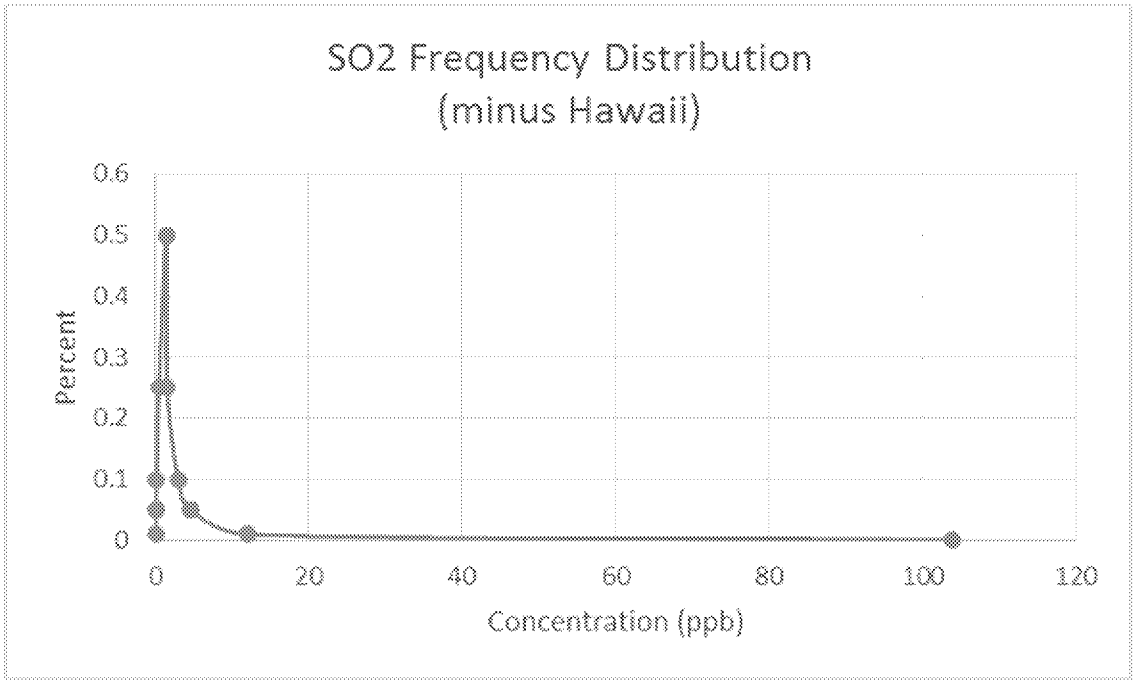

Figure 11. frequency distribution of SO_2 values

SUMMARY

As has been shown, monitoring agencies can test and achieve acceptable precision and bias results at lower concentration levels. Providing data users with estimates of precision and bias where the majority of our ambient air data are measured should be a programmatic goal and monitoring organizations should be working with EPA Regional Offices to develop the budgets necessary for purchasing the updated equipment and revising related procedures. The EPA will continue to endorse this approach to make the QC checks more meaningful and will consider future revisions to Appendix A to either require QC checks at two concentration levels (i.e., one around the mean concentrations and one related to the NAAQS) or require the span check to be reported to AQS. In addition, to alleviate concerns about failing the acceptance criteria at lower QC concentrations, EPA will evaluate suggestions by monitoring organizations to raise acceptance criteria or look at alternative acceptance criteria (e.g. difference instead of percent difference). Since acceptance criteria is included in guidance, EPA will have the opportunity to perform the evaluations without effecting the regulation. In 2011, EPA developed similar guidance for lower concentration levels of the annual performance evaluation audits.

Message

From: Compher, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E258CB856E3D4AE6BACCA7FA48CA827A-MCOMPHER]
Sent: 2/13/2015 6:15:07 PM
To: Hamilton, Scott [hamilton.scott@epa.gov]
Subject: RE: Precision question

I think the monitoring revisions proposed last fall won't be finalized until late summer. Effective dates are not clear yet. For some, it could be upon publication, others may be some period after published in FR, or a specific date.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Hamilton, Scott
Sent: Friday, February 13, 2015 11:57 AM
To: WICKER, JOHN; Qazzaz, Bilal
Cc: Compher, Michael; SHERRILL, JAMES
Subject: RE: Precision question

The 10 levels are the new levels and what will be in the revised CFR.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Friday, February 13, 2015 11:33 AM
To: Hamilton, Scott; Qazzaz, Bilal
Cc: Compher, Michael; SHERRILL, JAMES
Subject: RE: Precision question

So just to make sure I understand this correctly, table 3, which has the 10 audit levels is now changed to the 5 audit levels I have listed below?

Or is the table below, which has the 5 audit levels, and in the current CFR just not updated yet?

We are ordering some direct CO cylinder gases for quarterly accuracy audits so I want to make sure the ranges will be correct.

Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Hamilton, Scott [mailto:hamilton.scott@epa.gov]
Sent: Friday, February 13, 2015 12:26 PM
To: WICKER, JOHN; Qazzaz, Bilal
Cc: Compher, Michael; SHERRILL, JAMES
Subject: RE: Precision question

Yes. See http://www.epa.gov/ttnamti1/files/ambient/pm25/datamang/TechMemoforPEAuditLevels.pdf

These changes will be in the newly revised Appendix A. OAQPS is in the process of responding to comments on the Appendix A proposal. The Final Appendix A should be published in 1-2 months.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Friday, February 13, 2015 11:20 AM
To: Hamilton, Scott; Qazzaz, Bilal
Cc: Compher, Michael; SHERRILL, JAMES
Subject: RE: Precision question

Another question. Have the quarterly accuracy ranges been modified recently? According to 40 CFR Part 58 App A,

3.2.2.1 (a) The evaluation is made by challenging the analyzer with audit gas standard of known concentration (effective concentration for open path analyzers) from at least three consecutive audit levels. The audit levels selected should represent or bracket 80 percent of ambient concentrations measured by the analyzer being evaluated:

Audit level	Concentration range, ppm			
	O_3	SO_2	NO_2	CO
1	0.02-0.05	0.0003-0.005	0.0002-0.002	0.08-0.10
2	0.06-0.10	0.006-0.01	0.003-0.005	0.50-1.00
3	0.11-0.20	0.02-0.10	0.006-0.10	1.50-4.00
4	0.21-0.30	0.11-0.40	0.11-0.30	5-15
5	0.31-0.90	0.41-0.90	0.31-0.60	20-50

(b) An additional 4th level is encouraged for those monitors that have the potential for exceeding the concentration ranges described by the initial three selected.

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Hamilton, Scott [mailto:hamilton.scott@epa.gov]
Sent: Thursday, February 12, 2015 12:48 PM
To: WICKER, JOHN; Qazzaz, Bilal
Cc: Compher, Michael
Subject: RE: Precision question

Thanks John! This is really good discussion.

Michael/B, note the reference **(in red)** to a potential topic for our calls.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Thursday, February 12, 2015 10:51 AM

To: Qazzaz, Bilal; Hamilton, Scott
Subject: FW: Precision question

Gentlemen. Just some discussion Susan and I have had over audits and precision/span points. Since you guys oversee Region V maybe you can send out a question and just see how everyone is treating data based on the precision as well as the QA quarterly accuracy audit? Being old school I am trying to see how things are handled in the 21st century.

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Kilmer, Susan (DEQ) [mailto:KILMERS@michigan.gov]
Sent: Thursday, February 12, 2015 10:42 AM
To: WICKER, JOHN
Subject: RE: Precision question

Hi John
I think that is an excellent question for a regional call. I remember having a discussion about it during the training, it sounded like most of us void data when it's outside of the acceptance criteria.

Susan Kilmer
Quality Assurance Coordinator
Michigan Dept of Environmental Quality
Air Quality Division – Air Monitoring Unit
Kilmers@Michigan.gov
517-284-6752

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Thursday, February 12, 2015 10:29 AM
To: Kilmer, Susan (DEQ)
Subject: RE: Precision question

Susan. Thanks for your info. I am reading our QAPP for 2012 (which is due for rewrite this year) as well as any EPA documents. The 15% on the quarterly accuracy audit sounds pretty much set. My only unanswered questions is how everyone is treating data when is goes outside the limit for span and precision points.

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Kilmer, Susan (DEQ) [mailto:KILMERS@michigan.gov]
Sent: Wednesday, February 11, 2015 4:00 PM
To: WICKER, JOHN
Subject: RE: Precision question

Hi John;
If the 2-week check fails or the audit fails, we would most likely void the data. We would investigate the cause and could potentially flag some data depending on what we find. When we void, it is usually back to the last good check. Depending on what we find, we may keep or flag some of that data depending on what we find on closer inspection. For

example, if a precision check fails – and when we look back at the instrument readings, we see that 2 days prior something weird like the lamp died or something clearly went wild.. we would void the last 2 days and probably keep or flag the rest back to the previous check. For ozone, our sites are set up to do nightly zero and precision checks so that helps us keep an eye on performance. (not sure all of our other gas sites are doing nightly precision, NCore do but I don't think our near-road sites do that)

I don't think I have seen a case where the precision point was in and the span was way out. Where it would get tricky a little is if the precision is 7% and the span is 8%. We would probably still treat that as a failed check. We tend to void data if there is a question. I think Jesse McGrath feels differently, he wants the data set to remain intact even if a check or audit fails. This concept would be an interesting one to study/talk about in a STL call or data validation type workshop.

Take care

Susan Kilmer
Quality Assurance Coordinator
Michigan Dept of Environmental Quality
Air Quality Division – Air Monitoring Unit
Kilmers@Michigan.gov
517-284-6752

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Wednesday, February 11, 2015 3:30 PM
To: Kilmer, Susan (DEQ)
Subject: RE: Precision question

So if the precision point is greater than 7% for ozone, 10% for CO and SO2, and 15% for NO2 then you flag the data? But when the accuracy audit by QA is performed it is anything greater than 15% for flagging data and greater than 7.5% for out of cal, data valid? Does that seem right?

I just don't recall using the precision for data validity back in the old days. Obviously if the validation is say 10% and the precision if 30% out, I would most likely flag the data since there is something wrong.

Appreciate the info. Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Kilmer, Susan (DEQ) [mailto:KILMERS@michigan.gov]
Sent: Wednesday, February 11, 2015 3:20 PM
To: WICKER, JOHN
Subject: RE: Precision question

Hi John;
The number that AQS wants is the precision point, so it would be acceptable if it was at or below 7%.

When we do our 2-week checks; we conduct a zero, precision and a span point. In your example if the precision point was 7% and the span was 15%... I would be concerned that the linearity was off, usually the points are pretty close in terms of percent difference. On our worksheet, if any point is beyond 7% - that is a fail. We would investigate when

things seemed to go wrong and either void or flag the data. We would also recalibrate and or repair the instrument depending on what was going on.

The criteria for the annual audit is broader, 15% however I would be concerned if it was around 10%. Our audits are usually in the less than 5% zone, so much higher than that would get my attention.

Hope that helps,
Susan

Susan Kilmer
Quality Assurance Coordinator
Michigan Dept of Environmental Quality
Air Quality Division – Air Monitoring Unit
Kilmers@Michigan.gov
517-284-6752

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Wednesday, February 11, 2015 2:08 PM
To: Kilmer, Susan (DEQ)
Subject: Precision question

Susan. Maybe you can provide me an answer to this. When you guys run a precision point on say ozone, and it is greater than the allowable difference, which is 7% for ozone, but the span point shows the analyzer within 15%, what action do you guys take? Being old school, I always thought 0-7.5% all is good, 7.5-15% out of cal but data valid, and greater than 15% data invalid. And if the percent difference on the precision point is greater than the allowable difference it is not used in AQS? Can you provide some answers to this? Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

Message

From: Compher, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E258CB856E3D4AE6BACCA7FA48CA827A-MCOMPHER]
Sent: 2/11/2015 3:36:02 PM
To: Hamilton, Scott [hamilton.scott@epa.gov]
CC: Qazzaz, Bilal [qazzaz.bilal@epa.gov]
Subject: RE: Data Validity

Maybe the two of you can talk me through this quickly today. I'm less familiar with gas analyzer QA than PM.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Hamilton, Scott
Sent: Wednesday, February 11, 2015 7:35 AM
To: Compher, Michael
Cc: Qazzaz, Bilal
Subject: FW: Data Validity

Michael, FYI.

Let me know if you think our message should be anything different than this concerning data validation.

Thanks

From: Hamilton, Scott
Sent: Wednesday, February 11, 2015 7:31 AM
To: Qazzaz, Bilal; WICKER, JOHN
Subject: RE: Data Validity

Hey John. I would agree with B. These are judgment calls on your end.

For EPA guidance see the validation template.

1. 1-point QC and z/s are critical criteria (If criteria not met then data "should be invalidated unless there are compelling reason and justification for not doing so".)
2. Annual Performance Evaluation (aka Accuracy audit) are operational criteria (..."may be cause for invalidation"..."The decision maker should consider other QC information that may or may not indicate the data are acceptable"...)
3. If something is outside the limits look at all the available information to see what is wrong and then determine what to do with the data.
4. Have a process for actively watching analyzer drift. This will trigger warning limits when an action (such as a recalibration) could be taken.

We are happy to walk you through any examples if needed.

From: Qazzaz, Bilal
Sent: Wednesday, February 11, 2015 7:09 AM

To: WICKER, JOHN
Cc: Hamilton, Scott
Subject: RE: Data Validity

Hey John,

What does your current QAPP say about the criteria?

FYI, I'd be careful about rolling back anything Blaser put in place.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Tuesday, February 10, 2015 2:37 PM
To: Qazzaz, Bilal; Hamilton, Scott
Subject: Data Validity

Guys. We are discussing precision points and accuracy points and how it effects the data. For example, when any of the accuracy points are greater than 15% then the data is invalid. OR do all three points have to be greater than 15%? Also, looking at the precision point (say for ozone), if it is greater than 7% then is the data valid IF the daily span check and/or accuracy audit show it within 15%? Or would you consider this data invalid?

Being old school, I always thought the precision point was never used for data validity, only the upscale span (or accuracy audit). Unless the precision is so far that it indicates something is definitely wrong with the analyzer, meaning data is invalid.

We are rewriting our QAPP so please advise so we can get this correct. Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

Message

From: Compher, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E258CB856E3D4AE6BACCA7FA48CA827A-MCOMPHER]
Sent: 3/27/2015 3:03:39 PM
To: Tyson, Mary [tyson.marypat@epa.gov]
Subject: more data validation info to consider...

Jason's response provides context to the frequency of this issue experience in WI. I don't think this issue, regardless of our final direction, affects a large portion of our data.

PS. This debate is limited to the gaseous QC checks. As Jason indicates, failed flow checks on PM instruments have different implications (cut size from the cyclone or impactor).

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Treutel, Jason A - DNR [mailto:Jason.Treutel@wisconsin.gov]
Sent: Thursday, February 26, 2015 3:21 PM
To: Compher, Michael
Cc: Qazzaz, Bilal; McGrath, Jesse
Subject: RE: State, Local, and Tribal Monthly Conference Call

Thank you Michael, I do appreciate it. I do have concerns with the resources I have to implement Jesse's approach even if I do agree with some of the principles. I was having particular trouble yesterday with the consistency of the message I was hearing.

In answer to your question I am referring to failed routine QC checks that exceed due to instrument drift or soft failures where the data still looks normal. It happens a few times each year for our network.

- It is extremely rare for us to fail the 10% criteria we had been using for ozone precision checks, typically 0 times a year. Exceeding the 7% criteria stated in the may have occurred a few times in 2014 across our network because we were using 10% as the control limit (7% was our action limit).

- We typically get one or two QC failures for NO2/SO2/CO analyzers in our network in a year. The one NO2 issue I mentioned is the only one for 2014 that I recall.

- Continuous analyzer QC failures would typically affect two weeks or less of data and we are sometimes are able to justify using our nightly span checks to bracket the data and shorten this period of invalidated data. Invalidating a two week period or less does not itself drop our completion percentage below 75% for the quarter.

- I will add that we typically have one or two monthly flow check QC failures for our particulate sampling network in a year. This is a much more significant problem since it drops sites below 75% data completion when it fails if we invalidate the bracketed data (we typically do). I don't think I've ever heard an EPA official or seen a document that says it's okay to have a flow check off over 6% as long as your population of checks is under 4%. I would think the treatment being suggested for continuous samplers would be applied to discrete samplers as well based on the argument that was being made. Because of particle cut size being dependent on flow I would be reluctant to say this would be a good route to take.

In any case, I feel that we would have to have a more robust statistical analysis of our QC checks and data review than we have currently to move away from using the Validation Template critical criteria as validation criteria for routine checks and the associated data. Thank you for hearing me out. Any information you can provide would be helpful, even though I am concerned with our resource availability to implement significant changes in the near future.

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Jason Treutel
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dnr.wi.gov

From: Compher, Michael [mailto:compher.michael@epa.gov]
Sent: Thursday, February 26, 2015 7:53 AM
To: Treutel, Jason A - DNR
Cc: Qazzaz, Bilal; McGrath, Jesse
Subject: FW: State, Local, and Tribal Monthly Conference Call

Good morning Jason,

Thank you for providing this feedback to us. We will work out an approach within the Region in consultation with OAQPS and provide clarification for you.

I am interested in knowing, generally for WDNR's monitoring program, how frequently failed QC checks result in invalidation of any data.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Treutel, Jason A - DNR [mailto:Jason.Treutel@wisconsin.gov]
Sent: Wednesday, February 25, 2015 4:11 PM
To: Qazzaz, Bilal; McGrath, Jesse
Subject: RE: State, Local, and Tribal Monthly Conference Call

Good afternoon Bilal and Jesse. I just wanted to recap the validation conversation and the way I am interpreting it:

From the QA Handbook

Criteria that were deemed critical to maintaining the integrity of a sample or group of samples were placed on the first table. Observations that do not meet each and every criterion on the **Critical Criteria Table** should be

invalidated unless there are compelling reason and justification for not doing so. The sample or group of samples for which one or more of these criteria are not met is invalid until proven otherwise. The cause of not operating in the acceptable range for each of the violated criteria must be investigated and minimized to reduce the likelihood that additional samples will be invalidated.

Example from ozone validation template

1) Requirement (O_3)	2) Frequency	3) Acceptance Criteria	Information /Action
One Point QC Check	***Single analyzer 1/ 2 weeks***	< +7% (percent difference	1 and 2) 40 CFR Part 58 App A Sec 3.2 3) Recommendation based on DQO in 40 CFR Part 58 App A Sec 2.3.1.2. QC Check Conc range 0.01 - 0.10 ppm, relative to routine concentrations

My interpretation of the QA Handbook (and perhaps Anna Kelly's as well): If the one point QC check is >7% the Critical criteria has been violated and the observations should be invalidated. We don't like invalidating data so we make sure that the violating check is confirmed potentially with a repeat measurement, alternative calibration equipment, or even an expert operator. If the criteria violation is confirmed we invalidate the associated data and do not report the check to AQS.

Feedback from Bilal on the call: Seemed to agree that this was an acceptable if not appropriate approach

Feedback from Jesse: This is absolutely the wrong approach to use for invalidating data because the criteria is in relation to the statistical analysis of the population of the checks, not the individual check. This is not very clear to me in the QA Handbook Validation tables which due to time constraints I've relied on more than the text of the remainder of the document.

I apologize for venting here, but what I heard today seemed contradictory on the EPA side. Even though I am starting to agree philosophically with the approach Jesse recapped, I am very concerned with developing and implementing the processes necessary to adopt that approach.

Because I was at the QAPP meeting I had already heard some of this information on control charting and population evaluation vs. single check criteria being things to consider when developing a QAPP. I am concerned with the idea of developing control chart criteria and other statistical tests to judge the validity of our data and when and when not to invalidate it. I do not have the statistical background to do this without significant research or guidance and I do not currently have access to someone in our local group that can provide it. Therefore I am relying on documents like the Validation templates which according to Jesse, I am misinterpreting or at least not getting the full story. The hard and fast failure criteria they imply make validation/invalidation a simpler process and the data that meets it is of very high quality even if it ends up excluding data that would have resulted in a data set that is still good enough.

We rarely exceed the validation template criteria for a single validation point where there is not a hard failure of the instrument. There was one occurrence I will be revisiting as we move on to data certification. I had invalidated a block of NOx data based on a single check that was not addressed properly until the next biweekly check. This had caused a month of data to be invalidated and will cause the parameter to not meet completion percent requirements for Q1. Based on today's information it sounds like the data can and should be revalidated since the check exceeded by only a little and will not cause the population to exceed the criteria. I will also need to submit this check.

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From: Qazzaz, Bilal [mailto:qazzaz.bilal@epa.gov]
Sent: Monday, February 23, 2015 8:03 AM
To: abaird@oneidanation.org; aboetcher@nhbpi.com; Adam.Blundell@hamilton-co.org; air@lldrm.org; airquality@badriver-nsn.gov; Alexander Jackson; Allen, Mark K - DNR; bfrazier@piic.org; brettmc@chegnet.net; Rodger, Bruce C - DNR; Laude, Bryan T - DNR; Burt Mechenbar; Cashman, John; ccharwood@redlakenation.org; charlie.lippert@millelacsband.com; charliel.millelacsojibwe@gmail.com; Chris.Harrison@hamilton-co.org; Christina Wieg; christina.boss@hamilton-co.org; Cindy.Charles@epa.state.oh.us; cjlippert@hotmail.com; cspruce@kbic-nsn.gov; dallasr@uppersiouxcommunity-nsn.gov; Nickolie, Daniel W - DNR; darrell.pennington@epa.state.oh.us; ddtyrolt@chegnet.net; deb.dirlam@lowersioux.com; Deborah Stone (Environmental Control); dtan@cantonhealth.org; Desmond.berry@gtbindians.com; dwights@itcmi.org; dzeiler@idem.in.gov; carol.eggert@toledo.oh.gov; gary.engler@epa.state.oh.us; Fenlon, Dennis (MPCA); 'fitznerc@michigan.gov'; Giwojna, Benjamin; Good, Gail - DNR; Hetherington, Grant D - DNR; Greg.bunker@mohican-nsn.gov; gshubel@itcmi.org; randy.hock@epa.state.oh.us; hooverb2003@yahoo.com; jhupp@cantonhealth.org; jane.rohl@gtbindians.com; Treutel, Jason A - DNR; jesse.anderson@lowersioux.com; jlyons@mitw.org; jmears@oneidanation.org; Joe.Cebe@fcpotawatomi-nsn.gov; Jonathan Knight; joywiecks@fdlrez.com; jrodwan@nhbpi.com; kaleel@ladco.org; Karen Moore-Wright (Environmental Control); kari.palmer@state.mn.us; katies@stcroixtribalcenter.com; kbrosemer@saulttribe.net; Anna.Kelley@hamilton-co.org; kellie.gavin@pca.state.mn.us; kenski@ladco.org; kgunderson@ho-chunk.com; kjomac2000@yahoo.com; kmackety@nhbpi.com; Lacka, Monika; land@ccsmdc.org; Lengerich, Steve; lmorckel@cantonhealth.org; linda.katchenago@mohican-nsn.gov; Lynn Schmitt (Environmental Control); Mertes, Mary - DNR; Mayo, Kathleen; mctwg@arvig.net; meloneemontano@hotmail.com; Meyer, Cynthia; Moran, Eileen; mrogers@city.cleveland.oh.us; natalene.cummings@fcpotawatomi-nsn.gov; PARKS, JAMES; chris.price@illinois.gov; Rick Strassman; Robinson, Amy (DEQ); srubens@schd.org; skniffen@sagchip.org; soberg@boreal.org; stan.ellison@shakopeedakota.org; Steve Blaser; nathan.stroup@hamilton-co.org; kilmers@michigan.gov; Tara Cioffi; tdzienis@cantonhealth.org; terry.sanner@epa.state.oh.us; Thomas Shepard; thurlow.mcciellan@gtbindians.com; tmaki@itcmi.org; tomf@stcroixtribalcenter.com; travismaki906@gmail.com; twarner@kbic-nsn.gov; Tyson, MaryPat; whitmava@rapca.org; waynedupuis@fdlrez.com; wrc4pres@yahoo.com; yvettec@boreal.org; R5 ARD-ATAB-AMAS; Molnar, Eve; Worsham, Luke R - DNR; Helen.Waquiu@state.mn.us; cassie.mcmahon@state.mn.us; JOHN WICKER (JWICKER@idem.IN.gov); Bloomberg, David E.; Compher, Michael; Kevin Schnoes (Environmental Control) (Kevin.Schnoes@cookcountyil.gov)
Cc: Ross, Anthony; Fuoco, Marta; McEvoy, Chad; Caudill, Motria; Engler, Gary; Rodger, Bruce C - DNR; Delisio, Edward; Hamilton, Scott; McGrath, Jesse; Scott Wold
Subject: State, Local, and Tribal Monthly Conference Call

To all,

We will be having our SLT call on February 25, 1-2 CST.

Date: 2-25-15
Time: 1-2 (CST)

Where: 1813A

Call in number: 877-226-9607

Conference Code: 5770738038

Region 5 Items

-Phase 3 Near Road Update
-AQS Update
-Update on Ozone Traceability Best Practices
-Poll of those who are conducting Ultra-Fine Particle (UFP) monitoring

SLT Items

-MDEQ would like to discuss how other states are documenting the extended certifications of their cylinders
-IDEM would like to discuss how other states are validating their data
-Information sharing with SWOAQA and CCDEC

Bilal Qazzaz
Air & Radiation Division
Air Monitoring & Analysis Section
US EPA Region 5
(312) 353-2325

Message

From: Compher, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E258CB856E3D4AE6BACCA7FA48CA827A-MCOMPHER]
Sent: 3/25/2015 5:29:52 PM
To: Kelley, Anna [Anna.Kelley@hamilton-co.org]
Subject: RE: quick questions - data validation

Thanks for the response Anna. As you know, I really appreciate and respect your monitoring and QA knowledge.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Kelley, Anna [mailto:Anna.Kelley@hamilton-co.org]
Sent: Wednesday, March 25, 2015 9:18 AM
To: Compher, Michael
Subject: RE: quick questions - data validation

Good Morning Michael,

No worries in sharing this with others. I'm glad you are addressing and hopefully we can put this to rest.
Sorry for the delay in replying. I've read the questions and message twice – at separate times and concur with what Mike is saying.
Additionally, this is exactly how we run operations.
With regard to Question #3: we don't wait a long time to troubleshoot the analyzer – longest is usually 24 hours – yes even on weekends. I've been at sites where we have weekend access troubleshooting equipment. If we don't have access then it's the next day we do.

Also, I believe the procedures are consistent how other states and locals operate their equipment/operations.

Thanks –

Anna L. Kelley
Monitoring & Analysis Supervisor
Southwest Ohio Air Quality Agency
A division of the Hamilton County Department of Environmental Services

250 William Howard Taft Road
Cincinnati, Ohio 45219
p 513.946.7725
f 513.946.7778

anna.kelley@hamilton-co.org
SouthwestOhioAir.org

From: Compher, Michael [mailto:compher.michael@epa.gov]
Sent: Wednesday, March 25, 2015 7:58 AM
To: Kelley, Anna
Subject: FW: quick questions - data validation

Good morning Anna,

I've continued working to bring this data validation issue to closure. After several discussions, I narrowed down the specific questions where there are differences of approach by individuals in my group and posed those questions to Mike Papp. Could you look at my questions and Mike Papp's responses and let me know if this is consistent with your current practice at Hamilton County. Also, do you have other thoughts for clarification?

Please keep this message between you and I, since there are still opposing views on this approach among individuals in my group.

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Message

From: Compher, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E258CB856E3D4AE6BACCA7FA48CA827A-MCOMPHER]
Sent: 3/25/2015 2:59:26 PM
To: Tyson, Mary [tyson.marypat@epa.gov]
Subject: FW: quick questions - data validation
Attachments: removed.txt

Mary Pat - See Anna's response, from this morning. Did you hear back from Nealson?

Michael Compher
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Message

From: Compher, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E258CB856E3D4AE6BACCA7FA48CA827A-MCOMPHER]
Sent: 3/25/2015 11:57:48 AM
To: Anna.Kelley@hamilton-co.org
Subject: FW: quick questions - data validation

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Sent: 3/24/2015 3:19:48 PM
To: Tyson, Mary [tyson.marypat@epa.gov]
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Sent: 3/24/2015 1:00:42 PM
To: Papp, Michael [Papp.Michael@epa.gov]
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2. If no to #1: QC points are invalidated only after routine data are invalidated.
3. If a QC check is performed and out of spec from the validation template, many of our monitoring organizations troubleshoot (try again, use other equipment, send out another auditor, etc). If they can identify the issue and when it occurred, they will invalidate the correct portion of the data and associated QC check. Is this approach consistent with the data validation template and other QA documents?
4. If no cause is identified, (within the monitor, operator, traceability system, etc) should the ambient concentration data (and associated failed QC check) be invalidated back to the last valid QC check? Is this a hard and fast rule, or could there be case by case situations where the answer would be different?

Thanks for your help on this.

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EPA OFICE OF AIR QUALITY PLANNING AND STANDARDS

The QA EYE

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SPECIAL POINTS OF INTEREST:

- National Air Quality Conference Presentations on AMTIC

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National Air Quality Conference Well Attended

When all was said and done, over 500 people attended the Ambient Air Quality Conference the week of May 14 in Denver Colorado. The meeting packed in one day of training and two and one half days of plenary and concurrent technical sessions. Forty five vendors attended the conference and overall the attendees seemed happy with the venue and the sessions. Those attending received a follow-up email requesting additional feedback on the conference. We received 114 responses to the survey and the information will help us plan for future meetings.

QA Activities at the Conference

On Monday, a half day training course was provided on the 40 CFR Part 58 Appendix A QA Regulations. The session co-chaired by Donovan Rafferty, WA Dept of Ecology and Mike Papp, OAQPS. The session had trainers representing the States (Donovan Rafferty), Tribes (Melinda Ronca-Battista, Tribal Air Monitoring Support Center), the EPA Regions (Mathew Plate, R9 and Greg Noah, R4) and OAQPS (Dennis Crumpler, Mark Shanis, and Mike Papp). There was a lot of material covered in the 4 hours and although 80 people signed up for the session the 150 seat room was standing room only at the end of the day. Training slides are posted at the conference site on AMTIC. Survey responses on the training session were positive.

On Wednesday morning there was a breakout session on monitoring regulation changes. The session was more of a "let it all hang out" session where ideas were brought to the table to spur conversations and get initial impressions. Mike Papp, OAQPS talked about potential changes to the 40 CFR Part 58 Appendix A regulations. Prior to the conference, Mike asked for feedback from the monitoring community, via the QA Strategy Workgroup, on areas they thought needed changing in Appendix A. Mike is maintaining a table of these changes and is accepting any additional comments.

Wednesday also included a half-day QA technical session co-chaired by Yousaf Hameed, Clark County and Dennis Crumpler and Mark Shanis, OAQPS. There were many interesting papers at the session which was well attended. Presentations are posted at the conference site on AMTIC. http://www.epa.gov/ttn/amtic/naamc.html

Much of this Newsletter will be devoted to issues or discussions that came up during the conference.

Pb Analysis Audits- Questions about Concentration Ranges and Reporting.

Many people refer to the Pb analysis audits as the Pb audit strips. However, with the advent of Pb-PM_{10}, analysis audits need to be available for teflon filters with analysis either by XRF or by approved FEM methods. The following information is provided to help explain the concentration ranges that are considered acceptable.

	Current Regulation		
Level	Pb Conc (µg/strip)	Ambient Air Conc (µg/m³)	Conc Percentage of NAAQS
1	9 - 30	0.04 - 0.15	30-100%
2	60 - 90	0.30 - 0.45	200-300%

Pb Strips

These strips can either be developed by EPA (ordering on a annual basis), by a third party, or by the analytical laboratory performing the analysis. Standard operating procedures for the development of the strips are on AMTIC http://www.epa.gov/ttn/amtic/pb-monitoring.html. QA EYE Newsletters 8 and 9 have additional information about these strips. The current requirement in Appendix A for the concentrations for the Pb analysis audits are 30-100% of the NAQQS for level one and 200-300% of the NAAQS for level two. The reporting units for the data are in ug/strip (AQS units code 077) and are not converted to concentration (ug/m³).

NAAQS-0.15 ug/m3	Sampler Flow 1.7 m³/min			
	Level 1		Level 2	
	30%	100%	200%	300%
ug/m3	0.045	0.15	0.3	0.45
ug/strip (3/4" strips)	9.18	30.6	61.2	91.8
ug/strip 1" strips	12.24	40.8	81.6	122.4

	Sampler Flow 1.1 m³/min			
	Level 1		Level 2	
	30%	100%	200%	300%
ug/m3	0.045	0.15	0.3	0.45
ug/strip (3/4" strips)	5.94	19.8	39.6	59.4
ug/strip 1" strips	7.92	26.4	52.8	79.2

	Pb-TSP by extraction			
For AMP255	Level 1		Level 2	
	Min	Max	Min	Max
	5.9	40	45	125

The equivalent ambient Pb concentration in ug/m³ is based on sampling at a 1.7 m³/min flow rate for 24 hours on a 20.3 cmX25.4 cm (8X10 inch) glass fiber filter where one twelfth of the filter (3/4 inch strip) is used. EPA has received comments that monitoring organizations are using different filter strip sizes and different flow rates in the samplers so when they calculate the concentrations they need for the filter strip, it is outside the limits provided in the "Pb Conc" column of the table above and AQS identifies the concentration as not meeting the acceptance criteria. In some cases AQS did not allow the data to be reported.

Since the acceptable flow volumes for the TSP monitors are 1.1 to 1.7 m³/min and the Pb strips are made at ¾ to 1 inch widths, the calculations to the left were performed. The data illustrate that based upon what size strip and volume is used, the concentration limits can extend from 6- 40 ug/strip for audit level 1 and 40- 123 ug/strip for audit level 2. Although EPA would prefer that monitoring organization develop the Pb analysis audits within the 9-30 and 60-90 ug/strip range, in 2012 AQS will accept values at 4- 40 ug/strip for level 1 and 45- 170 ug/strip for level 2. **In 2013 we will be revising the ranges to 4-40 ug/strip for level 1 and 45-125 ug/strip for level 2.**

	PM10 Teflon by extraction			
	Level 1		Level 2	
	30%	100%	200%	300%
ug/m3	0.045	0.15	0.3	0.45
ug/filter	1.08	3.60	7.20	10.80

	PM10 Teflon by XRF			
	Level 1		Level 2	
	30%	100%	200%	300%
ug/m3	0.045	0.15	0.3	0.45
ug/filter	1.08	3.60	7.20	10.80
ug/cm2	0.09	0.30	0.61	0.91

Pb-PM10 (Teflon)

For the Pb-PM_{10} Teflon filters it is more straight forward since the filter size and the flow rates do not vary. The table to the left provides the appropriate ranges for the Teflon in units of ug/filter of 1.0 - 4.0 ug for Level 1 and 7.0 to 11.0 ug for level 2. The ranges are calculated by dividing the concentration (ug/filter) by the 24 hour sample volume which is 24 m³. Since some XRF analysis is reported in ug/cm², a conversion using the area of the filter of 11.86 cm² (as defined in 40 CFR part 50 App Q sect 2.1) is used. Since EPA has had some difficulty preparing/acquiring audits at the appropriate ranges, AQS is currently accepting 1.0 - 4.0 ug for Level 1 and 5.0 to 11.0 ug for level 2.

Reporting the Pb Analysis Audit Data– Replicate Analysis Results

Since some monitoring organizations are using contractors to analyze their filters, there has been some issues concerning what Pb analysis audit data to report. At a minimum, 6 analysis audit values (three low concentration and three high concentration) should be reported each quarter. Some contractors may run the audits within the quarter on different days, and some may run the audits all on the same day. It's preferred that they run on different days but it's not a requirement. However, the laboratories may also be providing the monitoring organizations with replicate analysis. For TSP strips this means that they are analyzing the extract a number of times and providing the results of this multiple analysis to the monitoring organization. In the case of XRF analysis, the laboratory may be running XRF on different portions of the same filter and providing the results of this analysis to the monitoring organizations. For purposes of AQS reporting, EPA requires only the mean of the replicates reported. Some laboratories may be running the XRF audit filters more often then required. These additional results provide more information about the quality of the laboratories results and can be reported to AQS.

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Annual PEs and Bracketing 80% of Ambient Air Concentrations... How's it calculated

For the annual performance evaluation requirements for the gaseous pollutants, EPA has received a fair number of questions on how to handle the suggestion that: "*The audit levels selected should represent or bracket 80 percent of ambient concentrations measured by the analyzer being evaluated*".

This intent of this suggestion is to implement audits at concentrations normally measured by the routine monitor so the assessment represents an estimate of uncertainty around routine concentration levels. Monitoring organizations trying to perform these assessments have asked EPA for the best method to represent or bracket their data. EPA did not get specific on this criteria in order to provide the monitoring organizations some flexibility in this approach. However, due to the popularity of this question some suggestions follow.

One could perform the 80% bracketing on a site level or on an aggregation of all sites within the monitoring organization.

All sites combined-

1) Take 3 years of hourly data from all sites, find the 80th percentile and use that as a starting point to find appropriate audit levels. Each year add a new year to create a rolling 3-year average. You could then use the same audit concentration levels for each site in the network.

2) Take the most current valid year of hourly data from all sites, find the 80th percentile and use that as a starting point to find appropriate audit levels. Each year use the most current year to provide an estimate. You could then use the same audit concentration levels for each site in the network.

Single Sites-

Perform the same estimate in #1 or #2 using individual sites for the development of site specific audit levels.

Protecting the NAAQS.

A comment that we've heard from monitoring organizations is that they like to audit in a manner that ensures the monitor is accurate at the NAAQS level. If this is the case, there are two acceptable solutions: 1) audit a fourth point around the level of the NAAQS or 2) use one of the three required audit points for this audit level. Since the audit levels do not need to be consecutive, either approach is acceptable.

Any of the techniques discussed above will provide audit levels that more closely match the routine concentrations at the site. There are probably other approaches that would be deemed acceptable by EPA, so check with your Region. Your QAPP should define how your organization will implement the requirement.

National Toxics Trends Site Network Assessment Presented at National Air Monitoring Conference

The NATTS Network collects ambient air monitoring data on air toxics as part of the Urban Air Toxic Strategy, which addresses air toxics in urban areas. Air toxics include hazardous air pollutants or HAPs, which are pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. Data generated by each NATTS site are quality assured and submitted to the national Air Quality System (AQS), EPA's repository of ambient air data. These quality-assured data can then be used for purposes such as:

- Identifying trends in ambient air toxic concentrations to facilitate tracking progress toward emission and risk reduction goals.
- Directly evaluating public exposure and environmental impacts in the vicinity of monitoring sites.
- Assessing the effects of specific emission reduction activities both locally and nationally.
- Providing quality assured air toxics data for risk characterization.
- Evaluating and subsequently improving air toxics emission inventories and model performance.
- Identifying additional monitoring needs (e.g., new sites or additional methods).

EPA conducted its NATTS Network Assessment as part of the Air Toxics Component of its overall National Monitoring Strategy, which requires that the NATTS Network be evaluated and modified every 6 years. EPA's assessment can be divided into two portions: quantitative and qualitative. The quantitative portion examined the pollutant datasets collected by the monitoring stations and evaluates the quality of those datasets in terms of suitability for assessing trends. EPA used the suitable datasets to identify trends of air toxic concentrations over the 6-year period 2005 - 2010, as well as to identify national trends of air toxics at individual sites. The qualitative portion examined issues such as whether the network design is appropriate to achieve the network's goals and objectives and whether changes to the sites, pollutants, or means of measurement are needed to refine the network. OAQPS staff presented the summary of the NATTS Network Assessment at the National Air Monitoring Conference in May 2012. A copy of the draft NATTS Network Assessment is available upon request. Please contact David Shelow @ shelow.david@epa.gov or Dennis Mikel at mikel.dennisk@epa.gov to request a copy.

PM2.5 Bias Estimates Continue to Puzzle

At the 2009 Ambient Air Conference in Nashville, Dennis Crumpler reported seeing a downward trend in the bias estimates based on the $PM_{2.5}$ Performance Evaluation Program (PEP). In developing the 2008-2010 $PM_{2.5}$ QA Report, EPA was continuing to see this trend and is trying to evaluate this data in a number of ways to determine a cause. EPA, working with Sonoma Technology Inc. (STI), started evaluating 12 years of the $PM_{2.5}$ data by asking:

- What are current levels of bias?
- Has bias been changing over time?
- When did bias start trending down?
- Does bias vary by type of separator, WINS versus Very Sharp Cut Cyclone (VSCC)?
- Does bias vary by season?
- Does bias vary by $PM_{2.5}$ concentration?
- Does bias vary by region of the country?

Current Levels of Bias.

Table 1 presents the 2008-2010 bias estimates of the major methods used in the $PM_{2.5}$ network. Although we have some continuous federal equivalent methods in the network, we do not have enough PEP data to make any definitive statements of bias. Table 1 illustrates that all bias estimates are negative, meaning concentrations from samplers operated by primary quality assurance organizations (PQAO) are lower than concentrations from PEP samplers, on average

Table 1. 2008-2010 bias estimates by method

Method Number	Maker	Single Sequential	WINS VSCC	Bias (%)	90% Confidence
116	BGI	Single	WINS	-7.8 %	+/- 3 %
117	R&P	Single	WINS	-12.4 %	+/- 3 %
118	R&P	Sequential	WINS	-11.8 %	+/- 1 %
119	Andersen	Single	WINS	-10.7 %	+/- 7 %
120	Andersen	Sequential	WINS	-8.0 %	+/- 1 %
142	BGI	Single	VSCC	-2.0 %	+/- 3 %
143	R&P	Single	VSCC	-6.0 %	+/- 4 %
145	R&P	Sequential	VSCC	-5.9 %	+/- 1 %
153	Thermo	Single	VSCC	-6.1 %	+/- 2 %
155	Thermo	Sequential	VSCC	-3.7 %	+/- 7 %

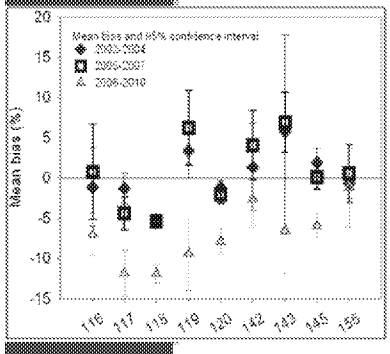

Fig 1. Bias over three, three-year periods

Has bias been changing over time?

Yes, as illustrated in Figure 1. In the 2002-2004 and 2005-2007 time periods the bias was fairly close and between methods there was no consistency which three year period was higher or lower. However, for the 2008-2010 time period, all methods are reading more negative than the other two 3-year periods.

When did bias start trending down?

It appears that the downward trend in bias, as illustrated in Figure 2 started somewhere around 2007. At this point EPA is unsure what might have been the cause for this trend. Only methods 118, 120 and 145 are shown because these three methods are used most often by the monitoring organizations. One can see that in 2011 the downward trend may have stopped but the data used in the assessment is preliminary and data validation is not complete.

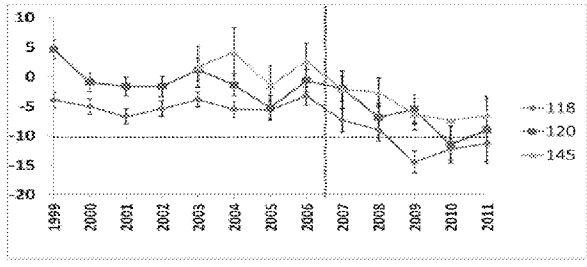

Fig 2. Bias trend for methods 118, 120, and 145

Does bias vary by type of separator, WINS versus very sharp cut cyclone (VSCC)?

Yes. In general it appears that with enough information present for both method designations (WINS and VSCC) that the WINS has a more negative bias than the VSCC when operated by the monitoring organizations. Figure 3 illustrates this for the R&P sequential, and Table 2 provides the information for the other major method designations.

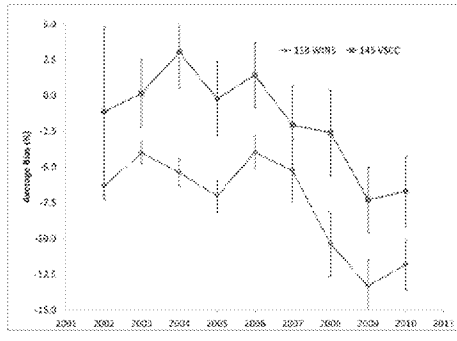

Fig 3. R&P Bias for WINS and VSCC

Table 2 Difference in Seperator by Major Method Sampler Type for SLT Samplers

Sampler Type	Method Numbers	Difference in WINS and VSCC Median Biases	Statistical Test of WINS Bias to VSCC Bias for SLT
BGI Single	116 vs 142	-7.4 %	WINS Bias < VSCC Bias
R&P Single	117 vs 143	-9.2 %	WINS Bias < VSCC Bias
R&P Sequential	118 vs 145	-4.5 %	WINS Bias < VSCC Bias
Andersen Single	119 vs 153	-8.3 %	Not significantly different.
Andersen Sequential	120 vs 155	-6.8 %	Not significantly different. Too few observations for 155.

STI also ran a similar assessment of the PEP monitors since the PEP also uses a combination of WINS and VSCC. However, the analysis did not find a significant difference between the two separators for the PEP samplers (the majority of the PEP uses the BGI audit sampler).

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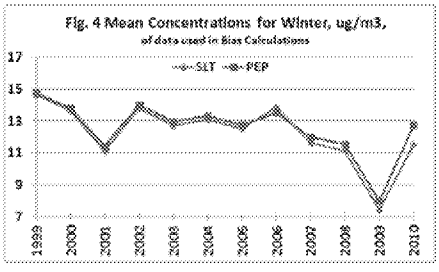
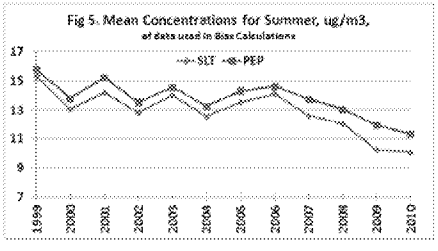
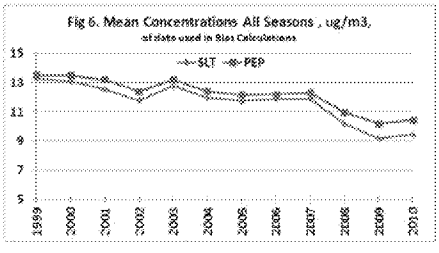
PM2.5 Bias *Continued from page 4*

Does bias vary by season?





Maybe. The trend is still downward for all seasons but in some cases it appears that the summer produces a more negative bias than other seasons. Figures 4 and 5 represent the annual mean concentrations for the PEP and State/Local/Tribal (SLT) samples for the winter and summer months respectively. There is more of a difference between the PEP and SLT concentrations during the summer which would lead to a more negative bias estimate during those periods.



Does Bias Vary by Concentration

Probably not. After looking at the season graphs and noticing the decrease in average concentrations which is better depicted in Figure 6 (representing all seasons), there was a concern whether the lower concentrations had an affect on the bias statistic since an absolute difference (i.e., 2 ug/m^3) at a lower concentration would produce a larger percent difference estimate. After some additional evaluation, we concluded lower concentrations have a limited role, if any, on the bias trend we are seeing. As illustrated in Table 3 we looked at median bias estimates over 5 different concentration ranges in the 2008 through 2010 data and did not see any significant differences although median bias estimates at concentrations > 12 ug/m^3 did show a less negative bias.

Table 3. 2008-2010 median percent Bias at concentration ranges

PEP Conc ug/m3	Median Percent Bias
0-3	-10.2
3-6	-12.6
6-9	-10.7
9-12	-11.5
>12	-6.4

Does Bias Vary by Region of the Country?

Not in any pattern. Bias estimates were generally trending down across the nation without a clear regional pattern.

So What's the Answer

We are not sure. We can't answer the question about why we see a trend but we do know that there appears to be more bias, in general, in the summer and the WINS appears to produce more negative results compared to the VSCC when the monitoring organization operates instruments with both types of separators. Some things come to mind that were also brought up at the conference.

1) Filter removal -The PEP program generally removes the filter the next morning while the routine sample can remain in the instrument for a maximum of 177 hours. The longer retrieval time allows for greater volatilization which is suggested by greater differences in summer months. However, it is not clear how this protocol could cause the downward trend in bias.
2) WINS cleaning - Since the VSCC requires less maintenance, there is a possibility that monitoring organizations are following the VSCC cleaning schedule which might mean the WINS are not cleaned as frequently (every 5 events). Some suggest that a dirty WINS might have an effect.
3) Cleaning of down tubes. Some have recently suggested that maybe there is an accumulation of particles on the down tube that is resulting in a loss of particles over time getting to the filters.
4) Aging of instruments and cassettes. A commenter at the conference wondered whether we are seeing the aging of the instruments. He also commented that there is a possibility we are getting leaks around the cassettes which may cause a change in concentration (since volume is a big part of the estimate)

Next Steps

There are a number of questions we may try and answer. They include:

- Do ambient temperatures play a role? As temperature increases, does bias becomes more negative?
- Do changes in speciation of PM2.5 play a role? As PM2.5 concentrations come down, is the volatile fraction of PM2.5 increasing?
- Do filters retrieved within 10 hours of the end of sampling have smaller bias than those retrieved after filters experience the heat of day?
- What is impact on bias based on length of time between last WINS cleaning and sample collection? Do longer times mean lower concentrations (compared to the PEP)?

Answers to some of these questions may require more in depth studies of data from monitoring organizations since some of this information is not reported to the Air Quality System (AQS).

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When Routine Data is Invalid Some QC Data Should Go

Not all App A checks fit nicely into the paradigm.

QAPPs should include wording that addresses when to retain and when to exclude QA and QC data from AQS.

The intent of the QC data that are reported to the AQS is to provide an estimate of precision and bias of the routine data collected during a particular time period. For example the 1-point QC check is performed minimally every two weeks for the gaseous pollutants and so the data from the check represents that the monitor was within acceptance specifications for that time period. Upon failure of the QC checks and subsequent invalidation of the data (should that occur) it is expected that null value codes would replace the routine data and the QC check would not be reported to AQS. Since the routine data would not be available it would not be appropriate to provide a QC value that would be used in an overall estimates of precision and bias of that site. The estimate of precision and bias for that site should represent the valid routine data being reported for the site.

It is suggested that only those QC checks that are performed on each monitor/sampler are subject to removal and only for the checks within the same time period that the routine data were invalidated. As an example if the Annual PE for ozone was performed in April, 2012 and the ozone data for Dec, 2012 were invalidated, the April 2012 PE could remain in AQS and only the 1-point QC checks for Dec. would be removed. Not all App A checks fit nicely into the paradigm. For example:

Collocated data- since they represent a PQAO and not an individual site it becomes more of a dilemma. However if routine data from a collocated site were invalidated due to a finding based on imprecision of the collocated data then one would not want to have these data represent the other sites in the PQAO.

NPAP and PEP data. Similar to the collocated data, this data represents the PQAO and is not often used to invalidate data. However, there are cases where NPAP data have been used to invalidate routine data and in that case it would not be appropriate to report the NPAP results to AQS.

Other concerns might arise in connection with the Annual PEs, or audits, mentioned above. Consistent with many agencies' Quality Assurance Project Plans (QAPPs), data will not be invalidated on the basis of an audit alone. Many agencies will verify, such as by independent tests, the results of a "failed" audit. It might not be practical in all cases to verify an audit result, immediately recalibrate the "failed" channel and schedule a second audit following the recalibration. Accordingly, excluding the audit result that discovered a problem in the first place could cause the responsible agency either to incur additional audit costs or, alternatively, be "penalized" for appearing to fail to meet the required number of audits. Many agencies would be concerned about having a less than complete audit count appear in the AMP255 at the time of annual data certification.

As suggested above, monitoring agencies should keep in mind the objective of reporting the results of QA and QC checks to AQS: The results of the reported QA/QC checks should represent the precision and bias of the reported raw data. The analysts who report these data should be mindful that precision and bias calculations can apply at the monitor level or at the PQAO level. Often, a result that falls outside criteria indicates an out-of-control situation that is subsequently corrected such as by invalidating data and recalibrating. Under other circumstances, after-the-fact review of QC checks with poor, but "passing," results might reveal a trend consistent with a problem that was only discovered by some other means.

Because of concerns such as these, it is important to consider these recommendations in the context of corrective action. It is recommended that QAPPs include wording that addresses when to retain and when to exclude QA and QC data from AQS and when to conduct replacement QA/QC checks. However, it is impossible to foresee every circumstance that might lead to a poor QA/QC result and, in some cases, it might not be obvious whether to report or exclude a result. In these cases decisions may fall to the responsible QA officers or managers. Discussions between the EPA Region and monitoring organizations might also need to occur to determine the best course of action.

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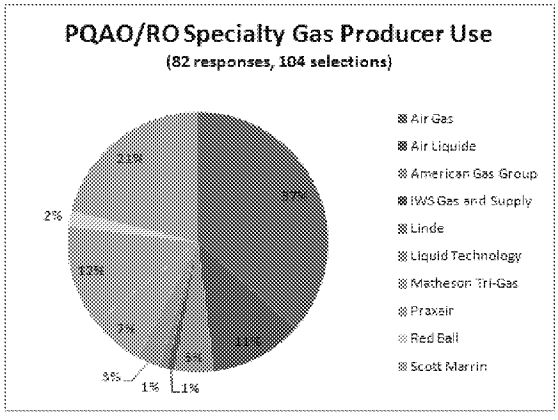
Ambient Air Protocol Gas Verification Program-2nd Report Published

A second full year of implementation of the Ambient Air Protocol Gas Verification program wrapped up December 2011. EPA provided the specialty gas producers an opportunity to review the last quarter of verification data, take any corrective action needed, and review the report prior to publication which was posted on AMTIC April, 2012.



In order to determine what specialty gas producers were being used by monitoring organizations, EPA asked each monitoring organization to complete a web-based survey. For the 2011 AA-PGVP, EPA received surveys from 82 of a possible 122 monitoring organizations, which is about a 67% response rate. This was lower than the input received from 2010 which was around 75%. The table above illustrates producer use based upon the responses received.

Of the 82 respondents, 33 either did not want to participate or were not receiving a cylinder during the year. This narrowed the participants down to 49. Of the possible participants, 15 monitoring organizations sent cylinders to EPA. EPA did not have a monitoring organization volunteer submit a cylinder from Linde, IWS, Red Ball, or Liquid Technology. EPA invited those producers to send a cylinder directly to EPA. In addition, although the monitoring organization surveys did not list, Global, Coastal or ILMO as a producer currently being used, they inquired about the program and submitted cylinders for verification. Some of these cylinders contained multiple pollutants so although 37 cylinders were sent to the RAVLs, 65 verifications were performed.

The Results

As required in 40 CFR Part 75 Appendix A, EPA Protocol Gases must have a certified uncertainty (95 percent confidence interval) that must not be greater than plus or minus (±) 2.0 percent of the certified concentration (tag value) of the gas mixture. This acceptance criterion is for the Acid Rain Program. The AA-PGVP adopted the criteria as its data quality objective and developed a quality system to allow the RAVLs to determine whether or not an individual protocol gas standard concentration was within ± 2% of the certified value. The Ambient Air Program has never identified an acceptance criterion for the protocol gases. Since the AA-PGVP has not been established to provide a statistically rigorous assessment of any specialty gas producer, the RAVLs report all valid results as analyzed but it is suggested that any difference greater than 4-5% is cause for concern.

In general, the AA-PGVP 2011 verifications have been successful. The quality system, standard operating procedures, analytical equipment and standards maintained the data quality of the program. Results show that of the 65 verifications, 64 were within the ± 4-5% AA-PGVP criteria, and 58 (89%) were within the ± 2% Acid Rain Program criteria.

Survey Improvement-

In 2010, EPA had difficulties with monitoring organizations naming production facilities. Sometimes names were mispelled or locations misrepresented. For example, a number of distribution facilities were identified that were not actually producing standards. In 2011, EPA implemented a web-based survey that allowed monitoring organizations to select (based on final 2010 data) the producers they were purchasing standards from. If the suvey list did not have a producer, the monitoring organization could supply a new name and location. The contractor who maintains the survey would provide the new producer information to EPA and if it was determined that it was a legitimate producer, the contractor would update the software so that the new producer would be included on the selection list. The new system has reduced entry errors considerably.

Program Issues– Participation EPA Needs Your Help!

Since the program is voluntary, EPA can not force participation. Due to the budget/resource issues, many monitoring organization are more resource constrained and since the AA-PGVP is optional, it is treated as a lower priority. Since the only added expense to monitoring organizations is the shipping cylinders to the RAVL, in 2011 EPA started helping monitoring organizations pay for the shipping cost. The first 2 quarters of 2012 show very light monitoring organization participation which may force EPA to invite the specialty gas producers to send cylinders directly from their facility which defeats the objective of a blind verification. Twenty five percent of last year's cylinders came directly from producers.

We are grateful to the following organizations that participated in last years survey and we hope that more will consider participating in 2012.

- **Arizona DEQ**
- **City of Philadelphia**
- **Mecklenburg County NC**
- **Maricopa County Air Quality Dept**
- **Minnesota Pollution Control Agency**
- **New Jersey DEP**
- **North Carolina DNR**
- **Ohio EPA (Portsmouth)**
- **Southern Ute Indian Tribe**
- **State of Delaware**
- **State of Florida**
- **Texas Commission of Environmental Quality**
- **University of Iowa State Hygienic Lab**
- **Virginia DEQ**
- **West Virginia DEP**

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Trace Gas NPAP Issues and Notes from the National Meeting

Mark Shanis has been working on a number of issues associated with NPAP activities at NCore sites. The following are some brief updates and helpful hints from his presentations at the National Ambient Air Meeting in Denver.

Zero Air Generator (ZAG) Agreement Issues

The API-701H seems to do a better job than API-701, but there is a need to control heat from the convertor, especially if you use a case-based audit system, or monitor with tightly packed instrument racks. If you are auditing or monitoring trace level CO and have an hydrocarbon (HC) convertor in your ZAG, especially if it is a 701 or 701H, you may need to have a CO convertor after the HC convertor. The HC converter will convert some, but not all, HC that goes through it into CO. If you have to add the CO convertor that API offers, it may mean more heat output from your ZAG. You may wish to check your ZAG against a good Ultra Pure Air cylinder, as the NPAP program does, to be able to independently check the performance of your ZAG.

Trace Level (TL) Calibrators

Generate the TL lower audit levels either with :

1. a lower ratio of CO/NO/SO2 in your blended gas (audit for generation) cylinder; or
2. adding 3rd lower flow rate pollutant mass flow controller (MFC) to your 100cc/min such as a 20 or 10cc/min MFC; or by increasing your dilution MFC from 10 lpm to 20 lpm, or from 20 lpm to 30 lpm (but you can only do that if you have a ZAG that is designed to and can safely go that high;

Some combination of 1 and 2 may also work. The NPAP audit trailer at RTP has a 20cc/min, 100cc/min, and 30 lpm MFC combination. We use approximately 675ppm CO, 60ppm NO, and 30ppm SO2, and we have a 2nd blend for lower levels of ppm CO/NO/SO2.

Region 2 has a 10cc/min, 100cc/min, and 20 lpm MFC combination, and have just proposed using 450ppm CO, 30ppm NO and 15ppm SO2 blend for generating audit levels.

TL calibrator's ozone generators have been observed in the past 2 years to have problems generating the lowest 1 or 2 ozone levels for GPT for NOy (or TL NO2), due to software and/or hardware design features of the generator; and/or to the ability of the auditor (or station manager) to keep a stable, correct range temperature, especially in the summer. However, newer or serviced models of at least API and Environics calibrator's ozone generators have been shown to provide 1-10ppb O3, with stability for an audit of NOy or GPT.

CO analyzer issues

Zero and 3-4 hour drift characteristics may not be as good as specified by the manufacturer. One factor causing the observed problem has been temperature variability due to limitations in AC control of the station, or the audit vehicle/container (trailer, truck, or case-based systems).

SO2 and NO analyzers seem less affected by temperature effects. Temperature control is a more important investment for trace level monitoring, and auditing. A zero of +/-15ppb for a 0-5 ppm full scale TL CO analyzer is probably as good as you may get.

NOy analyzer issues

The audit gas will have to be delivered to the sampling stations NOy convertor inlet, on top of a 10 meter tower. However, if you carry an audit NOy, the convertor does <u>not</u> have to be on a 10 meter tower for a representative audit. However, some NOy analyzer convertors' components may have a wiring problem, resulting in a convertor temperature lower than is required to do the NOy to NO conversion correctly, so be sure to see the API notice about this issue.

Since convertor efficiency is an issue for a device based on conversion of non-NO species to NO, and since the NOy technology is still relatively new, the convertor efficiency (CE) must be checked periodically, and audited. To do this, NO2 is not really sufficient, and NPN or IPN is available and must be used. NO2 only tests conversion efficiency of NO2, not NOy. Most of what will be measured will be NO2, not NOY, but if you don't check, how will you know which is present and in what proportions?

Regular range NO2 audits of NO-NOx analyzers have been shown to be accurate and reliable when based on measurement of the diluted CO from a cylinder of a gas blend of CO, SO2, and NO, followed by reaction of the diluted blend with ozone from the diluting calibration device. That is, we measure the diluted CO on our audit CO analyzer, which we calibrate at the site just before the audit, and assume the concentration of the diluted NO, based on reliance on the blend ratio (CO & NO). We use the audit station's NO-NOx response to test and calculate the sampling station's NO-NOx convertor efficiency for NO2. We call this an NO2 audit based on CO & GPT. The SOP for this procedure is in the NPAP TTP Draft Operators field SOP (7/28/2011) on AMTIC: http://www.epa.gov/ttn/amtic/npapsop.html

Reliance on this procedure for trace level NOy analyzers depends on the performance of the CO analyzer, and control of temperature and pressure. While we see that this SOP variation works, questions have been raised about the challenging the lowest audit levels.

At RTP we have developed an alternate NOy calibration and audit method, based on joint calibration of the CO & NOy analyzers with a set of NPN or IPN spans, and if needed, reliance on the NPN calibrated NOy analyzer for an audit. Initial tests appear promising. Confirmation tests are underway at RTP. If successful, the new and/or older method will be tried out in Region 4. Due to the added time for doing NOy audits by GPT, an alternate shortcut method has been proposed, will be tested around the Regions, and discussed for future use.

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"the agency feels this is an appropriate use for the filters and therefore a legitimate reason for not archiving filters that fall into this category of use."

PM_{10} Filters Serving Dual Purposes and a Reprieve for Filter Archiving

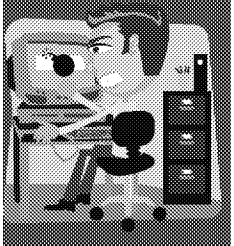
We have received questions on the use of low volume PM_{10} filters that can provide multiple measurements of PM_{10}; specifically the PM_{10} half of the $PM_{10-2.5}$ measurement, and subsequently used in the analysis of PM_{10}-Pb.

Using the same filters for both PM_{10} and Pb analysis reduces the number of samplers required at the monitoring sites and creates other efficiencies. EPA has encouraged this practice with guidance to perform PM_{10} mass measurements prior to performing Pb analysis on the same filter (QA EYE Issue 12). Now that there is an approved FEM Pb ICP-MS technique which will destroy the PM_{10} Teflon filter during sample extraction (the XRF FRM technique is non-destructive and therefore the filter can still be archived), monitoring organizations have asked whether using the PM_{10} filter for multiple uses with a destructive ICP-MS Pb FEM method is in conflict with the following 40 CFR Part 58.16 requirement that:

"The State, or where applicable, local agency shall archive all $PM_{2.5}$, PM_{10}, and $PM_{10-2.5}$ filters from manual low-volume samplers (samplers having flow rates less than 200 liters/minute) from all SLAMS sites for a minimum period of 1 year after collection."

The requirement goes on to state that the archived filters would be made available to EPA or other federal agencies, during the 1-year archive period, for supplemental analysis. Therefore, the archive requirement is to ensure that the filters are available, in a viable condition, for beneficial supplemental uses. Since the approved Pb FEM technique is available for use and EPA has encouraged multiple use of filters in order to reduce capital and resource costs, the agency feels this is an appropriate use for the filters and therefore a legitimate reason for not archiving filters that fall into this category of use.

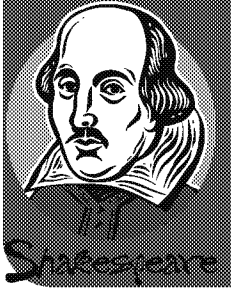
EPA Making Progress on New QA Transactions



The Ambient Air Monitoring Group and the National Air Data Group (the keepers of the AQS system) have formed a Workgroup with a number of EPA Regional and monitoring organization volunteers to review the reporting requirements for the required as well and non-required QA data that is reported to AQS. For many years we have tried to "fit" all our QA data into a precision (RP) or accuracy (RA) transaction that although functional, was not always a great fit. With the possibility of building more automated assessments and the need for additional QA data reported to AQS, this Workgroup has met three times to review the transactions and address issues arising from the review. The process was discussed during the QA Session at the May National Ambient Air Meeting in Denver and will be a topic at the August AQS Meeting.

The Workgroup has one or two meetings remaining which should get us to a stage for external review to a larger audience and programming.

Authors Contributing to the QA EYE— Have You Got Anything to Say?



We appreciate all those authors contributing to this issue. They include:

Bill Frietsche for his work on the Pb Analysis Audit (page 2)

Dennis Mikel who authored the National Toxics Summary on page 3

Shelly Eberly (Geometric Tools) and **Mike McCarthy** (STI) who provided the evaluations for the PM2.5 Bias estimate piece on pages 4 and 5

Joe Delwiche (R8) and **Chris Hall** for contributions to the data validation article on page 6, and,

Mark Shanis who authored the Trace Gas NPAP article on Page 8.

We are always looking for interesting articles for the QA EYE. Please take a few moments out of a day to write up something you feel would help the QA community .

EPA

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E-mail: papp.michael@epa.gov

The Office of Air Quality Planning and Standards is dedicated to developing a quality system to ensure that the Nation's ambient air data is of appropriate quality for informed decision making. We realize that it is only through the efforts of our EPA partners and the monitoring organizations that this data quality goal will be met. This newsletter is intended to provide up-to-date communications on changes or improvements to our quality system. Please pass a copy of this along to your peers and e-mail us with any issues you'd like discussed.

Mike Papp

Important People and Websites

Since 1998, the OAQPS QA Team has been working with the Office of Radiation and Indoor Air in Montgomery and Las Vegas and ORD in order to accomplish it's QA mission. The following personnel are listed by the major programs they implement. Since all are EPA employees, their e-mail address is: last name.first name@ epa.gov.

The **EPA Regions** are the primary contacts for the monitoring organizations and should always be informed of QA issues.

Program	Person		Affiliation
STN/IMPROVE Lab Performance Evaluations	Eric	Bozwell	ORIA- Montgomery
Tribal Air Monitoring	Emilio	Braganza	ORIA-LV
Statistics, DQOs, DQA, precision and bias	Rhonda	Thompson	OAQPS
Speciation Trends Network QA Lead	Dennis	Crumpler	OAQPS
OAQPS QA Manager	Joe	Elkins	OAQPS
Standard Reference Photometer Lead	Scott	Moore	ORD-APPCD
Speciation Trends Network/IMPROVE Field Audits	Jeff	Lantz	ORIA -LV
National Air Toxics Trend Sites QA Lead	Dennis	Mikel	OAQPS
Criteria Pollutant QA Lead	Mike	Papp	OAQPS
NPAP Lead	Mark	Shanis	OAQPS
PM2.5 and Pb PEP Lead	Dennis	Crumpler	OAQPS
STN/IMPROVE Lab PE/TSA/Special Studies	Jewell	Smiley	ORIA-Montgomery
STN/IMPROVE Lab PE/TSA/Special Studies	Steve	Taylor	ORIA-Montgomery

Websites

Website	URL	Description
EPA Quality Staff	EPA Quality System	Overall EPA QA policy and guidance
AMTIC	http://www.epa.gov/ttn/amtic/	Ambient air monitoring and QA
AMTIC QA Page	http://www.epa.gov/ttn/amtic/quality.html	Direct access to QA programs

Message

From: Compher, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E258CB856E3D4AE6BACCA7FA48CA827A-MCOMPHER]
Sent: 3/11/2015 1:35:05 PM
To: Qazzaz, Bilal [qazzaz.bilal@epa.gov]
Subject: FW: QC check completeness unforeseen issues and possible QC call topic

See the response below from Papp. It touches on the data validation issue we've been discussing.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Papp, Michael
Sent: Wednesday, March 11, 2015 8:30 AM
To: McGrath, Jesse
Cc: Compher, Michael; Coats, Robert
Subject: RE: QC check completeness unforeseen issues and possible QC call topic

Hi Jessie.

I'm sure this happens occasionally across all Regions. One thing we also need to keep in mind is if data is invalidated and a one point QC check is invalidated then there can be legitimate "spacing" between checks. In the case of the 1-point QC this is OK since we've made it clear we don't want QC checks that are unacceptable that might have revealed a problem that caused invalidation of routine data, to be reported to AQS since they don't represent the data collected. Therefore AQS needs to be smart enough to know whether there is routine data for at time period. I'm not sure whether this gets too complicated for AQS programing.

From: McGrath, Jesse
Sent: Tuesday, March 10, 2015 4:19 PM
To: Papp, Michael
Cc: Compher, Michael; Coats, Robert
Subject: RE: QC check completeness unforeseen issues and possible QC call topic

'Uncredited check' is a term I made up for this email -- borrowing from the PM2.5 creditable samples.
In PM2.5 creditable samples are included for completeness and calculating the mean or 98th percentile.
Non-creditable samples are not included in completeness but are still used to calculate the mean and 98th percentile.

I believe, and have not confirmed, that QC checks which aren't counted towards completeness are also not counted towards calculating the bias, precision, or 95% UCLs of that stats.

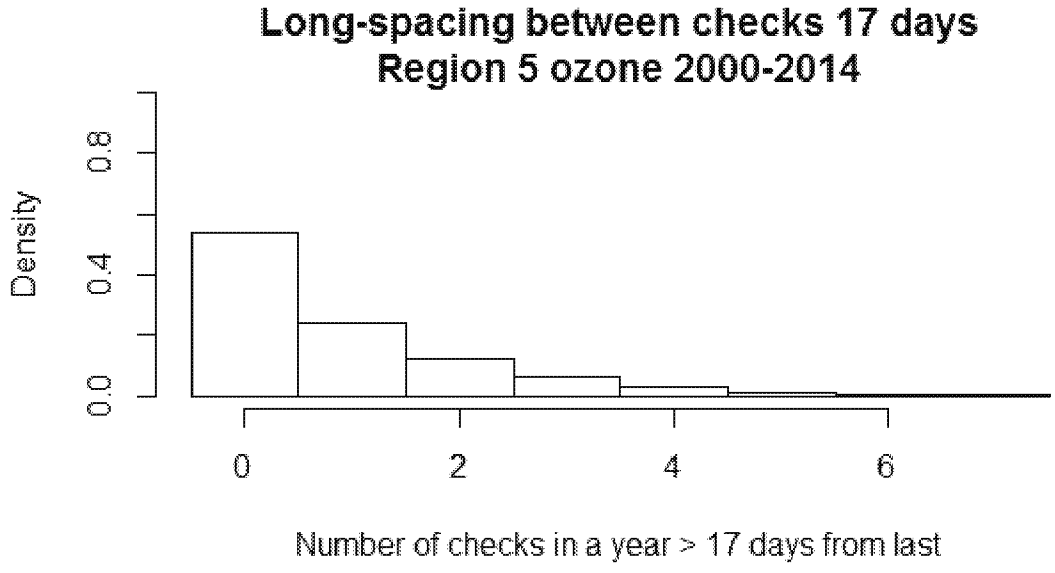
On alternates -- It looks like requiring 5 or 6 checks in a quarter will effectively require the checks to be within 21 or 17 days respectively

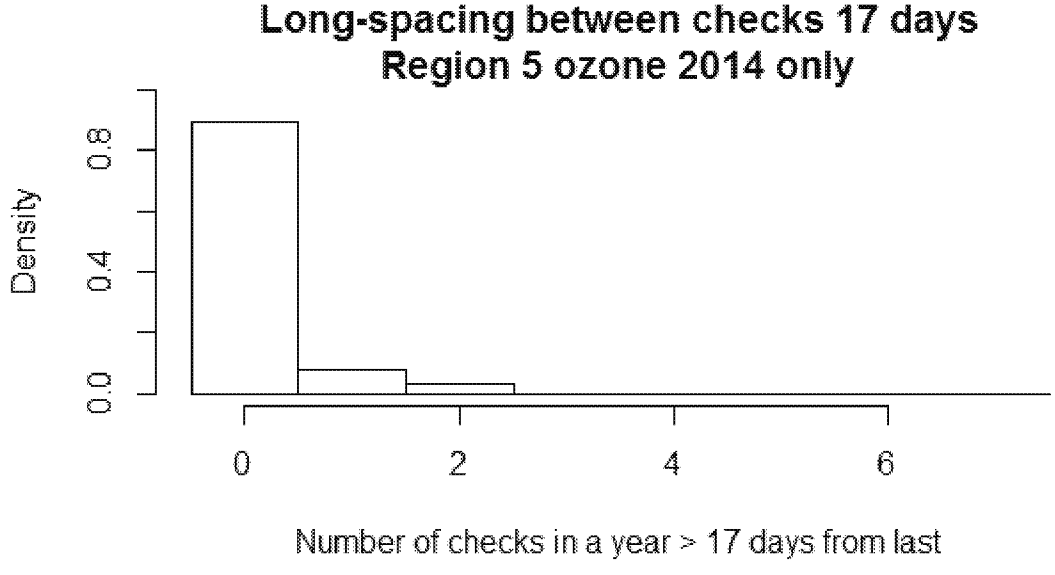
I checked how many checks were done greater than 17 or 21 days from the last for all ozone checks in region 5 from 2000-2014.
The histograms are the number of times a check was done more than 17 or 21 days after the last – so if it was done 18 days or 30 it's just counted once. This is the frequency of lapses – not the extremity of the lapse.
About 55% of the checks are done within 17 days of each other.
About 70% are done within 21 days of each other.

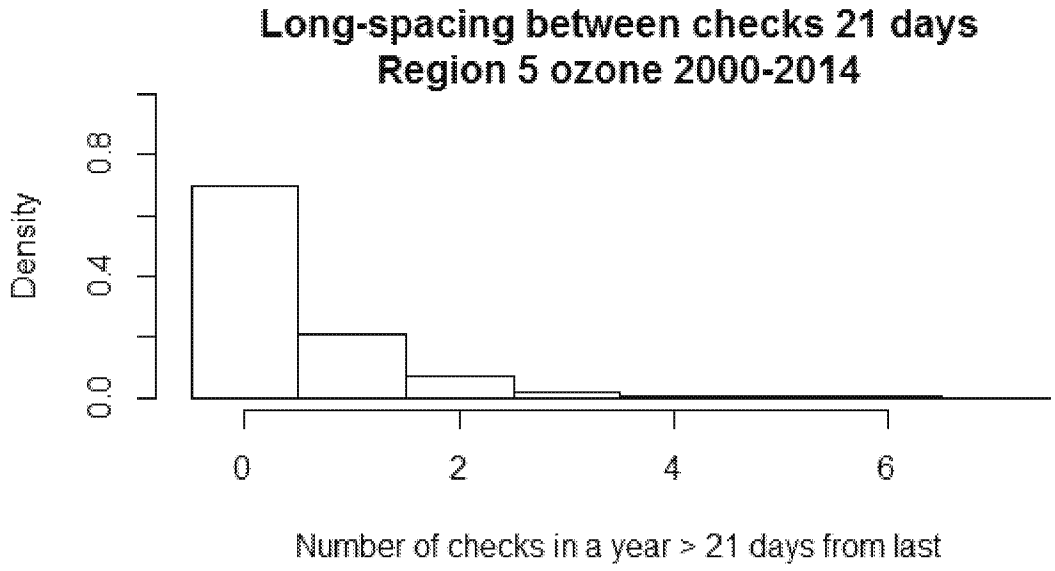
Looking at just 2014 those are closer to 90-95%. Multiple lapses are rare, but I think tend to be from the same agencies.
So from a high-level 6 checks a quarter not more than 17 days apart seems to meet the intention of the checks, identify piling or other issues, offer leeway, and not raise false alarms.

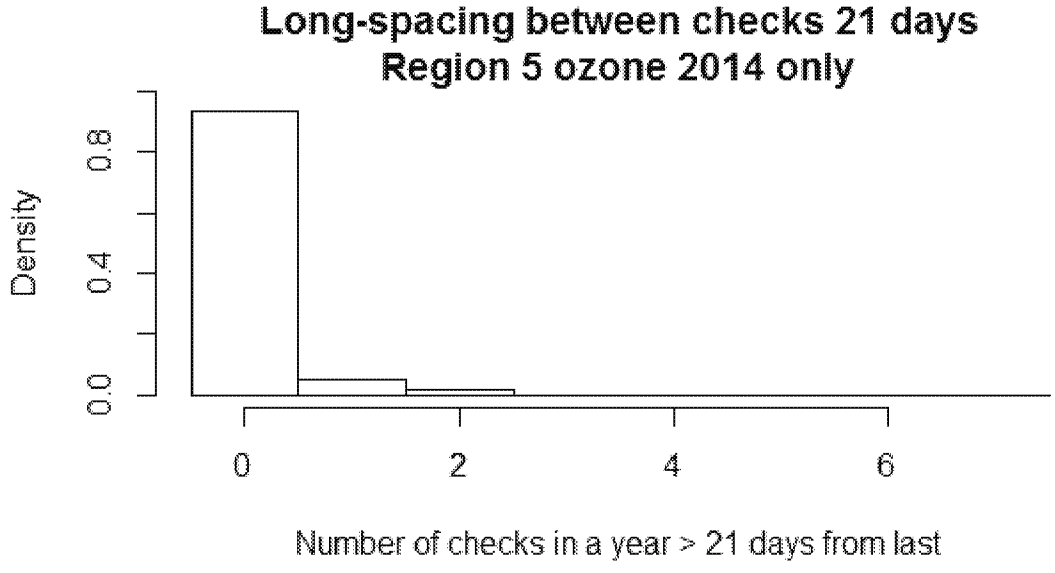
What plausible special cases would break this?

I'm going to run this by the states that have brought it up to me to see if they can identify problems with that scheme.
Have other regions run into this?









Thank you,
Jesse

-----Original Message-----
From: Papp, Michael
Sent: Tuesday, March 10, 2015 11:16 AM
To: McGrath, Jesse
Cc: Compher, Michael; Coats, Robert
Subject: RE: QC check completeness unforeseen issues and possible QC call topic

We can make something work that is less concerning to the monitoring agencies but provides some back stop for piling on at the end of the year. I like option 3 but maybe something like at least 5 checks in a quarter and at least a check every 17 days (little more than 14 but a little less than 21). I was not aware of what is called uncredited checks. May need to talk to Robert about this.

-----Original Message-----

From: McGrath, Jesse
Sent: Tuesday, March 10, 2015 10:42 AM
To: Papp, Michael
Cc: Compher, Michael
Subject: QC check completeness unforeseen issues and possible QC call topic

Hi Mike,

The QC check completeness calculation was changed to a blocked design in response to a comment I made about an agency performing many QC checks near the end of the year to meet the 26 total requirement.

The blocked scheme does cover those issues, but also under-credits agencies when they perform their checks very near the edges of the blocks; slight variations in the check day can result in the check not being counted even though the frequency is OK.

I'm loathe to ask for another change to AQS but Robert says he can do it I talk to the QA team..
I'd like to talk to you about options for handling this for 2014 certification and moving on.

Options on how to handle for 2014.
1. Unless the checks are unreasonably spaced use the certification flagging and commenting system 2. For agencies that do daily precision checks but don't submit them all, allow a random portion to be submitted to meet completeness -- or submit all daily checks if possible.
3. Turn off this calculation for pre-2014. Robert said he'd need your concurrence for this.

Options on how to handle for 2015 on.
1. Leave it as-is and use operational changes to avoid problems. Specifically, aim for the middle of the block, not the edge.
2. Use the previous by-year system. This makes it harder to find oddly-spaced checks, but is easy to implement. Also needs concurrence.
3. Refine the calculation. Needs concurrence. I didn't expect any ill side-effects with the blocked design change so we might want to test what effect any proposed change would have. I'd like this to be simple. Some proposals are:
    a. At least 5 checks in a quarter and 26 in a year.
    b. Checks not more than 21 days (3 weeks) apart.
4. Another issue is that uncredited checks appear to be dropped from the bias and precision calculation. Regardless of whether they're credited for completeness they should be included those calculations.

Thanks,
Jesse

Message

From: Compher, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E258CB856E3D4AE6BACCA7FA48CA827A-MCOMPHER]
Sent: 2/26/2015 1:53:20 PM
To: jason.treutel@wisconsin.gov
CC: Qazzaz, Bilal [qazzaz.bilal@epa.gov]; McGrath, Jesse [mcgrath.jesse@epa.gov]
Subject: FW: State, Local, and Tribal Monthly Conference Call

Good morning Jason,

Thank you for providing this feedback to us. We will work out an approach within the Region in consultation with OAQPS and provide clarification for you.

I am interested in knowing, generally for WDNR's monitoring program, how frequently failed QC checks result in invalidation of any data.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Treutel, Jason A - DNR [mailto:Jason.Treutel@wisconsin.gov]
Sent: Wednesday, February 25, 2015 4:11 PM
To: Qazzaz, Bilal; McGrath, Jesse
Subject: RE: State, Local, and Tribal Monthly Conference Call

Good afternoon Bilal and Jesse. I just wanted to recap the validation conversation and the way I am interpreting it:

From the QA Handbook

Criteria that were deemed critical to maintaining the integrity of a sample or group of samples were placed on the first table. Observations that do not meet each and every criterion on the **Critical Criteria Table** should be invalidated unless there are compelling reason and justification for not doing so. The sample or group of samples for which one or more of these criteria are not met is invalid until proven otherwise. The cause of not operating in the acceptable range for each of the violated criteria must be investigated and minimized to reduce the likelihood that additional samples will be invalidated.

Example from ozone validation template

1) Requirement (O_3)	2) Frequency	3) Acceptance Criteria	Information /Action
One Point QC Check	***Single analyzer 1/ 2 weeks***	< +7% (percent difference	1 and 2) 40 CFR Part 58 App A Sec 3.2 3) Recommendation based on DQO in 40 CFR Part 58 App A Sec 2.3.1.2. QC Check Conc range 0.01 - 0.10 ppm, relative to routine concentrations

My interpretation of the QA Handbook (and perhaps Anna Kelly's as well): If the one point QC check is >7% the Critical criteria has been violated and the observations should be invalidated. We don't like invalidating data so

we make sure that the violating check is confirmed potentially with a repeat measurement, alternative calibration equipment, or even an expert operator. If the criteria violation is confirmed we invalidate the associated data and do not report the check to AQS.

Feedback from Bilal on the call: Seemed to agree that this was an acceptable if not appropriate approach

Feedback from Jesse: This is absolutely the wrong approach to use for invalidating data because the criteria is in relation to the statistical analysis of the population of the checks, not the individual check. This is not very clear to me in the QA Handbook Validation tables which due to time constraints I've relied on more than the text of the remainder of the document.

I apologize for venting here, but what I heard today seemed contradictory on the EPA side. Even though I am starting to agree philosophically with the approach Jesse recapped, I am very concerned with developing and implementing the processes necessary to adopt that approach.

Because I was at the QAPP meeting I had already heard some of this information on control charting and population evaluation vs. single check criteria being things to consider when developing a QAPP. I am concerned with the idea of developing control chart criteria and other statistical tests to judge the validity of our data and when and when not to invalidate it. I do not have the statistical background to do this without significant research or guidance and I do not currently have access to someone in our local group that can provide it. Therefore I am relying on documents like the Validation templates which according to Jesse, I am misinterpreting or at least not getting the full story. The hard and fast failure criteria they imply make validation/invalidation a simpler process and the data that meets it is of very high quality even if it ends up excluding data that would have resulted in a data set that is still good enough.

We rarely exceed the validation template criteria for a single validation point where there is not a hard failure of the instrument. There was one occurrence I will be revisiting as we move on to data certification. I had invalidated a block of NOx data based on a single check that was not addressed properly until the next biweekly check. This had caused a month of data to be invalidated and will cause the parameter to not meet completion percent requirements for Q1. Based on today's information it sounds like the data can and should be revalidated since the check exceeded by only a little and will not cause the population to exceed the criteria. I will also need to submit this check.

We are committed to service excellence.
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Jason.Treutel@wisconsin.gov

dnr.wi.gov

From: Qazzaz, Bilal [mailto:qazzaz.bilal@epa.gov]
Sent: Monday, February 23, 2015 8:03 AM
To: abaird@oneidanation.org; aboetcher@nhbpi.com; Adam.Blundell@hamilton-co.org; air@lldrm.org; airquality@badriver-nsn.gov; Alexander Jackson; Allen, Mark K - DNR; bfrazier@piic.org; brettmc@chegnet.net; Rodger, Bruce C - DNR; Laude, Bryan T - DNR; Burt Mechenbar; Cashman, John; ccharwood@redlakenation.org; charlie.lippert@millelacsband.com; charliel.millelacsojibwe@gmail.com; Chris.Harrison@hamilton-co.org; Christina Wieg; christina.boss@hamilton-co.org; Cindy.Charles@epa.state.oh.us; cjlippert@hotmail.com; cspruce@kbic-nsn.gov; dallasr@uppersiouxcommunity-nsn.gov; Nickolie, Daniel W - DNR; darrell.pennington@epa.state.oh.us; ddtyrolt@chegnet.net; deb.dirlam@lowersioux.com; Deborah Stone (Environmental Control);

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Cc: Ross, Anthony; Fuoco, Marta; McEvoy, Chad; Caudill, Motria; Engler, Gary; Rodger, Bruce C - DNR; Delisio, Edward; Hamilton, Scott; McGrath, Jesse; Scott Wold
Subject: State, Local, and Tribal Monthly Conference Call

To all,

We will be having our SLT call on February 25, 1-2 CST.

Date: 2-25-15
Time: 1-2 (CST)
Where: 1813A

Call in number: 877-226-9607

Conference Code: 5770738038

Region 5 Items

-Phase 3 Near Road Update
-AQS Update
-Update on Ozone Traceability Best Practices
-Poll of those who are conducting Ultra-Fine Particle (UFP) monitoring

SLT Items

-MDEQ would like to discuss how other states are documenting
the extended certifications of their cylinders
-IDEM would like to discuss how other states are validating their data
-Information sharing with SWOAQA and CCDEC

Bilal Qazzaz
Air & Radiation Division
Air Monitoring & Analysis Section
US EPA Region 5
(312) 353-2325

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: WLV

CERTIFICATION EVALUATION AND CONCURRENCE

Report Request ID: 1344873

Report Code: AMP600

Jun. 17, 2015

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA			

AGENCY SELECTIONS

Indiana Depart Of Environ Management/Office Of Air Quality

SELECTED OPTIONS

Option Type	Option Value
MERGE PDF FILES	YES
AGENCY ROLE	CERTIFYING

DATE CRITERIA

Start Date	End Date
2014	2014

Data Evaluation and Concurrence Report Summary

Certification Year: 2014
Certifying Agency (CA): Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Pollutants in Report:

Parameter Name	Code	Monitors Evaluated	Monitors Recommended for Concurrence by AQS	Monitors NOT Recommended for Concurrence by AQS
Carbon monoxide	42101	6	6	0
Lead (TSP) LC	14129	11	10	1
Nitrogen dioxide (NO2)	42602	8	7	1
Ozone	44201	45	45	0
PM10 Total 0-10um STP	81102	16	15	1
PM2.5 - Local Conditions	88101	49	47	2
Sulfur dioxide	42401	22	22	0

PQAOs in Report:

PQAO Name	PQAO Code	TSA Date
Hoosier Energy	0501	
Indiana Depart Of Environ Management/Office Of Air Quality	0520	11/03/11
Indianapolis Power And Light Company	0524	
Northern Indiana Public Service Company	0788	
Richmond Power And Light	0909	
Duke Energy	1324	

Summary of 'N' flags for all pollutants:

PQAO	Parameter Code	AQS Site-ID	POC	AQS Recommended Flag	Cert. Agency Recommended Flag	Reason for AQS Recommendation
0520	14129	18-127-0027	1	N	Y	Annual Summary completeness < 70%.
0520	42602	18-097-0087	1	N	Y	1-Point QC Completeness < 65%.
0520	88101	18-107-0004	3	N		Flow Rate Audit completeness < 65%.
0520	88101	18-107-0004	1	N		Flow Rate Audit completeness < 65%.
0520	88101	18-107-0004	1	N		PQAO-Level Collocation criteria not met.
0520	81102	18-127-0023	3	N	Y	Flow Rate Audit Bias > 9%.

Signature of Monitoring Organization Representative: _____

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Carbon monoxide (42101) (ppm)
PQAO Name Indiana Depart Of Environ Management/Office Of Air Quality (0520)
QAPP Approval Date 12/31/2012

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
1	-2.6070	Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
18-089-0015	1	SLAMS	0.562	0.250	5.400	0	0	98	3.64	+/-2.87	100	3.14	100		Y	Y	Y	Y	Y
18-097-0072	1	SLAMS	0.634	0.250	13.600	0	0	99	6.13	+/-4.55	100	- 0.11	100		Y	Y	Y	Y	Y
18-097-0073	1	SLAMS	0.308	0.250	2.000	0	0	98	1.87	+/-1.36	96	0.75	100	- 2.61	Y	Y	Y	Y	Y
18-097-0078	1	SLAMS	0.232	0.010	1.700	0	0	73	9.25	+/-7.96	81	7.62	100		Y	Y	Y	Y	Y
18-097-0087	1	SPM	0.265	0.010	1.400	0	0	89	8.15	+/-6.12	71	0.99	100		Y	Y	Y	Y	Y
18-163-0022	1	SLAMS	0.306	0.250	5.700	0	0	98	1.07	-1.69	92	- 0.63	100		Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Nitrogen dioxide (NO2) (42602) (ppb)
PQAO Name Indiana Depart Of Environ Management/Office Of Air Quality (0520)
QAPP Approval Date 12/31/2012

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
1	1.09890	Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
18-005-0007	1	SPM	3.1	- 1.0	28.7		0	95	2.83	+/-2.48	96	2.45	100		Y	Y	Y	Y	Y
18-089-0022	1	SLAMS	12.6	0.0	74.6		0	91	3.34	+4.56	85	- 0.55	100		Y	Y	Y	Y	Y
18-097-0073	1	SLAMS	9.4	0.2	53.9		0	95	4.33	-5.36	92	2.11	100	1.10	Y	Y	Y	Y	Y
18-097-0078	2	SLAMS	13.7	0.9	57.5		0	74	3.92	-4.65	81	- 1.32	100		Y	Y	Y	Y	Y
18-097-0087	1	SPM	16.7	0.0	64.4		0	96	5.78	+/-4.44	30	6.56	100		Y	Y	N	Y	S
Submitter Comment Available audit results confirm validation of data.																			
18-141-0015	1	SLAMS	7.4	0.0	54.6		0	91	3.90	-4.41	88	1.56	100		Y	Y	Y	Y	Y
18-163-0021	1	SLAMS	9.0	1.5	41.8		0	90	5.67	+/-5.04	77	- 2.07	100		Y	Y	Y	Y	Y
18-183-0003	1	SPM	5.3	0.0	41.3		0	80	4.42	+/-3.78	81	- 1.35	100		Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Ozone (44201) (ppm)
PQAO Name Indiana Depart Of Environ Management/Office Of Air Quality (0520)
QAPP Approval Date 12/31/2012

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
9	-.21569	Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
17-023-0001	1	SLAMS	0.046	0.016	0.072	0	0	95	2.15	+/-1.37	100	- 1.78	100		Y	Y	Y	Y	Y
18-003-0002	1	SLAMS	0.048	0.024	0.072	0	0	99	0.55	+1.05	100	- 1.68	100		Y	Y	Y	Y	Y
18-003-0004	1	SLAMS	0.047	0.022	0.072	0	0	99	0.64	+/-0.42	100	- 0.68	100		Y	Y	Y	Y	Y
18-005-0007	1	SPM	0.054	0.029	0.081	0	0	99	5.59	-4.13	100	1.45	100		Y	Y	Y	Y	Y
18-011-0001	1	SLAMS	0.051	0.025	0.078	0	0	99	1.99	+/-1.34	100	- 1.00	100	- 3.24	Y	Y	Y	Y	Y
18-013-0001	1	SPM	0.047	0.025	0.068	0	0	84	1.19	+/-0.84	100	- 1.39	100		Y	Y	Y	Y	Y
18-015-0002	1	SLAMS	0.049	0.021	0.078	0	0	95	1.26	+/-1.04	100	2.19	100		Y	Y	Y	Y	Y
18-019-0008	1	SLAMS	0.052	0.017	0.091	0	0	93	1.56	+/-1.16	100	1.00	100	- 2.63	Y	Y	Y	Y	Y
18-035-0010	1	SLAMS	0.043	0.021	0.069	0	0	99	1.41	+/-1.31	100	- 3.75	100		Y	Y	Y	Y	Y
18-039-0007	1	SLAMS	0.042	0.016	0.063	0	0	99	1.29	+/-0.89	100	- 3.34	100		Y	Y	Y	Y	Y
18-043-1004	1	SLAMS	0.052	0.016	0.087	0	0	97	1.22	+/-0.96	92	- 0.25	100	2.47	Y	Y	Y	Y	Y
18-055-0001	1	SLAMS	0.050	0.024	0.075	0	0	98	2.04	+/-1.91	100	- 2.96	100	- 0.11	Y	Y	Y	Y	Y
18-057-0006	1	SLAMS	0.045	0.022	0.069	0	0	99	1.16	+/-0.56	100	0.43	100		Y	Y	Y	Y	Y
18-059-0003	1	SLAMS	0.041	0.019	0.067	0	0	99	1.65	+2.24	100	- 2.24	100		Y	Y	Y	Y	Y
18-063-0004	1	SLAMS	0.043	0.020	0.067	0	0	99	3.66	+/-3.03	100	- 2.42	100		Y	Y	Y	Y	Y
18-069-0002	1	SLAMS	0.043	0.020	0.068	0	0	95	2.14	+/-2.03	100	- 1.24	100		Y	Y	Y	Y	Y
18-071-0001	1	SLAMS	0.050	0.027	0.075	0	0	99	3.07	+/-2.18	100	3.27	100		Y	Y	Y	Y	Y
18-081-0002	1	SLAMS	0.044	0.022	0.067	0	0	95	1.76	+/-1.31	100	- 0.58	100		Y	Y	Y	Y	Y
18-089-0022	1	SLAMS	0.049	0.022	0.079	0	0	96	0.84	+1.53	85	- 0.62	100		Y	Y	Y	Y	Y
18-089-0030	1	SLAMS	0.048	0.022	0.081	0	0	98	1.52	+/-1.56	100	- 1.67	100		Y	Y	Y	Y	Y
18-089-2008	1	SLAMS	0.051	0.027	0.084	0	0	94	3.61	-4.65	100	1.84	100		Y	Y	Y	Y	Y
18-091-0005	1	SLAMS	0.053	0.025	0.084	0	0	98	0.66	+/-0.91	100	- 1.01	100	- 0.22	Y	Y	Y	Y	Y
18-091-0010	1	SLAMS	0.044	0.020	0.069	0	0	98	3.03	+/-2.62	100	- 4.30	100		Y	Y	Y	Y	Y
18-095-0010	1	SLAMS	0.040	0.019	0.063	0	0	92	1.43	+2.81	77	- 2.37	100		Y	Y	Y	Y	Y
18-097-0050	1	SLAMS	0.051	0.025	0.079	0	0	99	0.59	-1.01	100	- 0.76	100		Y	Y	Y	Y	Y
18-097-0057	1	SLAMS	0.051	0.026	0.079	0	0	99	5.52	+5.31	92	- 1.93	100		Y	Y	Y	Y	Y
18-097-0073	1	SLAMS	0.051	0.024	0.078	0	0	98	0.47	+/-0.25	100	- 0.74	100	0.00	Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Ozone (44201) (ppm)
PQAO Name Indiana Depart Of Environ Management/Office Of Air Quality (0520)
QAPP Approval Date 12/31/2012

			Routine Data						One Point Quality Check			Annual PE		NPAP			Concur. Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	Precision	Bias	Complete	Bias	Complete	Bias	PQAO Level Criteria	QAPP Appr.	Aqs Rec Flag	CA Rec Flag	Epa Concur
18-097-0078	1	SLAMS	0.049	0.008	0.073	0	0	75	1.30	+/-0.91	69	1.26	100	- 1.79	Y	Y	Y	Y	Y
18-097-0087	1	SPM	0.046	0.005	0.078	0	0	99	0.88	-1.49	80	2.10	100		Y	Y	Y	Y	Y
18-109-0005	1	SLAMS	0.050	0.025	0.074	0	0	98	2.03	-2.29	92	0.00	100		Y	Y	Y	Y	Y
18-123-0009	1	SLAMS	0.052	0.020	0.080	0	0	98	1.73	+/-1.59	100	- 1.39	100		Y	Y	Y	Y	Y
18-127-0024	1	SLAMS	0.052	0.024	0.082	0	0	95	0.70	+/-0.81	100	- 0.87	100	- 1.21	Y	Y	Y	Y	Y
18-127-0026	1	SLAMS	0.051	0.025	0.082	0	0	98	3.76	+/-1.90	100	1.46	100		Y	Y	Y	Y	Y
18-129-0003	1	SLAMS	0.050	0.022	0.075	0	0	98	0.59	+/-0.29	100	- 0.66	100		Y	Y	Y	Y	Y
18-141-0010	1	SLAMS	0.044	0.018	0.067	0	0	99	2.31	+3.26	100	- 3.52	100		Y	Y	Y	Y	Y
18-141-0015	1	SLAMS	0.050	0.018	0.075	0	0	99	0.55	+/-0.36	92	- 1.50	100		Y	Y	Y	Y	Y
18-141-0016	1	SLAMS	0.049	0.018	0.073	0	0	99	0.95	+/-0.73	100	- 1.59	100		Y	Y	Y	Y	Y
18-145-0001	1	SLAMS	0.049	0.026	0.076	0	0	99	0.00	+/-0.00	100	0.70	100		Y	Y	Y	Y	Y
18-163-0013	1	SLAMS	0.052	0.023	0.081	0	0	98	2.67	+/-2.27	100	1.86	100	0.00	Y	Y	Y	Y	Y
18-163-0021	1	SLAMS	0.051	0.010	0.080	0	0	98	7.02	+/-5.55	85	- 0.42	100		Y	Y	Y	Y	Y
18-167-0018	1	SLAMS	0.048	0.023	0.075	0	0	99	2.87	+/-2.04	100	- 1.96	100		Y	Y	Y	Y	Y
18-167-0024	1	SLAMS	0.045	0.020	0.071	0	0	99	1.40	+/-1.08	100	0.70	100		Y	Y	Y	Y	Y
18-173-0008	1	SLAMS	0.051	0.024	0.082	0	0	98	0.38	+/-0.19	100	- 1.28	100		Y	Y	Y	Y	Y
18-173-0009	1	SLAMS	0.049	0.024	0.077	0	0	99	0.95	-1.79	100	- 0.58	100		Y	Y	Y	Y	Y
18-173-0011	1	SLAMS	0.051	0.023	0.084	0	0	98	2.67	+/-1.54	100	- 0.45	100		Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Sulfur dioxide (42401) (ppb)

PQAO Name Duke Energy (1324)
QAPP Approval Date

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
0		Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
17-185-0001	1	INDUSTRIAL	2.4	1.0	109.0		0	95	1.85	+/-1.88	96	- 0.41	100		Y	Y	Y	Y	Y
18-043-0004	1	INDUSTRIAL	3.0	0.0	90.0		0	95	1.07	+/-0.78	92	1.48	100		Y	Y	Y	Y	Y
18-045-0001	1	INDUSTRIAL	2.2	1.0	60.0		0	95	2.88	+/-2.46	96	- 1.46	100		Y	Y	Y	Y	Y
18-051-0002	1	INDUSTRIAL	3.2	0.0	94.0		0	93	4.03	+/-3.19	100	- 0.69	100		Y	Y	Y	Y	Y
18-167-1014	1	INDUSTRIAL	3.8	0.0	169.0		0	95	2.52	+/-2.35	96	- 0.82	100		Y	Y	Y	Y	Y

PQAO Name Hoosier Energy (0501)
QAPP Approval Date

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
0		Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
18-125-0005	1	INDUSTRIAL	3.7	- 1.8	232.8		0	96	3.96	+/-3.57	100	1.81	100		Y	Y	Y	Y	Y

PQAO Name Indiana Depart Of Environ Management/Office Of Air Quality (0520)
QAPP Approval Date 12/31/2012

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
1	1.14943	Y

Routine Data | One Point Quality Check | Annual PE | NPAP | Concur. Flag

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Sulfur dioxide (42401) (ppb)

PQAO Name Indiana Depart Of Environ Management/Office Of Air Quality (0520)
QAPP Approval Date 12/31/2012

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
18-005-0007	1	SPM	2.2	0.3	43.4		0	99	1.78	+/-1.40	100	- 0.03	100		Y	Y	Y	Y	Y
18-043-1004	1	SLAMS	1.6	0.0	63.8		0	98	1.45	-1.62	96	0.86	100	1.15	Y	Y	Y	Y	Y
18-089-0022	1	SLAMS	1.6	0.0	128.7		0	97	2.70	+/-2.04	96	- 3.22	100		Y	Y	Y	Y	Y
18-089-2008	1	SLAMS	1.9	0.2	44.6		0	96	1.55	-2.74	92	- 2.86	100		Y	Y	Y	Y	Y
18-097-0057	1	SLAMS	3.3	0.0	151.2		0	98	3.09	+/-2.44	100	0.34	100		Y	Y	Y	Y	Y
18-097-0073	1	SLAMS	3.1	0.0	143.0		0	94	3.23	-3.67	96	- 0.19	100		Y	Y	Y	Y	Y
18-097-0078	1	SLAMS	3.0	0.0	99.8		0	80	9.28	-13.75	85	- 6.51	100		Y	Y	Y	Y	Y
18-163-0021	1	SLAMS	1.6	0.0	45.5		0	98	2.28	+/-1.63	100	1.38	100		Y	Y	Y	Y	Y
18-167-0018	2	SLAMS	2.0	0.0	115.8		0	96	1.25	+/-1.54	100	- 0.59	100		Y	Y	Y	Y	Y
18-183-0003	1	SPM	0.4	0.0	29.9		0	96	2.61	-3.18	100	- 4.02	100		Y	Y	Y	Y	Y

PQAO Name Indianapolis Power And Light Company (0524)
QAPP Approval Date

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
0		Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
18-027-0002	1	INDUSTRIAL	3.7	0.0	292.0		0	89	5.22	+/-4.71	81	0.73	100		Y	Y	Y	Y	Y
18-109-1001	1	INDUSTRIAL	3.1	0.0	135.0		0	93	1.42	+/-1.01	100	- 2.43	100		Y	Y	Y	Y	Y

PQAO Name Northern Indiana Public Service Company (0788)
QAPP Approval Date

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
0		Y

Routine Data | One Point Quality Check | Annual PE | NPAP | Concur. Flag

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Sulfur dioxide (42401) (ppb)

PQAO Name Northern Indiana Public Service Company (0788)
QAPP Approval Date

			Routine Data						One Point Quality Check			Annual PE		NPAP			Concur. Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	Precision	Bias	Complete	Bias	Complete	Bias	PQAO Level Criteria	QAPP Appr.	Aqs Rec Flag	CA Rec Flag	Epa Concur
18-073-0002	1	INDUSTRIAL	0.9	0.0	29.0		0	97	3.57	+/-3.12	100	0.32	100		Y	Y	Y	Y	Y
18-091-0005	1	INDUSTRIAL	0.9	0.0	16.0		0	95	3.95	+/-3.22	100	- 0.87	100		Y	Y	Y	Y	Y
18-127-0011	1	INDUSTRIAL	2.0	0.0	30.0		0	97	3.48	+/-2.81	100	- 1.87	100		Y	Y	Y	Y	Y

PQAO Name Richmond Power And Light (0909)
QAPP Approval Date

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
0		Y

			Routine Data						One Point Quality Check			Annual PE		NPAP			Concur. Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	Precision	Bias	Complete	Bias	Complete	Bias	PQAO Level Criteria	QAPP Appr.	Aqs Rec Flag	CA Rec Flag	Epa Concur
18-177-0006	1	INDUSTRIAL	2.1	0.0	8.1		0	99	4.53	+/-4.47	100	0.29	100		Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2014
Certifying Agency: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Parameter: PM10 Total 0-10um STP (81102) CONTINUOUS
PQAO Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Quality Assurance Project Plan Approval Date: 12/31/2012

Monitors Summaries

			Routine Data (ug/m3)						Flow Rate Verification		Flow Rate Audit			Concurrence Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Bias	% Complete	Bias	% Complete	QAPP Appr.	AQS Rec Flag	CA Rec Flag	EPA Concur
18-089-0022	2	SLAMS	23.04	.0	590.0		0	89	+5.57	100	-4.59	100	Y	Y	Y	Y
18-097-0078	4	SLAMS	20.34	2.0	361.0		0	76	+2.29	92	+2.02	100	Y	Y	Y	Y
18-127-0023	3	SLAMS	20.38	.0	311.0		0	75	+/-8.42	100	-12.58	100	Y	N	Y	S

Submitter Comment: Audit results requiring frequent calibration.

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2014
Certifying Agency: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Parameter: PM10 Total 0-10um STP (81102) INTERMITTENT
PQAO Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Quality Assurance Project Plan Approval Date: 12/31/2012

Collocation Summary

# Sites	# Sites Req	# Sites Collocated	% Collocated	CV Est	CV UB	Criteria Met?
10	2	3	100	4.17	4.50	Y

Monitors Summaries

			Routine Data (ug/m3)						Flow Rate Audit		Collocation				Concurrence Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Bias	% Complete	CV	% Complete	PQAO Crit. Met	QAPP Appr.	AQS Rec Flag	CA Rec Flag	EPA Concur
18-019-0006	1	SLAMS	19.51	5.0	40.0	0	0	98	+1.60	100			Y	Y	Y	Y	Y
18-037-2001	2	SLAMS	17.10	4.0	35.0	0	0	96	+1.63	100			Y	Y	Y	Y	Y
18-089-0006	2	SLAMS	20.25	5.0	52.0	0	0	100	-1.86	100	3.34	100	Y	Y	Y	Y	Y
18-089-0006	3	SLAMS	20.12	5.0	52.0	0	0	100	-2.51	100			Y	Y	Y	Y	Y
18-089-0031	1	SLAMS	23.80	6.0	66.0	0	0	75	-0.98	100	5.95	100	Y	Y	Y	Y	Y
18-089-0031	2	SLAMS	23.72	5.0	67.0	0	0	95	-2.14	100			Y	Y	Y	Y	Y
18-089-0034	1	SLAMS	21.46	2.0	49.0	0	0	90	-1.65	100			Y	Y	Y	Y	Y
18-097-0043	1	SLAMS	26.16	5.0	69.0	0	0	96	-0.57	100	4.76	100	Y	Y	Y	Y	Y
18-097-0043	2	SLAMS	26.59	6.0	72.0	0	0	98	-1.89	100			Y	Y	Y	Y	Y
18-097-0078	1	SLAMS	18.10	2.0	52.0	0	0	84	+0.33	100			Y	Y	Y	Y	Y
18-127-0024	1	SLAMS	15.02	2.0	33.0	0	0	91	-1.22	100			Y	Y	Y	Y	Y
18-163-0021	1	SLAMS	17.28	2.0	41.0	0	0	100	-0.02	100			Y	Y	Y	Y	Y
18-167-0018	1	SLAMS	17.61	4.0	58.0	0	0	95	-0.56	100			Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2014
Certifying Agency: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Parameter: PM2.5 - Local Conditions (88101)
PQAO Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Quality Assurance Project Plan Approval Date: 12/31/2012

Collocation Summary

Method	# Sites	# Sites Req	# Sites Collocated	% Collocated	CV Est	CV UB	Criteria Met?
142	1	1	0	0			N
145	35	5	10	100	11.53	11.85	Y

PEP Summary

# Methods	# Audited Methods	# PEP Required	# PEP Submitted	% Complete	Bias	Criteria Met?
2	1	8	7	87.5	+4.86	Y

Monitors Summaries

AQS Site ID	POC	Method	Monitor Type	Routine Data (ug/m3) Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Flow Rate Audit Bias	% Complete	Collocation CV	% Complete	PQAO Crit. Met	PEP PQAO Crit. Met	QAPP Appr.	Concurrence Flag AQS Rec Flag	CA Rec Flag	EPA Concur
18-003-0004	1	145	SLAMS	10.70	2.1	49.6		0	98	-0.23	100	4.75	100	Y	Y	Y	Y	Y	Y
18-003-0004	2	145	SLAMS	10.57	2.1	49.2		0	98	+0.11	100			Y	Y	Y	Y	Y	Y
18-005-0008	1	145	SPM	10.41	2.5	21.5		0	100	-0.42	100			Y	Y	Y	Y	Y	Y
18-005-0008	3	170	SPM	10.99	-2.3	89.8		0	90	+0.85	100			Y	Y	Y	Y	Y	Y
18-019-0006	1	145	SLAMS	11.99	2.9	43.2		0	83	-0.60	100			Y	Y	Y	Y	Y	Y
Submitter Comment:			early certification																
18-019-0008	1	145	SPM	9.45	2.7	26.7		0	95	+0.14	100			Y	Y	Y	Y	Y	Y
18-035-0006	1	145	SLAMS	10.26	2.1	47.4		0	97	+0.88	100			Y	Y	Y	Y	Y	Y
18-037-2001	1	145	SLAMS	11.12	2.3	33.7		0	100	+0.32	100			Y	Y	Y	Y	Y	Y
18-039-0008	1	145	SLAMS	11.34	1.1	41.7		0	95	-1.88	100			Y	Y	Y	Y	Y	Y
18-043-1004	1	145	SLAMS	10.24	2.5	25.7		0	100	+1.41	100	3.59	100	Y	Y	Y	Y	Y	Y
18-043-1004	2	145	SLAMS	10.55	3.1	23.7		0	95	+0.68	100			Y	Y	Y	Y	Y	Y
18-055-0001	1	145	SLAMS	9.92	1.5	29.0		0	98	-0.37	100			Y	Y	Y	Y	Y	Y
18-057-0007	1	145	SLAMS	10.88	1.0	45.0		0	97	+0.64	100			Y	Y	Y	Y	Y	Y
18-057-0007	3	170	SPM	9.58	-2.2	145.7		0	100	+1.80	100			Y	Y	Y	Y	Y	Y
18-065-0003	1	145	SLAMS	9.85	2.0	42.7		0	98	+0.08	100			Y	Y	Y	Y	Y	Y
18-067-0004	1	145	SPM	9.55	2.4	20.8		0	100	-1.12	100	16.40	100	Y	Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2014
Certifying Agency: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Parameter: PM2.5 - Local Conditions (88101)
PQAO Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Quality Assurance Project Plan Approval Date: 12/31/2012

Collocation Summary

Method	# Sites	# Sites Req	# Sites Collocated	% Collocated	CV Est	CV UB	Criteria Met?
142	1	1	0	0			N
145	35	5	10	100	11.53	11.85	Y

PEP Summary

# Methods	# Audited Methods	# PEP Required	# PEP Submitted	% Complete	Bias	Criteria Met?
2	1	8	7	87.5	+4.86	Y

Monitors Summaries

AQS Site ID	POC	Method	Monitor Type	Routine Data (ug/m3) Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Flow Rate Audit Bias	% Complete	Collocation CV	% Complete	PQAO Crit. Met	PEP PQAO Crit. Met	QAPP Appr.	Concurrence Flag AQS Rec Flag	CA Rec Flag	EPA Concur
18-067-0004	3	170	SPM	10.97	-2.4	86.8		0	93	-0.15	100			Y	Y	Y	Y	Y	Y
18-089-0006	1	145	SLAMS	10.62	2.5	43.5		0	87	-1.27	100			Y	Y	Y	Y	Y	Y
18-089-0022	1	145	SLAMS	12.06	2.4	45.1		0	97	-2.79	100			Y	Y	Y	Y	Y	Y
18-089-0026	1	145	SLAMS	12.51	2.8	62.3		0	100	-2.58	100			Y	Y	Y	Y	Y	Y
18-089-0031	1	145	SLAMS	11.83	2.0	44.0		0	95	-0.08	100	4.79	100	Y	Y	Y	Y	Y	Y
18-089-0031	2	145	SLAMS	11.65	2.5	41.2		0	95	-0.34	100			Y	Y	Y	Y	Y	Y
18-089-2004	1	145	SLAMS	11.32	3.0	41.6		0	95	-0.92	100	19.25	100	Y	Y	Y	Y	Y	Y
18-091-0011	1	145	SLAMS	10.05	2.1	37.6		0	94	-1.11	100			Y	Y	Y	Y	Y	Y
18-095-0011	1	145	SLAMS	10.33	2.1	47.0		0	96	+0.39	100			Y	Y	Y	Y	Y	Y
18-097-0043	1	145	SLAMS	12.64	2.2	40.9		0	100	-0.50	100			Y	Y	Y	Y	Y	Y
18-097-0078	1	145	SLAMS	11.43	2.3	41.3		0	85	+0.34	100			Y	Y	Y	Y	Y	Y
18-097-0078	4	170	SLAMS	11.72	-2.5	278.0		0	81	+0.79	100			Y	Y	Y	Y	Y	Y
18-097-0081	1	145	SLAMS	12.19	2.6	44.7		0	95	-0.25	100	13.96	100	Y	Y	Y	Y	Y	Y
18-097-0081	2	145	SLAMS	11.96	2.9	42.1		0	85	-0.68	100			Y	Y	Y	Y	Y	Y
18-097-0083	1	145	SLAMS	11.78	2.2	49.9		0	98	+0.36	100			Y	Y	Y	Y	Y	Y
18-097-0084	1	145	SLAMS	11.94	2.0	43.8		0	98	-0.25	100			Y	Y	Y	Y	Y	Y
18-097-0087	1	145	EPA	13.08	1.9	40.7		0	100	+0.38	100			Y	Y	Y	Y	Y	Y
18-105-0003	1	145	SLAMS	10.04	1.8	24.2		0	99	+0.80	100			Y	Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2014
Certifying Agency: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Parameter: PM2.5 - Local Conditions (88101)
PQAO Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Quality Assurance Project Plan Approval Date: 12/31/2012

Collocation Summary

Method	# Sites	# Sites Req	# Sites Collocated	% Collocated	CV Est	CV UB	Criteria Met?
142	1	1	0	0			N
145	35	5	10	100	11.53	11.85	Y

PEP Summary

# Methods	# Audited Methods	# PEP Required	# PEP Submitted	% Complete	Bias	Criteria Met?
2	1	8	7	87.5	+4.86	Y

Monitors Summaries

AQS Site ID	POC	Method	Monitor Type	Routine Data (ug/m3) Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Flow Rate Audit Bias	% Complete	Collocation CV	% Complete	PQAO Crit. Met	PEP PQAO Crit. Met	QAPP Appr.	Concurrence Flag AQS Rec Flag	CA Rec Flag	EPA Concur
18-127-0024	1	145	SLAMS	10.52	1.7	40.4		0	90	-0.01	100	3.37	100	Y	Y	Y	Y	Y	Y
18-127-0024	2	145	SLAMS	10.10	2.0	41.3		0	89	-2.01	100			Y	Y	Y	Y	Y	Y
18-141-0015	1	145	SLAMS	10.16	1.6	31.8		0	96	-1.09	100	8.04	100	Y	Y	Y	Y	Y	Y
18-141-0015	2	145	SLAMS	10.24	2.1	33.2		0	88	-2.08	100			Y	Y	Y	Y	Y	Y
18-147-0009	1	145	SLAMS	10.78	1.9	33.0		0	100	+1.10	100			Y	Y	Y	Y	Y	Y
18-157-0008	1	145	SLAMS	10.58	2.5	46.3		0	95	-1.86	100	2.99	100	Y	Y	Y	Y	Y	Y
18-157-0008	2	145	SLAMS	10.39	2.2	31.7		0	93	-1.82	100			Y	Y	Y	Y	Y	Y
18-163-0016	1	145	SLAMS	11.18	1.8	30.1		0	100	-0.56	100			Y	Y	Y	Y	Y	Y
18-163-0021	1	145	SLAMS	11.26	2.0	31.2		0	96	-1.10	100	3.41	100	Y	Y	Y	Y	Y	Y
18-163-0021	2	145	SLAMS	11.46	2.5	31.2		0	100	-1.78	100			Y	Y	Y	Y	Y	Y
18-163-0023	1	145	SLAMS	11.18	1.6	29.5		0	100	+0.15	100			Y	Y	Y	Y	Y	Y
18-167-0018	1	145	SLAMS	11.09	2.0	49.1		0	100	-0.71	100			Y	Y	Y	Y	Y	Y
18-183-0003	1	145	SLAMS	9.73	2.2	43.6		0	99	-1.05	100			Y	Y	Y	Y	Y	Y
18-107-0004	1	142	INDUSTRIAL	10.70	2.7	22.5		0	78	+/-	0			N	Y	Y	N		
18-107-0004	3	170	INDUSTRIAL	11.18	.0	63.0		0	96	+/-	0			Y	Y	Y	N		

Data Concurrence and Evaluation Report for Lead

Certification Year 2014

Certifying Agency Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Lead (TSP) LC (14129)

PQAO Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Quality Assurance Project Plan Approval Date: 12/31/2012

Collocation Summary:

Number of Sites	Number of Colloc Sites Required	Number of Actual Colloc Sites	Percent Collocated	CV Est	CV UB	Criteria Met
8	1	2	100	4.91	5.94	Y

PEP Summary

Number of Methods	Number of Methods Audited	Number of PEP Audits Required	Number of Audits Submitted	Percent Complete	Bias	Criteria Met
1	0	2	0	0		Y

Analysis Audit Summary:

Number Required	Number Submitted	Percent Complete	Bias	Criteria Met
24	24	100	+/-5.02	Y

Monitors Recommended for Certification

AQS Site-ID	POC	Monitor Type	Routine Data (ug/m^3) Mean	Min	Max	Exceed. Count	Outlier Count	Percent Comp.	Flow Rate Audit Bias	Percent Comp.	Collocation CV UB	Percent Comp.	PQAO Crit. Met	PEP PQAO Crit. Met	Lead Analysis Crit. Met	QAPP Appr.	Certification AQS Rec. V	CA Rec Value	EPA Concur
18-035-0009	3	SPM	0.034	0.002	0.191	0	0	100	-1.26	100			Y	Y	Y	Y	Y	Y	Y
18-035-0009	4	SPM	0.042	0.002	0.162	0	0	88	-2.88	100			Y	Y	Y	Y	Y	Y	Y
18-089-0032	1	SPM	0.012	0.001	0.049	0	0	95	-4.32	100			Y	Y	Y	Y	Y	Y	Y
18-089-0033	1	SPM	0.070	0.001	0.790	0	0	96	-4.13	100			Y	Y	Y	Y	Y	Y	Y
18-089-0034	1	SLAMS	0.028	0.003	0.358	0	0	91	+0.45	100			Y	Y	Y	Y	Y	Y	Y
18-089-2008	1	SLAMS	0.019	0.001	0.168	0	0	95	-1.72	100	6.36	100	Y	Y	Y	Y	Y	Y	Y
18-089-2008	2	SLAMS	0.016	0.001	0.127	0	0	96	-0.54	100			Y	Y	Y	Y	Y	Y	Y
18-097-0063	1	SPM	0.014	0.002	0.057	0	0	100	-0.17	100	7.10	100	Y	Y	Y	Y	Y	Y	Y
18-097-0063	2	SPM	0.014	0.001	0.058	0	0	96	+1.19	100			Y	Y	Y	Y	Y	Y	Y
18-097-0078	1	SPM	0.004	0.000	0.016	0	0	93	-1.93	100			Y	Y	Y	Y	Y	Y	Y

Monitors Not Recommended for Certification

AQS Site-ID	POC	Monitor Type	Routine Data (ug/m^3) Mean	Min	Max	Exceed. Count	Outlier Count	Percent Comp.	Flow Rate Audit Bias	Percent Comp.	Collocation CV UB	Percent Comp.	PQAO Crit. Met	PEP PQAO Crit. Met	Lead Analysis Crit. Met	QAPP Appr.	Certification AQS Rec. V	CA Rec Value	EPA Concur
18-127-0027	1	SPM	0.024	0.001	0.239	0	0	68	+7.91	100			Y	Y	Y	Y	N	Y	S

Submitter Comment: Audit results requiring calibration & power issues.

EPA Comment:

Message

From: WICKER, JOHN [JWICKER@idem.IN.gov]
Sent: 2/17/2015 7:16:24 PM
To: Qazzaz, Bilal [qazzaz.bilal@epa.gov]
CC: Hamilton, Scott [hamilton.scott@epa.gov]
Subject: RE: Precision question

Yes, it was pointed out to me that the CFR vol 79 no 176 is a "proposed rule" and not set it stone yet. So we are still good. Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Qazzaz, Bilal [mailto:qazzaz.bilal@epa.gov]
Sent: Tuesday, February 17, 2015 9:20 AM
To: WICKER, JOHN
Cc: Hamilton, Scott
Subject: RE: Precision question

John,

Below is currently what is in the CFR, so abide by that.

3.2.1 One-Point Quality Control Check for SO2, NO2, O3, and CO. A one-point quality control (QC) check must be performed at least once every 2 weeks on each automated analyzer used to measure SO2, NO2, O3 and CO. The frequency of QC checks may be reduced based upon review, assessment and approval of the EPA Regional Administrator. However, with the advent of automated calibration systems more frequent checking is encouraged. See Reference 10 of this appendix for guidance on the review procedure. The QC check is made by challenging the analyzer with a QC check gas of known concentration (effective concentration for open path analyzers) between **0.01 and 0.10 parts per million (ppm) for SO2, NO2, and O3,** and between **1 and 10 ppm for CO analyzers**. The ranges allow for appropriate check gas selection for SLAMS sites that may be sampling for different objectives, i.e., trace gas monitoring vs. comparison to National Ambient Air Quality Standards (NAAQS). The QC check gas concentration selected should be related to the routine concentrations normally measured at sites within the monitoring network in order to appropriately reflect the precision and bias at these routine concentration ranges. To check the precision and bias of SLAMS analyzers operating at ranges either above or below the levels identified, use check gases of appropriate concentrations as approved by the appropriate EPA Regional Administrator or their designee. The standards from which check concentrations are obtained must meet the specifications of section 2.6 of this appendix.
http://www.ecfr.gov/cgi-bin/text-idx?SID=a4d2b6fc000f9b9d2fb8c96390085457&node=ap40.6.58_161.a&rgn=div9

Now, as part of the proposed monitoring changes there may be some changes to the QC check ranges though those have yet to take effect.

From: Hamilton, Scott
Sent: Tuesday, February 17, 2015 7:05 AM
To: Qazzaz, Bilal
Subject: FW: Precision question

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Monday, February 16, 2015 7:04 AM
To: Hamilton, Scott
Subject: RE: Precision question

So don't use what is stated here?
40 CFR Part 58, dated 9-11-14

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Hamilton, Scott [mailto:hamilton.scott@epa.gov]
Sent: Friday, February 13, 2015 5:17 PM
To: WICKER, JOHN
Subject: RE: Precision question

Check the validation template.

O3, NO2, SO2 = 10-100 ppb
CO = 1-10 ppm

Anymore questions just let me know! Have a good weekend.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Friday, February 13, 2015 1:49 PM
To: Hamilton, Scott
Subject: RE: Precision question

Scott. Has the 1 pt QC check (precision check) also been recently changed? From what I recall it was .08 to .1 for SO2, O3, and NO2 and 8-10 for CO. Looking in federal register 40 CFR Part 58, dated 9-11-14, it has .005-.08 for SO2, O3, and NO2 and .5 to 5 for CO. Geez, I need a freaking aspirin. It's like I was in suspended animation for 15 years.

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Hamilton, Scott [mailto:hamilton.scott@epa.gov]
Sent: Friday, February 13, 2015 1:31 PM

To: WICKER, JOHN
Subject: FW: Precision question

Hey John. FYI, it sounds like the Appendix A won't be published until later this summer not 1-2 months.

From: Compher, Michael
Sent: Friday, February 13, 2015 12:15 PM
To: Hamilton, Scott
Subject: RE: Precision question

I think the monitoring revisions proposed last fall won't be finalized until late summer. Effective dates are not clear yet. For some, it could be upon publication, others may be some period after published in FR, or a specific date.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Hamilton, Scott
Sent: Friday, February 13, 2015 11:57 AM
To: WICKER, JOHN; Qazzaz, Bilal
Cc: Compher, Michael; SHERRILL, JAMES
Subject: RE: Precision question

The 10 levels are the new levels and what will be in the revised CFR.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Friday, February 13, 2015 11:33 AM
To: Hamilton, Scott; Qazzaz, Bilal
Cc: Compher, Michael; SHERRILL, JAMES
Subject: RE: Precision question

So just to make sure I understand this correctly, table 3, which has the 10 audit levels is now changed to the 5 audit levels I have listed below?

Or is the table below, which has the 5 audit levels, and in the current CFR just not updated yet?

We are ordering some direct CO cylinder gases for quarterly accuracy audits so I want to make sure the ranges will be correct.

Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Hamilton, Scott [mailto:hamilton.scott@epa.gov]
Sent: Friday, February 13, 2015 12:26 PM
To: WICKER, JOHN; Qazzaz, Bilal

Cc: Compher, Michael; SHERRILL, JAMES
Subject: RE: Precision question

Yes. See http://www.epa.gov/ttnamti1/files/ambient/pm25/datamang/TechMemoforPEAuditLevels.pdf

These changes will be in the newly revised Appendix A. OAQPS is in the process of responding to comments on the Appendix A proposal. The Final Appendix A should be published in 1-2 months.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Friday, February 13, 2015 11:20 AM
To: Hamilton, Scott; Qazzaz, Bilal
Cc: Compher, Michael; SHERRILL, JAMES
Subject: RE: Precision question

Another question. Have the quarterly accuracy ranges been modified recently? According to 40 CFR Part 58 App A,

3.2.2.1 (a) The evaluation is made by challenging the analyzer with audit gas standard of known concentration (effective concentration for open path analyzers) from at least three consecutive audit levels. The audit levels selected should represent or bracket 80 percent of ambient concentrations measured by the analyzer being evaluated:

Audit level	Concentration range, ppm			
	O_3	SO_2	NO_2	CO
1	0.02-0.05	0.0003-0.005	0.0002-0.002	0.08-0.10
2	0.06-0.10	0.006-0.01	0.003-0.005	0.50-1.00
3	0.11-0.20	0.02-0.10	0.006-0.10	1.50-4.00
4	0.21-0.30	0.11-0.40	0.11-0.30	5-15
5	0.31-0.90	0.41-0.90	0.31-0.60	20-50

(b) An additional 4th level is encouraged for those monitors that have the potential for exceeding the concentration ranges described by the initial three selected.

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Hamilton, Scott [mailto:hamilton.scott@epa.gov]
Sent: Thursday, February 12, 2015 12:48 PM
To: WICKER, JOHN; Qazzaz, Bilal
Cc: Compher, Michael
Subject: RE: Precision question

Thanks John! This is really good discussion.

Michael/B, note the reference **(in red)** to a potential topic for our calls.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Thursday, February 12, 2015 10:51 AM
To: Qazzaz, Bilal; Hamilton, Scott
Subject: FW: Precision question

Gentlemen. Just some discussion Susan and I have had over audits and precision/span points. Since you guys oversee Region V maybe you can send out a question and just see how everyone is treating data based on the precision as well as the QA quarterly accuracy audit? Being old school I am trying to see how things are handled in the 21st century.

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Kilmer, Susan (DEQ) [mailto:KILMERS@michigan.gov]
Sent: Thursday, February 12, 2015 10:42 AM
To: WICKER, JOHN
Subject: RE: Precision question

Hi John
I think that is an excellent question for a regional call. I remember having a discussion about it during the training, it sounded like most of us void data when it's outside of the acceptance criteria.

Susan Kilmer
Quality Assurance Coordinator
Michigan Dept of Environmental Quality
Air Quality Division – Air Monitoring Unit
Kilmers@Michigan.gov
517-284-6752

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Thursday, February 12, 2015 10:29 AM
To: Kilmer, Susan (DEQ)
Subject: RE: Precision question

Susan. Thanks for your info. I am reading our QAPP for 2012 (which is due for rewrite this year) as well as any EPA documents. The 15% on the quarterly accuracy audit sounds pretty much set. My only unanswered questions is how everyone is treating data when is goes outside the limit for span and precision points.

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Kilmer, Susan (DEQ) [mailto:KILMERS@michigan.gov]
Sent: Wednesday, February 11, 2015 4:00 PM
To: WICKER, JOHN
Subject: RE: Precision question

Hi John;

If the 2-week check fails or the audit fails, we would most likely void the data. We would investigate the cause and could potentially flag some data depending on what we find. When we void, it is usually back to the last good check. Depending on what we find, we may keep or flag some of that data depending on what we find on closer inspection. For example, if a precision check fails – and when we look back at the instrument readings, we see that 2 days prior something weird like the lamp died or something clearly went wild.. we would void the last 2 days and probably keep or flag the rest back to the previous check. For ozone, our sites are set up to do nightly zero and precision checks so that helps us keep an eye on performance. (not sure all of our other gas sites are doing nightly precision, NCore do but I don't think our near-road sites do that)

I don't think I have seen a case where the precision point was in and the span was way out. Where it would get tricky a little is if the precision is 7% and the span is 8%. We would probably still treat that as a failed check. We tend to void data if there is a question. I think Jesse McGrath feels differently, he wants the data set to remain intact even if a check or audit fails. This concept would be an interesting one to study/talk about in a STL call or data validation type workshop.

Take care

Susan Kilmer
Quality Assurance Coordinator
Michigan Dept of Environmental Quality
Air Quality Division – Air Monitoring Unit
Kilmers@Michigan.gov
517-284-6752

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Wednesday, February 11, 2015 3:30 PM
To: Kilmer, Susan (DEQ)
Subject: RE: Precision question

So if the precision point is greater than 7% for ozone, 10% for CO and SO2, and 15% for NO2 then you flag the data? But when the accuracy audit by QA is performed it is anything greater than 15% for flagging data and greater than 7.5% for out of cal, data valid? Does that seem right?

I just don't recall using the precision for data validity back in the old days. Obviously if the validation is say 10% and the precision if 30% out, I would most likely flag the data since there is something wrong.

Appreciate the info. Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

From: Kilmer, Susan (DEQ) [mailto:KILMERS@michigan.gov]
Sent: Wednesday, February 11, 2015 3:20 PM
To: WICKER, JOHN
Subject: RE: Precision question

Hi John;
The number that AQS wants is the precision point, so it would be acceptable if it was at or below 7%.

When we do our 2-week checks; we conduct a zero, precision and a span point. In your example if the precision point was 7% and the span was 15%... I would be concerned that the linearity was off, usually the points are pretty close in terms of percent difference. On our worksheet, if any point is beyond 7% - that is a fail. We would investigate when things seemed to go wrong and either void or flag the data. We would also recalibrate and or repair the instrument depending on what was going on.

The criteria for the annual audit is broader, 15% however I would be concerned if it was around 10%. Our audits are usually in the less than 5% zone, so much higher than that would get my attention.

Hope that helps,
Susan

Susan Kilmer
Quality Assurance Coordinator
Michigan Dept of Environmental Quality
Air Quality Division – Air Monitoring Unit
Kilmers@Michigan.gov
517-284-6752

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Wednesday, February 11, 2015 2:08 PM
To: Kilmer, Susan (DEQ)
Subject: Precision question

Susan. Maybe you can provide me an answer to this. When you guys run a precision point on say ozone, and it is greater than the allowable difference, which is 7% for ozone, but the span point shows the analyzer within 15%, what action do you guys take? Being old school, I always thought 0-7.5% all is good, 7.5-15% out of cal but data valid, and greater than 15% data invalid. And if the percent difference on the precision point is greater than the allowable difference it is not used in AQS? Can you provide some answers to this? Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

Message

From: Hamilton, Scott [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FC13937A4DCA4048A621EC1BB378D894-SMHAMILT]
Sent: 2/11/2015 1:31:13 PM
To: Qazzaz, Bilal [qazzaz.bilal@epa.gov]; WICKER, JOHN [JWICKER@idem.IN.gov]
Subject: RE: Data Validity

Hey John. I would agree with B. These are judgment calls on your end.

For EPA guidance see the validation template.

1. 1-point QC and z/s are critical criteria (If criteria not met then data "should be invalidated unless there are compelling reason and justification for not doing so".)
2. Annual Performance Evaluation (aka Accuracy audit) are operational criteria (..."may be cause for invalidation"..."The decision maker should consider other QC information that may or may not indicate the data are acceptable"...)
3. If something is outside the limits look at all the available information to see what is wrong and then determine what to do with the data.
4. Have a process for actively watching analyzer drift. This will trigger warning limits when an action (such as a recalibration) could be taken.

We are happy to walk you through any examples if needed.

From: Qazzaz, Bilal
Sent: Wednesday, February 11, 2015 7:09 AM
To: WICKER, JOHN
Cc: Hamilton, Scott
Subject: RE: Data Validity

Hey John,

What does your current QAPP say about the criteria?

FYI, I'd be careful about rolling back anything Blaser put in place.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Tuesday, February 10, 2015 2:37 PM
To: Qazzaz, Bilal; Hamilton, Scott
Subject: Data Validity

Guys. We are discussing precision points and accuracy points and how it effects the data. For example, when any of the accuracy points are greater than 15% then the data is invalid. OR do all three points have to be greater than 15%? Also, looking at the precision point (say for ozone), if it is greater than 7% then is the data valid IF the daily span check and/or accuracy audit show it within 15%? Or would you consider this data invalid?

Being old school, I always thought the precision point was never used for data validity, only the upscale span (or accuracy audit). Unless the precision is so far that it indicates something is definitely wrong with the analyzer, meaning data is invalid.

We are rewriting our QAPP so please advise so we can get this correct. Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

Message

From: Treutel, Jason A - DNR [Jason.Treutel@wisconsin.gov]
Sent: 2/25/2015 10:11:15 PM
To: Qazzaz, Bilal [qazzaz.bilal@epa.gov]; McGrath, Jesse [mcgrath.jesse@epa.gov]
Subject: RE: State, Local, and Tribal Monthly Conference Call

Good afternoon Bilal and Jesse. I just wanted to recap the validation conversation and the way I am interpreting it:

From the QA Handbook

Criteria that were deemed critical to maintaining the integrity of a sample or group of samples were placed on the first table. Observations that do not meet each and every criterion on the **Critical Criteria Table** should be invalidated unless there are compelling reason and justification for not doing so. The sample or group of samples for which one or more of these criteria are not met is invalid until proven otherwise. The cause of not operating in the acceptable range for each of the violated criteria must be investigated and minimized to reduce the likelihood that additional samples will be invalidated.

Example from ozone validation template

1) Requirement (O_3)	2) Frequency	3) Acceptance Criteria	Information /Action
One Point QC Check	***Single analyzer 1/ 2 weeks***	< +7% (percent difference	1 and 2) 40 CFR Part 58 App A Sec 3.2 3) Recommendation based on DQO in 40 CFR Part 58 App A Sec 2.3.1.2. QC Check Conc range 0.01 - 0.10 ppm, relative to routine concentrations

My interpretation of the QA Handbook (and perhaps Anna Kelly's as well): If the one point QC check is >7% the Critical criteria has been violated and the observations should be invalidated. We don't like invalidating data so we make sure that the violating check is confirmed potentially with a repeat measurement, alternative calibration equipment, or even an expert operator. If the criteria violation is confirmed we invalidate the associated data and do not report the check to AQS.

Feedback from Bilal on the call: Seemed to agree that this was an acceptable if not appropriate approach

Feedback from Jesse: This is absolutely the wrong approach to use for invalidating data because the criteria is in relation to the statistical analysis of the population of the checks, not the individual check. This is not very clear to me in the QA Handbook Validation tables which due to time constraints I've relied on more than the text of the remainder of the document.

I apologize for venting here, but what I heard today seemed contradictory on the EPA side. Even though I am starting to agree philosophically with the approach Jesse recapped, I am very concerned with developing and implementing the processes necessary to adopt that approach.

Because I was at the QAPP meeting I had already heard some of this information on control charting and population evaluation vs. single check criteria being things to consider when developing a QAPP. I am concerned with the idea of developing control chart criteria and other statistical tests to judge the validity of our data and when and when not to invalidate it. I do not have the statistical background to do this without significant research or guidance and I do not currently have access to someone in our local group that can provide it. Therefore I am relying on documents like the Validation templates which according to Jesse, I am misinterpreting or at least not getting the full story. The hard and

fast failure criteria they imply make validation/invalidation a simpler process and the data that meets it is of very high quality even if it ends up excluding data that would have resulted in a data set that is still good enough.

We rarely exceed the validation template criteria for a single validation point where there is not a hard failure of the instrument. There was one occurrence I will be revisiting as we move on to data certification. I had invalidated a block of NOx data based on a single check that was not addressed properly until the next biweekly check. This had caused a month of data to be invalidated and will cause the parameter to not meet completion percent requirements for Q1. Based on today's information it sounds like the data can and should be revalidated since the check exceeded by only a little and will not cause the population to exceed the criteria. I will also need to submit this check.

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Jason Treutel
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Wisconsin Department of Natural Resources
Phone: (608) 264-8596
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Jason.Treutel@wisconsin.gov

dnr.wi.gov

From: Qazzaz, Bilal [mailto:qazzaz.bilal@epa.gov]
Sent: Monday, February 23, 2015 8:03 AM
To: abaird@oneidanation.org; aboetcher@nhbpi.com; Adam.Blundell@hamilton-co.org; air@lldrm.org; airquality@badriver-nsn.gov; Alexander Jackson; Allen, Mark K - DNR; bfrazier@piic.org; brettmc@cheqnet.net; Rodger, Bruce C - DNR; Laude, Bryan T - DNR; Burt Mechenbar; Cashman, John; ccharwood@redlakenation.org; charlie.lippert@millelacsband.com; charliel.millelacsojibwe@gmail.com; Chris.Harrison@hamilton-co.org; Christina Wieg; christina.boss@hamilton-co.org; Cindy.Charles@epa.state.oh.us; cjlippert@hotmail.com; cspruce@kbic-nsn.gov; dallasr@uppersiouxcommunity-nsn.gov; Nickolie, Daniel W - DNR; darrell.pennington@epa.state.oh.us; ddtyrolt@cheqnet.net; deb.dirlam@lowersioux.com; Deborah Stone (Environmental Control); dtan@cantonhealth.org; Desmond.berry@gtbindians.com; dwights@itcmi.org; dzeiler@idem.in.gov; carol.eggert@toledo.oh.gov; gary.engler@epa.state.oh.us; Fenlon, Dennis (MPCA); 'fitznerc@michigan.gov'; Giwojna, Benjamin; Good, Gail - DNR; Hetherington, Grant D - DNR; Greg.bunker@mohican-nsn.gov; gshubel@itcmi.org; randy.hock@epa.state.oh.us; hooverb2003@yahoo.com; jhupp@cantonhealth.org; jane.rohl@gtbindians.com; Treutel, Jason A - DNR; jesse.anderson@lowersioux.com; jlyons@mitw.org; jmears@oneidanation.org; Joe.Cebe@fcpotawatomi-nsn.gov; Jonathan Knight; joywiecks@fdlrez.com; jrodwan@nhbpi.com; kaleel@ladco.org; Karen Moore-Wright (Environmental Control); kari.palmer@state.mn.us; katies@stcroixtribalcenter.com; kbrosemer@saulttribe.net; Anna.Kelley@hamilton-co.org; kellie.gavin@pca.state.mn.us; kenski@ladco.org; kgunderson@ho-chunk.com; kjomac2000@yahoo.com; kmackety@nhbpi.com; Lacka, Monika; land@ccsmdc.org; Lengerich, Steve; lmorckel@cantonhealth.org; linda.katchenago@mohican-nsn.gov; Lynn Schmitt (Environmental Control); Mertes, Mary - DNR; Mayo, Kathleen; mctwq@arvig.net; meloneemontano@hotmail.com; Meyer, Cynthia; Moran, Eileen; mrogers@city.cleveland.oh.us; natalene.cummings@fcpotawatomi-nsn.gov; PARKS, JAMES; chris.price@illinois.gov; Rick Strassman; Robinson, Amy (DEQ); srubens@schd.org; skniffen@sagchip.org; soberg@boreal.org; stan.ellison@shakopeedakota.org; Steve Blaser; nathan.stroup@hamilton-co.org; kilmers@michigan.gov; Tara Cioffi; tdzienis@cantonhealth.org; terry.sanner@epa.state.oh.us; Thomas Shepard; thurlow.mcclellan@gtbindians.com; tmaki@itcmi.org; tomf@stcroixtribalcenter.com; travismaki906@gmail.com; twarner@kbic-nsn.gov; Tyson, MaryPat; whitmava@rapca.org; waynedupuis@fdlrez.com; wrc4pres@yahoo.com; yvettec@boreal.org; R5 ARD-ATAB-AMAS; Molnar, Eve; Worsham, Luke R - DNR; Helen.Waquiu@state.mn.us; cassie.mcmahon@state.mn.us; JOHN WICKER (JWICKER@idem.IN.gov); Bloomberg, David E.; Compher, Michael; Kevin Schnoes (Environmental Control) (Kevin.Schnoes@cookcountyil.gov)
Cc: Ross, Anthony; Fuoco, Marta; McEvoy, Chad; Caudill, Motria; Engler, Gary; Rodger, Bruce C - DNR; Delisio,

Edward; Hamilton, Scott; McGrath, Jesse; Scott Wold
Subject: State, Local, and Tribal Monthly Conference Call

To all,

We will be having our SLT call on February 25, 1-2 CST.

Date: 2-25-15
Time: 1-2 (CST)
Where: 1813A

Call in number: 877-226-9607

Conference Code: 5770738038

Region 5 Items

-Phase 3 Near Road Update
-AQS Update
-Update on Ozone Traceability Best Practices
-Poll of those who are conducting Ultra-Fine Particle (UFP) monitoring

SLT Items

-MDEQ would like to discuss how other states are documenting the extended certifications of their cylinders
-IDEM would like to discuss how other states are validating their data
-Information sharing with SWOAQA and CCDEC

Bilal Qazzaz
Air & Radiation Division
Air Monitoring & Analysis Section
US EPA Region 5
(312) 353-2325

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: WLV

CERTIFICATION EVALUATION AND CONCURRENCE

Report Request ID: 1344873

Report Code: AMP600

Jun. 17, 2015

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA			

AGENCY SELECTIONS

Indiana Depart Of Environ Management/Office Of Air Quality

SELECTED OPTIONS

Option Type	Option Value
MERGE PDF FILES	YES
AGENCY ROLE	CERTIFYING

DATE CRITERIA

Start Date	End Date
2014	2014

Data Evaluation and Concurrence Report Summary

Certification Year: 2014
Certifying Agency (CA): Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Pollutants in Report:

Parameter Name	Code	Monitors Evaluated	Monitors Recommended for Concurrence by AQS	Monitors NOT Recommended for Concurrence by AQS
Carbon monoxide	42101	6	6	0
Lead (TSP) LC	14129	11	10	1
Nitrogen dioxide (NO2)	42602	8	7	1
Ozone	44201	45	45	0
PM10 Total 0-10um STP	81102	16	15	1
PM2.5 - Local Conditions	88101	49	47	2
Sulfur dioxide	42401	22	22	0

PQAOs in Report:

PQAO Name	PQAO Code	TSA Date
Hoosier Energy	0501	
Indiana Depart Of Environ Management/Office Of Air Quality	0520	11/03/11
Indianapolis Power And Light Company	0524	
Northern Indiana Public Service Company	0788	
Richmond Power And Light	0909	
Duke Energy	1324	

Summary of 'N' flags for all pollutants:

PQAO	Parameter Code	AQS Site-ID	POC	AQS Recommended Flag	Cert. Agency Recommended Flag	Reason for AQS Recommendation
0520	14129	18-127-0027	1	N	Y	Annual Summary completeness < 70%.
0520	42602	18-097-0087	1	N	Y	1-Point QC Completeness < 65%.
0520	88101	18-107-0004	3	N		Flow Rate Audit completeness < 65%.
0520	88101	18-107-0004	1	N		Flow Rate Audit completeness < 65%.
0520	88101	18-107-0004	1	N		PQAO-Level Collocation criteria not met.
0520	81102	18-127-0023	3	N	Y	Flow Rate Audit Bias > 9%.

Signature of Monitoring Organization Representative: _____

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Carbon monoxide (42101) (ppm)
PQAO Name Indiana Depart Of Environ Management/Office Of Air Quality (0520)
QAPP Approval Date 12/31/2012

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
1	-2.6070	Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
18-089-0015	1	SLAMS	0.562	0.250	5.400	0	0	98	3.64	+/-2.87	100	3.14	100		Y	Y	Y	Y	Y
18-097-0072	1	SLAMS	0.634	0.250	13.600	0	0	99	6.13	+/-4.55	100	- 0.11	100		Y	Y	Y	Y	Y
18-097-0073	1	SLAMS	0.308	0.250	2.000	0	0	98	1.87	+/-1.36	96	0.75	100	- 2.61	Y	Y	Y	Y	Y
18-097-0078	1	SLAMS	0.232	0.010	1.700	0	0	73	9.25	+/-7.96	81	7.62	100		Y	Y	Y	Y	Y
18-097-0087	1	SPM	0.265	0.010	1.400	0	0	89	8.15	+/-6.12	71	0.99	100		Y	Y	Y	Y	Y
18-163-0022	1	SLAMS	0.306	0.250	5.700	0	0	98	1.07	-1.69	92	- 0.63	100		Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Nitrogen dioxide (NO2) (42602) (ppb)
PQAO Name Indiana Depart Of Environ Management/Office Of Air Quality (0520)
QAPP Approval Date 12/31/2012

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
1	1.09890	Y

			Routine Data						One Point Quality Check			Annual PE		NPAP			Concur. Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	Precision	Bias	Complete	Bias	Complete	Bias	PQAO Level Criteria	QAPP Appr.	Aqs Rec Flag	CA Rec Flag	Epa Concur
18-005-0007	1	SPM	3.1	- 1.0	28.7		0	95	2.83	+/-2.48	96	2.45	100		Y	Y	Y	Y	Y
18-089-0022	1	SLAMS	12.6	0.0	74.6		0	91	3.34	+4.56	85	- 0.55	100		Y	Y	Y	Y	Y
18-097-0073	1	SLAMS	9.4	0.2	53.9		0	95	4.33	-5.36	92	2.11	100	1.10	Y	Y	Y	Y	Y
18-097-0078	2	SLAMS	13.7	0.9	57.5		0	74	3.92	-4.65	81	- 1.32	100		Y	Y	Y	Y	Y
18-097-0087	1	SPM	16.7	0.0	64.4		0	96	5.78	+/-4.44	30	6.56	100		Y	Y	N	Y	S
Submitter Comment Available audit results confirm validation of data.																			
18-141-0015	1	SLAMS	7.4	0.0	54.6		0	91	3.90	-4.41	88	1.56	100		Y	Y	Y	Y	Y
18-163-0021	1	SLAMS	9.0	1.5	41.8		0	90	5.67	+/-5.04	77	- 2.07	100		Y	Y	Y	Y	Y
18-183-0003	1	SPM	5.3	0.0	41.3		0	80	4.42	+/-3.78	81	- 1.35	100		Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Ozone (44201) (ppm)
PQAO Name Indiana Depart Of Environ Management/Office Of Air Quality (0520)
QAPP Approval Date 12/31/2012

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
9	-.21569	Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
17-023-0001	1	SLAMS	0.046	0.016	0.072	0	0	95	2.15	+/-1.37	100	- 1.78	100		Y	Y	Y	Y	Y
18-003-0002	1	SLAMS	0.048	0.024	0.072	0	0	99	0.55	+1.05	100	- 1.68	100		Y	Y	Y	Y	Y
18-003-0004	1	SLAMS	0.047	0.022	0.072	0	0	99	0.64	+/-0.42	100	- 0.68	100		Y	Y	Y	Y	Y
18-005-0007	1	SPM	0.054	0.029	0.081	0	0	99	5.59	-4.13	100	1.45	100		Y	Y	Y	Y	Y
18-011-0001	1	SLAMS	0.051	0.025	0.078	0	0	99	1.99	+/-1.34	100	- 1.00	100	- 3.24	Y	Y	Y	Y	Y
18-013-0001	1	SPM	0.047	0.025	0.068	0	0	84	1.19	+/-0.84	100	- 1.39	100		Y	Y	Y	Y	Y
18-015-0002	1	SLAMS	0.049	0.021	0.078	0	0	95	1.26	+/-1.04	100	2.19	100		Y	Y	Y	Y	Y
18-019-0008	1	SLAMS	0.052	0.017	0.091	0	0	93	1.56	+/-1.16	100	1.00	100	- 2.63	Y	Y	Y	Y	Y
18-035-0010	1	SLAMS	0.043	0.021	0.069	0	0	99	1.41	+/-1.31	100	- 3.75	100		Y	Y	Y	Y	Y
18-039-0007	1	SLAMS	0.042	0.016	0.063	0	0	99	1.29	+/-0.89	100	- 3.34	100		Y	Y	Y	Y	Y
18-043-1004	1	SLAMS	0.052	0.016	0.087	0	0	97	1.22	+/-0.96	92	- 0.25	100	2.47	Y	Y	Y	Y	Y
18-055-0001	1	SLAMS	0.050	0.024	0.075	0	0	98	2.04	+/-1.91	100	- 2.96	100	- 0.11	Y	Y	Y	Y	Y
18-057-0006	1	SLAMS	0.045	0.022	0.069	0	0	99	1.16	+/-0.56	100	0.43	100		Y	Y	Y	Y	Y
18-059-0003	1	SLAMS	0.041	0.019	0.067	0	0	99	1.65	+2.24	100	- 2.24	100		Y	Y	Y	Y	Y
18-063-0004	1	SLAMS	0.043	0.020	0.067	0	0	99	3.66	+/-3.03	100	- 2.42	100		Y	Y	Y	Y	Y
18-069-0002	1	SLAMS	0.043	0.020	0.068	0	0	95	2.14	+/-2.03	100	- 1.24	100		Y	Y	Y	Y	Y
18-071-0001	1	SLAMS	0.050	0.027	0.075	0	0	99	3.07	+/-2.18	100	3.27	100		Y	Y	Y	Y	Y
18-081-0002	1	SLAMS	0.044	0.022	0.067	0	0	95	1.76	+/-1.31	100	- 0.58	100		Y	Y	Y	Y	Y
18-089-0022	1	SLAMS	0.049	0.022	0.079	0	0	96	0.84	+1.53	85	- 0.62	100		Y	Y	Y	Y	Y
18-089-0030	1	SLAMS	0.048	0.022	0.081	0	0	98	1.52	+/-1.56	100	- 1.67	100		Y	Y	Y	Y	Y
18-089-2008	1	SLAMS	0.051	0.027	0.084	0	0	94	3.61	-4.65	100	1.84	100		Y	Y	Y	Y	Y
18-091-0005	1	SLAMS	0.053	0.025	0.084	0	0	98	0.66	+/-0.91	100	- 1.01	100	- 0.22	Y	Y	Y	Y	Y
18-091-0010	1	SLAMS	0.044	0.020	0.069	0	0	98	3.03	+/-2.62	100	- 4.30	100		Y	Y	Y	Y	Y
18-095-0010	1	SLAMS	0.040	0.019	0.063	0	0	92	1.43	+2.81	77	- 2.37	100		Y	Y	Y	Y	Y
18-097-0050	1	SLAMS	0.051	0.025	0.079	0	0	99	0.59	-1.01	100	- 0.76	100		Y	Y	Y	Y	Y
18-097-0057	1	SLAMS	0.051	0.026	0.079	0	0	99	5.52	+5.31	92	- 1.93	100		Y	Y	Y	Y	Y
18-097-0073	1	SLAMS	0.051	0.024	0.078	0	0	98	0.47	+/-0.25	100	- 0.74	100	0.00	Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Ozone (44201) (ppm)
PQAO Name Indiana Depart Of Environ Management/Office Of Air Quality (0520)
QAPP Approval Date 12/31/2012

			Routine Data						One Point Quality Check			Annual PE		NPAP			Concur. Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	Precision	Bias	Complete	Bias	Complete	Bias	PQAO Level Criteria	QAPP Appr.	Aqs Rec Flag	CA Rec Flag	Epa Concur
18-097-0078	1	SLAMS	0.049	0.008	0.073	0	0	75	1.30	+/-0.91	69	1.26	100	- 1.79	Y	Y	Y	Y	Y
18-097-0087	1	SPM	0.046	0.005	0.078	0	0	99	0.88	-1.49	80	2.10	100		Y	Y	Y	Y	Y
18-109-0005	1	SLAMS	0.050	0.025	0.074	0	0	98	2.03	-2.29	92	0.00	100		Y	Y	Y	Y	Y
18-123-0009	1	SLAMS	0.052	0.020	0.080	0	0	98	1.73	+/-1.59	100	- 1.39	100		Y	Y	Y	Y	Y
18-127-0024	1	SLAMS	0.052	0.024	0.082	0	0	95	0.70	+/-0.81	100	- 0.87	100	- 1.21	Y	Y	Y	Y	Y
18-127-0026	1	SLAMS	0.051	0.025	0.082	0	0	98	3.76	+/-1.90	100	1.46	100		Y	Y	Y	Y	Y
18-129-0003	1	SLAMS	0.050	0.022	0.075	0	0	98	0.59	+/-0.29	100	- 0.66	100		Y	Y	Y	Y	Y
18-141-0010	1	SLAMS	0.044	0.018	0.067	0	0	99	2.31	+3.26	100	- 3.52	100		Y	Y	Y	Y	Y
18-141-0015	1	SLAMS	0.050	0.018	0.075	0	0	99	0.55	+/-0.36	92	- 1.50	100		Y	Y	Y	Y	Y
18-141-0016	1	SLAMS	0.049	0.018	0.073	0	0	99	0.95	+/-0.73	100	- 1.59	100		Y	Y	Y	Y	Y
18-145-0001	1	SLAMS	0.049	0.026	0.076	0	0	99	0.00	+/-0.00	100	0.70	100		Y	Y	Y	Y	Y
18-163-0013	1	SLAMS	0.052	0.023	0.081	0	0	98	2.67	+/-2.27	100	1.86	100	0.00	Y	Y	Y	Y	Y
18-163-0021	1	SLAMS	0.051	0.010	0.080	0	0	98	7.02	+/-5.55	85	- 0.42	100		Y	Y	Y	Y	Y
18-167-0018	1	SLAMS	0.048	0.023	0.075	0	0	99	2.87	+/-2.04	100	- 1.96	100		Y	Y	Y	Y	Y
18-167-0024	1	SLAMS	0.045	0.020	0.071	0	0	99	1.40	+/-1.08	100	0.70	100		Y	Y	Y	Y	Y
18-173-0008	1	SLAMS	0.051	0.024	0.082	0	0	98	0.38	+/-0.19	100	- 1.28	100		Y	Y	Y	Y	Y
18-173-0009	1	SLAMS	0.049	0.024	0.077	0	0	99	0.95	-1.79	100	- 0.58	100		Y	Y	Y	Y	Y
18-173-0011	1	SLAMS	0.051	0.023	0.084	0	0	98	2.67	+/-1.54	100	- 0.45	100		Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Sulfur dioxide (42401) (ppb)

PQAO Name Duke Energy (1324)
QAPP Approval Date

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
0		Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
17-185-0001	1	INDUSTRIAL	2.4	1.0	109.0		0	95	1.85	+/-1.88	96	- 0.41	100		Y	Y	Y	Y	Y
18-043-0004	1	INDUSTRIAL	3.0	0.0	90.0		0	95	1.07	+/-0.78	92	1.48	100		Y	Y	Y	Y	Y
18-045-0001	1	INDUSTRIAL	2.2	1.0	60.0		0	95	2.88	+/-2.46	96	- 1.46	100		Y	Y	Y	Y	Y
18-051-0002	1	INDUSTRIAL	3.2	0.0	94.0		0	93	4.03	+/-3.19	100	- 0.69	100		Y	Y	Y	Y	Y
18-167-1014	1	INDUSTRIAL	3.8	0.0	169.0		0	95	2.52	+/-2.35	96	- 0.82	100		Y	Y	Y	Y	Y

PQAO Name Hoosier Energy (0501)
QAPP Approval Date

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
0		Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
18-125-0005	1	INDUSTRIAL	3.7	- 1.8	232.8		0	96	3.96	+/-3.57	100	1.81	100		Y	Y	Y	Y	Y

PQAO Name Indiana Depart Of Environ Management/Office Of Air Quality (0520)
QAPP Approval Date 12/31/2012

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
1	1.14943	Y

Routine Data | One Point Quality Check | Annual PE | NPAP | Concur. Flag

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Sulfur dioxide (42401) (ppb)

PQAO Name Indiana Depart Of Environ Management/Office Of Air Quality (0520)
QAPP Approval Date 12/31/2012

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
18-005-0007	1	SPM	2.2	0.3	43.4		0	99	1.78	+/-1.40	100	- 0.03	100		Y	Y	Y	Y	Y
18-043-1004	1	SLAMS	1.6	0.0	63.8		0	98	1.45	-1.62	96	0.86	100	1.15	Y	Y	Y	Y	Y
18-089-0022	1	SLAMS	1.6	0.0	128.7		0	97	2.70	+/-2.04	96	- 3.22	100		Y	Y	Y	Y	Y
18-089-2008	1	SLAMS	1.9	0.2	44.6		0	96	1.55	-2.74	92	- 2.86	100		Y	Y	Y	Y	Y
18-097-0057	1	SLAMS	3.3	0.0	151.2		0	98	3.09	+/-2.44	100	0.34	100		Y	Y	Y	Y	Y
18-097-0073	1	SLAMS	3.1	0.0	143.0		0	94	3.23	-3.67	96	- 0.19	100		Y	Y	Y	Y	Y
18-097-0078	1	SLAMS	3.0	0.0	99.8		0	80	9.28	-13.75	85	- 6.51	100		Y	Y	Y	Y	Y
18-163-0021	1	SLAMS	1.6	0.0	45.5		0	98	2.28	+/-1.63	100	1.38	100		Y	Y	Y	Y	Y
18-167-0018	2	SLAMS	2.0	0.0	115.8		0	96	1.25	+/-1.54	100	- 0.59	100		Y	Y	Y	Y	Y
18-183-0003	1	SPM	0.4	0.0	29.9		0	96	2.61	-3.18	100	- 4.02	100		Y	Y	Y	Y	Y

PQAO Name Indianapolis Power And Light Company (0524)
QAPP Approval Date

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
0		Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
18-027-0002	1	INDUSTRIAL	3.7	0.0	292.0		0	89	5.22	+/-4.71	81	0.73	100		Y	Y	Y	Y	Y
18-109-1001	1	INDUSTRIAL	3.1	0.0	135.0		0	93	1.42	+/-1.01	100	- 2.43	100		Y	Y	Y	Y	Y

PQAO Name Northern Indiana Public Service Company (0788)
QAPP Approval Date

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
0		Y

Routine Data | One Point Quality Check | Annual PE | NPAP | Concur. Flag

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2014
Certifying Agency Code Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Parameter Sulfur dioxide (42401) (ppb)

PQAO Name Northern Indiana Public Service Company (0788)
QAPP Approval Date

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
18-073-0002	1	INDUSTRIAL	0.9	0.0	29.0		0	97	3.57	+/-3.12	100	0.32	100		Y	Y	Y	Y	Y
18-091-0005	1	INDUSTRIAL	0.9	0.0	16.0		0	95	3.95	+/-3.22	100	- 0.87	100		Y	Y	Y	Y	Y
18-127-0011	1	INDUSTRIAL	2.0	0.0	30.0		0	97	3.48	+/-2.81	100	- 1.87	100		Y	Y	Y	Y	Y

PQAO Name Richmond Power And Light (0909)
QAPP Approval Date

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
0		Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
18-177-0006	1	INDUSTRIAL	2.1	0.0	8.1		0	99	4.53	+/-4.47	100	0.29	100		Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2014
Certifying Agency: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Parameter: PM10 Total 0-10um STP (81102) CONTINUOUS
PQAO Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Quality Assurance Project Plan Approval Date: 12/31/2012

Monitors Summaries

			Routine Data (ug/m3)						Flow Rate Verification		Flow Rate Audit			Concurrence Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Bias	% Complete	Bias	% Complete	QAPP Appr.	AQS Rec Flag	CA Rec Flag	EPA Concur
18-089-0022	2	SLAMS	23.04	.0	590.0		0	89	+5.57	100	-4.59	100	Y	Y	Y	Y
18-097-0078	4	SLAMS	20.34	2.0	361.0		0	76	+2.29	92	+2.02	100	Y	Y	Y	Y
18-127-0023	3	SLAMS	20.38	.0	311.0		0	75	+/-8.42	100	-12.58	100	Y	N	Y	S

Submitter Comment: Audit results requiring frequent calibration.

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2014
Certifying Agency: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Parameter: PM10 Total 0-10um STP (81102) INTERMITTENT
PQAO Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Quality Assurance Project Plan Approval Date: 12/31/2012

Collocation Summary

# Sites	# Sites Req	# Sites Collocated	% Collocated	CV Est	CV UB	Criteria Met?
10	2	3	100	4.17	4.50	Y

Monitors Summaries

			Routine Data (ug/m3)						Flow Rate Audit		Collocation				Concurrence Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Bias	% Complete	CV	% Complete	PQAO Crit. Met	QAPP Appr.	AQS Rec Flag	CA Rec Flag	EPA Concur
18-019-0006	1	SLAMS	19.51	5.0	40.0	0	0	98	+1.60	100			Y	Y	Y	Y	Y
18-037-2001	2	SLAMS	17.10	4.0	35.0	0	0	96	+1.63	100			Y	Y	Y	Y	Y
18-089-0006	2	SLAMS	20.25	5.0	52.0	0	0	100	-1.86	100	3.34	100	Y	Y	Y	Y	Y
18-089-0006	3	SLAMS	20.12	5.0	52.0	0	0	100	-2.51	100			Y	Y	Y	Y	Y
18-089-0031	1	SLAMS	23.80	6.0	66.0	0	0	75	-0.98	100	5.95	100	Y	Y	Y	Y	Y
18-089-0031	2	SLAMS	23.72	5.0	67.0	0	0	95	-2.14	100			Y	Y	Y	Y	Y
18-089-0034	1	SLAMS	21.46	2.0	49.0	0	0	90	-1.65	100			Y	Y	Y	Y	Y
18-097-0043	1	SLAMS	26.16	5.0	69.0	0	0	96	-0.57	100	4.76	100	Y	Y	Y	Y	Y
18-097-0043	2	SLAMS	26.59	6.0	72.0	0	0	98	-1.89	100			Y	Y	Y	Y	Y
18-097-0078	1	SLAMS	18.10	2.0	52.0	0	0	84	+0.33	100			Y	Y	Y	Y	Y
18-127-0024	1	SLAMS	15.02	2.0	33.0	0	0	91	-1.22	100			Y	Y	Y	Y	Y
18-163-0021	1	SLAMS	17.28	2.0	41.0	0	0	100	-0.02	100			Y	Y	Y	Y	Y
18-167-0018	1	SLAMS	17.61	4.0	58.0	0	0	95	-0.56	100			Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2014
Certifying Agency: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Parameter: PM2.5 - Local Conditions (88101)
PQAO Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Quality Assurance Project Plan Approval Date: 12/31/2012

Collocation Summary

Method	# Sites	# Sites Req	# Sites Collocated	% Collocated	CV Est	CV UB	Criteria Met?
142	1	1	0	0			N
145	35	5	10	100	11.53	11.85	Y

PEP Summary

# Methods	# Audited Methods	# PEP Required	# PEP Submitted	% Complete	Bias	Criteria Met?
2	1	8	7	87.5	+4.86	Y

Monitors Summaries

AQS Site ID	POC	Method	Monitor Type	Routine Data (ug/m3) Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Flow Rate Audit Bias	% Complete	Collocation CV	% Complete	PQAO Crit. Met	PEP PQAO Crit. Met	QAPP Appr.	Concurrence Flag AQS Rec Flag	CA Rec Flag	EPA Concur
18-003-0004	1	145	SLAMS	10.70	2.1	49.6		0	98	-0.23	100	4.75	100	Y	Y	Y	Y	Y	Y
18-003-0004	2	145	SLAMS	10.57	2.1	49.2		0	98	+0.11	100			Y	Y	Y	Y	Y	Y
18-005-0008	1	145	SPM	10.41	2.5	21.5		0	100	-0.42	100			Y	Y	Y	Y	Y	Y
18-005-0008	3	170	SPM	10.99	-2.3	89.8		0	90	+0.85	100			Y	Y	Y	Y	Y	Y
18-019-0006	1	145	SLAMS	11.99	2.9	43.2		0	83	-0.60	100			Y	Y	Y	Y	Y	Y
Submitter Comment:			early certification																
18-019-0008	1	145	SPM	9.45	2.7	26.7		0	95	+0.14	100			Y	Y	Y	Y	Y	Y
18-035-0006	1	145	SLAMS	10.26	2.1	47.4		0	97	+0.88	100			Y	Y	Y	Y	Y	Y
18-037-2001	1	145	SLAMS	11.12	2.3	33.7		0	100	+0.32	100			Y	Y	Y	Y	Y	Y
18-039-0008	1	145	SLAMS	11.34	1.1	41.7		0	95	-1.88	100			Y	Y	Y	Y	Y	Y
18-043-1004	1	145	SLAMS	10.24	2.5	25.7		0	100	+1.41	100	3.59	100	Y	Y	Y	Y	Y	Y
18-043-1004	2	145	SLAMS	10.55	3.1	23.7		0	95	+0.68	100			Y	Y	Y	Y	Y	Y
18-055-0001	1	145	SLAMS	9.92	1.5	29.0		0	98	-0.37	100			Y	Y	Y	Y	Y	Y
18-057-0007	1	145	SLAMS	10.88	1.0	45.0		0	97	+0.64	100			Y	Y	Y	Y	Y	Y
18-057-0007	3	170	SPM	9.58	-2.2	145.7		0	100	+1.80	100			Y	Y	Y	Y	Y	Y
18-065-0003	1	145	SLAMS	9.85	2.0	42.7		0	98	+0.08	100			Y	Y	Y	Y	Y	Y
18-067-0004	1	145	SPM	9.55	2.4	20.8		0	100	-1.12	100	16.40	100	Y	Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2014
Certifying Agency: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Parameter: PM2.5 - Local Conditions (88101)
PQAO Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Quality Assurance Project Plan Approval Date: 12/31/2012

Collocation Summary

Method	# Sites	# Sites Req	# Sites Collocated	% Collocated	CV Est	CV UB	Criteria Met?
142	1	1	0	0			N
145	35	5	10	100	11.53	11.85	Y

PEP Summary

# Methods	# Audited Methods	# PEP Required	# PEP Submitted	% Complete	Bias	Criteria Met?
2	1	8	7	87.5	+4.86	Y

Monitors Summaries

				Routine Data (ug/m3)						Flow Rate Audit		Collocation			PEP		Concurrence Flag		
AQS Site ID	POC	Method	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Bias	% Complete	CV	% Complete	PQAO Crit. Met	PEP PQAO Crit. Met	QAPP Appr.	AQS Rec Flag	CA Rec Flag	EPA Concur
18-067-0004	3	170	SPM	10.97	-2.4	86.8		0	93	-0.15	100			Y	Y	Y	Y	Y	Y
18-089-0006	1	145	SLAMS	10.62	2.5	43.5		0	87	-1.27	100			Y	Y	Y	Y	Y	Y
18-089-0022	1	145	SLAMS	12.06	2.4	45.1		0	97	-2.79	100			Y	Y	Y	Y	Y	Y
18-089-0026	1	145	SLAMS	12.51	2.8	62.3		0	100	-2.58	100			Y	Y	Y	Y	Y	Y
18-089-0031	1	145	SLAMS	11.83	2.0	44.0		0	95	-0.08	100	4.79	100	Y	Y	Y	Y	Y	Y
18-089-0031	2	145	SLAMS	11.65	2.5	41.2		0	95	-0.34	100			Y	Y	Y	Y	Y	Y
18-089-2004	1	145	SLAMS	11.32	3.0	41.6		0	95	-0.92	100	19.25	100	Y	Y	Y	Y	Y	Y
18-091-0011	1	145	SLAMS	10.05	2.1	37.6		0	94	-1.11	100			Y	Y	Y	Y	Y	Y
18-095-0011	1	145	SLAMS	10.33	2.1	47.0		0	96	+0.39	100			Y	Y	Y	Y	Y	Y
18-097-0043	1	145	SLAMS	12.64	2.2	40.9		0	100	-0.50	100			Y	Y	Y	Y	Y	Y
18-097-0078	1	145	SLAMS	11.43	2.3	41.3		0	85	+0.34	100			Y	Y	Y	Y	Y	Y
18-097-0078	4	170	SLAMS	11.72	-2.5	278.0		0	81	+0.79	100			Y	Y	Y	Y	Y	Y
18-097-0081	1	145	SLAMS	12.19	2.6	44.7		0	95	-0.25	100	13.96	100	Y	Y	Y	Y	Y	Y
18-097-0081	2	145	SLAMS	11.96	2.9	42.1		0	85	-0.68	100			Y	Y	Y	Y	Y	Y
18-097-0083	1	145	SLAMS	11.78	2.2	49.9		0	98	+0.36	100			Y	Y	Y	Y	Y	Y
18-097-0084	1	145	SLAMS	11.94	2.0	43.8		0	98	-0.25	100			Y	Y	Y	Y	Y	Y
18-097-0087	1	145	EPA	13.08	1.9	40.7		0	100	+0.38	100			Y	Y	Y	Y	Y	Y
18-105-0003	1	145	SLAMS	10.04	1.8	24.2		0	99	+0.80	100			Y	Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2014
Certifying Agency: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Parameter: PM2.5 - Local Conditions (88101)
PQAO Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)
Quality Assurance Project Plan Approval Date: 12/31/2012

Collocation Summary

Method	# Sites	# Sites Req	# Sites Collocated	% Collocated	CV Est	CV UB	Criteria Met?
142	1	1	0	0			N
145	35	5	10	100	11.53	11.85	Y

PEP Summary

# Methods	# Audited Methods	# PEP Required	# PEP Submitted	% Complete	Bias	Criteria Met?
2	1	8	7	87.5	+4.86	Y

Monitors Summaries

				Routine Data (ug/m3)						Flow Rate Audit		Collocation			PEP		Concurrence Flag		
AQS Site ID	POC	Method	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Bias	% Complete	CV	% Complete	PQAO Crit. Met	PEP PQAO Crit. Met	QAPP Appr.	AQS Rec Flag	CA Rec Flag	EPA Concur
18-127-0024	1	145	SLAMS	10.52	1.7	40.4		0	90	-0.01	100	3.37	100	Y	Y	Y	Y	Y	Y
18-127-0024	2	145	SLAMS	10.10	2.0	41.3		0	89	-2.01	100			Y	Y	Y	Y	Y	Y
18-141-0015	1	145	SLAMS	10.16	1.6	31.8		0	96	-1.09	100	8.04	100	Y	Y	Y	Y	Y	Y
18-141-0015	2	145	SLAMS	10.24	2.1	33.2		0	88	-2.08	100			Y	Y	Y	Y	Y	Y
18-147-0009	1	145	SLAMS	10.78	1.9	33.0		0	100	+1.10	100			Y	Y	Y	Y	Y	Y
18-157-0008	1	145	SLAMS	10.58	2.5	46.3		0	95	-1.86	100	2.99	100	Y	Y	Y	Y	Y	Y
18-157-0008	2	145	SLAMS	10.39	2.2	31.7		0	93	-1.82	100			Y	Y	Y	Y	Y	Y
18-163-0016	1	145	SLAMS	11.18	1.8	30.1		0	100	-0.56	100			Y	Y	Y	Y	Y	Y
18-163-0021	1	145	SLAMS	11.26	2.0	31.2		0	96	-1.10	100	3.41	100	Y	Y	Y	Y	Y	Y
18-163-0021	2	145	SLAMS	11.46	2.5	31.2		0	100	-1.78	100			Y	Y	Y	Y	Y	Y
18-163-0023	1	145	SLAMS	11.18	1.6	29.5		0	100	+0.15	100			Y	Y	Y	Y	Y	Y
18-167-0018	1	145	SLAMS	11.09	2.0	49.1		0	100	-0.71	100			Y	Y	Y	Y	Y	Y
18-183-0003	1	145	SLAMS	9.73	2.2	43.6		0	99	-1.05	100			Y	Y	Y	Y	Y	Y
18-107-0004	1	142	INDUSTRIAL	10.70	2.7	22.5		0	78	+/-	0			N	Y	Y	N		
18-107-0004	3	170	INDUSTRIAL	11.18	.0	63.0		0	96	+/-	0			Y	Y	Y	N		

Data Concurrence and Evaluation Report for Lead

Certification Year 2014

Certifying Agency Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Lead (TSP) LC (14129)

PQAO Name: Indiana Depart Of Environ Management/Office Of Air Quality (0520)

Quality Assurance Project Plan Approval Date: 12/31/2012

Collocation Summary:

Number of Sites	Number of Colloc Sites Required	Number of Actual Colloc Sites	Percent Collocated	CV Est	CV UB	Criteria Met
8	1	2	100	4.91	5.94	Y

PEP Summary

Number of Methods	Number of Methods Audited	Number of PEP Audits Required	Number of Audits Submitted	Percent Complete	Bias	Criteria Met
1	0	2	0	0		Y

Analysis Audit Summary:

Number Required	Number Submitted	Percent Complete	Bias	Criteria Met
24	24	100	+/-5.02	Y

Monitors Recommended for Certification

AQS Site-ID	POC	Monitor Type	Routine Data (ug/m^3) Mean	Min	Max	Exceed. Count	Outlier Count	Percent Comp.	Flow Rate Audit Bias	Percent Comp.	Collocation CV UB	Percent Comp.	PQAO Crit. Met	PEP PQAO Crit. Met	Lead Analysis Crit. Met	Certification QAPP Appr.	AQS Rec. V	CA Rec Value	EPA Concur
18-035-0009	3	SPM	0.034	0.002	0.191	0	0	100	-1.26	100			Y	Y	Y	Y	Y	Y	Y
18-035-0009	4	SPM	0.042	0.002	0.162	0	0	88	-2.88	100			Y	Y	Y	Y	Y	Y	Y
18-089-0032	1	SPM	0.012	0.001	0.049	0	0	95	-4.32	100			Y	Y	Y	Y	Y	Y	Y
18-089-0033	1	SPM	0.070	0.001	0.790	0	0	96	-4.13	100			Y	Y	Y	Y	Y	Y	Y
18-089-0034	1	SLAMS	0.028	0.003	0.358	0	0	91	+0.45	100			Y	Y	Y	Y	Y	Y	Y
18-089-2008	1	SLAMS	0.019	0.001	0.168	0	0	95	-1.72	100	6.36	100	Y	Y	Y	Y	Y	Y	Y
18-089-2008	2	SLAMS	0.016	0.001	0.127	0	0	96	-0.54	100			Y	Y	Y	Y	Y	Y	Y
18-097-0063	1	SPM	0.014	0.002	0.057	0	0	100	-0.17	100	7.10	100	Y	Y	Y	Y	Y	Y	Y
18-097-0063	2	SPM	0.014	0.001	0.058	0	0	96	+1.19	100			Y	Y	Y	Y	Y	Y	Y
18-097-0078	1	SPM	0.004	0.000	0.016	0	0	93	-1.93	100			Y	Y	Y	Y	Y	Y	Y

Monitors Not Recommended for Certification

AQS Site-ID	POC	Monitor Type	Routine Data (ug/m^3) Mean	Min	Max	Exceed. Count	Outlier Count	Percent Comp.	Flow Rate Audit Bias	Percent Comp.	Collocation CV UB	Percent Comp.	PQAO Crit. Met	PEP PQAO Crit. Met	Lead Analysis Crit. Met	Certification QAPP Appr.	AQS Rec. V	CA Rec Value	EPA Concur
18-127-0027	1	SPM	0.024	0.001	0.239	0	0	68	+7.91	100			Y	Y	Y	Y	N	Y	S

Submitter Comment: Audit results requiring calibration & power issues.

EPA Comment:

Appointment

From: McGrath, Jesse [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C34718C70BB64FE58E72FA1AB387E90E-JMCGRA02]
Sent: 4/2/2015 6:20:34 PM
To: Tara Cioffi [taracioffi@ychd.com]; Nate [nbell@ychd.com]; McEvoy, Chad [mcevoy.chad@epa.gov]
BCC: R5Metcalfe-ConfRm-R1813A/R5-Metcalfe---18th-Floor [r5metcalfe-confrm-r1813a@epa.gov]; R5Metcalfe-ConfRm-R1819/R5-Metcalfe---18th-Floor [r5metcalfe-confrm-r1819@epa.gov]

Subject: NEDO Auditor O3 Certifications
Location: R5Metcalfe-ConfRm-R1813A/R5-Metcalfe---18th-Floor; R5Metcalfe-ConfRm-R1819/R5-Metcalfe---18th-Floor

Start: 4/3/2015 3:00:00 PM
End: 4/3/2015 3:30:00 PM
Show Time As: Tentative

From: Tara Cioffi [mailto:taracioffi@ychd.com]
Sent: Tuesday, March 31, 2015 7:19 AM
To: McGrath, Jesse
Subject: RE: NEDO Auditor O3 Certifications

Jesse,

We are available Friday, April 3 anytime.

From: McGrath, Jesse [mailto:mcgrath.jesse@epa.gov]
Sent: Monday, March 30, 2015 4:56 PM
To: Tara Cioffi; McEvoy, Chad; Hamilton, Scott
Cc: Nate
Subject: RE: NEDO Auditor O3 Certifications

Thanks for the update, Tara.
Taking that into account, looking at the documents you sent, and looking at some other nearby sites I think the additional variability in the QC and audit points is small doesn't indicate a growing problem.
I'm still not sure why we're seeing the increasingly negative NPAP bias and we'll probably have to wait for the NPAP audits to see what's going on.

I'd like to talk with you and Nate for about 15-30 minutes to confirm and explain what I'm seeing, and talk about next steps.
I can meet whenever you're free.

Thank you,
Jesse

From: Tara Cioffi [mailto:taracioffi@ychd.com]
Sent: Friday, March 13, 2015 7:53 AM

To: McGrath, Jesse; McEvoy, Chad
Cc: Nate
Subject: RE: NEDO Auditor O3 Certifications

Oops- thanks for email correction.

In regards to missed QC checks, we regretfully missed some checks in this time period due to a miscommunication with the Field Tech and the required precision checks. Specifically, Nathan Bell started work in March 2012 and understood the rule to include audits as precision checks, so he did not perform all necessary checks. M-TAPCA has since created a corrective action plan where Nate has been disciplined and a set calendar of job requirements have been made. I do not anticipate this to be a problem moving forward. We invalidate data in accordance with the rules, so if there was an instance requiring us to do so then we would invalidate.

Thanks,

From: McGrath, Jesse [mailto:mcgrath.jesse@epa.gov]
Sent: Thursday, March 12, 2015 4:19 PM
To: McEvoy, Chad
Cc: Tara Cioffi
Subject: FW: NEDO Auditor O3 Certifications

Got it – thanks. Chad's email is mcevoy.chad@epa.gov
For some reason EPA does it backwards.

We have a follow-up question.
In 2012 and 2013 there are fewer QC checks than expected.
Is that related to the issues you were describing earlier? Assuming those checks were invalidated did you also invalidate part of the routine data?

Thank you,
Jesse

From: Tara Cioffi [mailto:taracioffi@ychd.com]
Sent: Thursday, March 12, 2015 2:46 PM
To: McGrath, Jesse; chad.mcevoy@epamail.gov
Subject: FW: NEDO Auditor O3 Certifications

From: Griffin, Ryan [mailto:ryan.griffin@epa.ohio.gov]
Sent: Thursday, March 12, 2015 3:27 PM
To: (Mahoning) taracioffi@ychd.com
Subject: NEDO Auditor O3 Certifications

Tara,

Attached, are copies of the 2013-2014 certification forms for the Ohio EPA audit transfer standards (TS). Each page represents a separate certification against Ohio EPA's primary standard at the Groveport Field Office. This should be the same local primary that your TS certifications are conducted on. Everything should be in chronological order and separated by serial number. Audit TS are typically certified at least once per quarter against the Ohio EPA primary. Sample lines are replaced annually. The 500mL flask manifold is cleaned / re-conditioned twice per ozone season.

If you need copies of the individual ozone audit reports, I can pull out the signed copies and send them to you as well.

Ryan Griffin
Ohio EPA- Northeast District Office
Division of Air Pollution Control
2110 East Aurora Rd.
Twinsburg, Ohio 44087
330-963-1156

John Wicker--IDEM

One thing I would like to see some discussion on is the percent differences for data validity. I am still somewhat cautious on applying a 7% one point percent difference for ozone. Here is my reasoning. If QA and Ambient have calibrators that are verified by the same primary standard, why is QA allowed 15% but ambient is allowed only 7%? This does not make sense to me. Based on my 25+ years of air monitoring I am seeing data validity limits as follows:

QA – 15%

Ambient span – allowed 10% drift based on specific time period. If more than 10% data investigation. If greater than 15% invalid data.

Ambient 1 pt – 7% but this is a statistical average over a specific time period. Failing 7% would indicate data investigation. Daily span as well as QA results help determine data validation.

This is just my take on what the requirements should be. There does seem to be some open interpretation in the CFR.

Mike Burk--IDEM

I'm not sure if this meeting is the right forum or not, but I'd like to get a feel for how our neighboring states are handling their audit data and reporting. We currently use an oracle database application that was designed in the late '90s/2000's and is well past its useful life. It's great in serving as a repository for our instruments, certifications, calibrations and audits, but not so great on the reporting side. We're currently in the preliminary stages of coming up with a replacement, and would love to get some specifics on how the other Region 5 states are doing things; what's working, what isn't, etc.

Dennis Fenlon--MPCA

1. Some Black carbon analyzers are capable of generating 7 channels of data. However, there doesn't seem to be any parameter codes in AQS for any black carbon data other than UV (BC1) and black carbon (BC6). How are other agencies reporting those additional channels of data?
2. Furthermore, is black carbon to be reported to AQS in local or standard conditions?
3. Are there any agencies in R5 collecting ultrafine particle data? Once again, there seems to be no applicable parameter codes for that data. How are others reporting that data to AQS?
4. Due to temperature and humidity control problems in our TSP/PM10 gravimetric weighing room, we have decided to move the actual weighing (equalization & weighing only) of both of those parameters into our PM2.5 weighing clean room. Is this an acceptable practice?
5. We have found that our NOy audits take several hours to complete, specifically due to slow zero stabilization. Do other agencies have these same slow responses?

Message

From: Qazzaz, Bilal [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=779FA066F1974031969CE3F09A410D78-BQAZZAZ]
Sent: 2/11/2015 1:08:46 PM
To: WICKER, JOHN [JWICKER@idem.IN.gov]
CC: Scott Hamilton [Hamilton.Scott@epa.gov]
Subject: RE: Data Validity

Hey John,

What does your current QAPP say about the criteria?

FYI, I'd be careful about rolling back anything Blaser put in place.

From: WICKER, JOHN [mailto:JWICKER@idem.IN.gov]
Sent: Tuesday, February 10, 2015 2:37 PM
To: Qazzaz, Bilal; Hamilton, Scott
Subject: Data Validity

Guys. We are discussing precision points and accuracy points and how it effects the data. For example, when any of the accuracy points are greater than 15% then the data is invalid. OR do all three points have to be greater than 15%? Also, looking at the precision point (say for ozone), if it is greater than 7% then is the data valid IF the daily span check and/or accuracy audit show it within 15%? Or would you consider this data invalid?

Being old school, I always thought the precision point was never used for data validity, only the upscale span (or accuracy audit). Unless the precision is so far that it indicates something is definitely wrong with the analyzer, meaning data is invalid.

We are rewriting our QAPP so please advise so we can get this correct. Thanks

John Wicker
Section Chief
Quality Assurance Section
Air Monitoring Branch
Office of Air Quality
Indiana Department of Environmental Management

Message

From: Compher, Michael [compher.michael@epa.gov]
Sent: 3/27/2015 3:03:39 PM
To: Tyson, MaryPat [tyson.marypat@epa.gov]
Subject: more data validation info to consider...

Jason's response provides context to the frequency of this issue experience in WI. I don't think this issue, regardless of our final direction, affects a large portion of our data.

PS. This debate is limited to the gaseous QC checks. As Jason indicates, failed flow checks on PM instruments have different implications (cut size from the cyclone or impactor).

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Treutel, Jason A - DNR [mailto:Jason.Treutel@wisconsin.gov]
Sent: Thursday, February 26, 2015 3:21 PM
To: Compher, Michael
Cc: Qazzaz, Bilal; McGrath, Jesse
Subject: RE: State, Local, and Tribal Monthly Conference Call

Thank you Michael, I do appreciate it. I do have concerns with the resources I have to implement Jesse's approach even if I do agree with some of the principles. I was having particular trouble yesterday with the consistency of the message I was hearing.

In answer to your question I am referring to failed routine QC checks that exceed due to instrument drift or soft failures where the data still looks normal. It happens a few times each year for our network.

- It is extremely rare for us to fail the 10% criteria we had been using for ozone precision checks, typically 0 times a year. Exceeding the 7% criteria stated in the may have occurred a few times in 2014 across our network because we were using 10% as the control limit (7% was our action limit).

- We typically get one or two QC failures for NO2/SO2/CO analyzers in our network in a year. The one NO2 issue I mentioned is the only one for 2014 that I recall.

- Continuous analyzer QC failures would typically affect two weeks or less of data and we are sometimes are able to justify using our nightly span checks to bracket the data and shorten this period of invalidated data. Invalidating a two week period or less does not itself drop our completion percentage below 75% for the quarter.

- I will add that we typically have one or two monthly flow check QC failures for our particulate sampling network in a year. This is a much more significant problem since it drops sites below 75% data completion when it fails if we invalidate the bracketed data (we typically do). I don't think I've ever heard an EPA official or seen a document that says it's okay to have a flow check off over 6% as long as your population of checks is under 4%. I would think the treatment being suggested for continuous samplers would be applied to discrete samplers as well based on the argument that was being made. Because of particle cut size being dependent on flow I would be reluctant to say this would be a good route to take.

In any case, I feel that we would have to have a more robust statistical analysis of our QC checks and data review than we have currently to move away from using the Validation Template critical criteria as validation criteria for routine checks and the associated data. Thank you for hearing me out. Any information you can provide would be helpful, even though I am concerned with our resource availability to implement significant changes in the near future.

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Jason Treutel
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Jason.Treutel@wisconsin.gov

dnr.wi.gov

From: Compher, Michael [mailto:compher.michael@epa.gov]
Sent: Thursday, February 26, 2015 7:53 AM
To: Treutel, Jason A - DNR
Cc: Qazzaz, Bilal; McGrath, Jesse
Subject: FW: State, Local, and Tribal Monthly Conference Call

Good morning Jason,

Thank you for providing this feedback to us. We will work out an approach within the Region in consultation with OAQPS and provide clarification for you.

I am interested in knowing, generally for WDNR's monitoring program, how frequently failed QC checks result in invalidation of any data.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Treutel, Jason A - DNR [mailto:Jason.Treutel@wisconsin.gov]
Sent: Wednesday, February 25, 2015 4:11 PM
To: Qazzaz, Bilal; McGrath, Jesse
Subject: RE: State, Local, and Tribal Monthly Conference Call

Good afternoon Bilal and Jesse. I just wanted to recap the validation conversation and the way I am interpreting it:

From the QA Handbook

Criteria that were deemed critical to maintaining the integrity of a sample or group of samples were placed on the first table. Observations that do not meet each and every criterion on the **Critical Criteria Table** should be invalidated unless there are compelling reason and justification for not doing so. The sample or group of

samples for which one or more of these criteria are not met is invalid until proven otherwise. The cause of not operating in the acceptable range for each of the violated criteria must be investigated and minimized to reduce the likelihood that additional samples will be invalidated.

Example from ozone validation template

1) Requirement (O_3)	2) Frequency	3) Acceptance Criteria	Information /Action
One Point QC Check	***Single analyzer 1/ 2 weeks***	< +7% (percent difference	1 and 2) 40 CFR Part 58 App A Sec 3.2 3) Recommendation based on DQO in 40 CFR Part 58 App A Sec 2.3.1.2. QC Check Conc range 0.01 - 0.10 ppm, relative to routine concentrations

My interpretation of the QA Handbook (and perhaps Anna Kelly's as well): If the one point QC check is >7% the Critical criteria has been violated and the observations should be invalidated. We don't like invalidating data so we make sure that the violating check is confirmed potentially with a repeat measurement, alternative calibration equipment, or even an expert operator. If the criteria violation is confirmed we invalidate the associated data and do not report the check to AQS.

Feedback from Bilal on the call: Seemed to agree that this was an acceptable if not appropriate approach

Feedback from Jesse: This is absolutely the wrong approach to use for invalidating data because the criteria is in relation to the statistical analysis of the population of the checks, not the individual check. This is not very clear to me in the QA Handbook Validation tables which due to time constraints I've relied on more than the text of the remainder of the document.

I apologize for venting here, but what I heard today seemed contradictory on the EPA side. Even though I am starting to agree philosophically with the approach Jesse recapped, I am very concerned with developing and implementing the processes necessary to adopt that approach.

Because I was at the QAPP meeting I had already heard some of this information on control charting and population evaluation vs. single check criteria being things to consider when developing a QAPP. I am concerned with the idea of developing control chart criteria and other statistical tests to judge the validity of our data and when and when not to invalidate it. I do not have the statistical background to do this without significant research or guidance and I do not currently have access to someone in our local group that can provide it. Therefore I am relying on documents like the Validation templates which according to Jesse, I am misinterpreting or at least not getting the full story. The hard and fast failure criteria they imply make validation/invalidation a simpler process and the data that meets it is of very high quality even if it ends up excluding data that would have resulted in a data set that is still good enough.

We rarely exceed the validation template criteria for a single validation point where there is not a hard failure of the instrument. There was one occurrence I will be revisiting as we move on to data certification. I had invalidated a block of NOx data based on a single check that was not addressed properly until the next biweekly check. This had caused a month of data to be invalidated and will cause the parameter to not meet completion percent requirements for Q1. Based on today's information it sounds like the data can and should be revalidated since the check exceeded by only a little and will not cause the population to exceed the criteria. I will also need to submit this check.

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From: Qazzaz, Bilal [mailto:qazzaz.bilal@epa.gov]
Sent: Monday, February 23, 2015 8:03 AM
To: abaird@oneidanation.org; aboetcher@nhbpi.com; Adam.Blundell@hamilton-co.org; air@lldrm.org; airquality@badriver-nsn.gov; Alexander Jackson; Allen, Mark K - DNR; bfrazier@piic.org; brettmc@chegnet.net; Rodger, Bruce C - DNR; Laude, Bryan T - DNR; Burt Mechenbar; Cashman, John; ccharwood@redlakenation.org; charlie.lippert@millelacsband.com; charliel.millelacsojibwe@gmail.com; Chris.Harrison@hamilton-co.org; Christina Wieg; christina.boss@hamilton-co.org; Cindy.Charles@epa.state.oh.us; cjlippert@hotmail.com; cspruce@kbic-nsn.gov; dallasr@uppersiouxcommunity-nsn.gov; Nickolie, Daniel W - DNR; darrell.pennington@epa.state.oh.us; ddtyrolt@chegnet.net; deb.dirlam@lowersioux.com; Deborah Stone (Environmental Control); dtan@cantonhealth.org; Desmond.berry@gtbindians.com; dwights@itcmi.org; dzeiler@idem.in.gov; carol.eggert@toledo.oh.gov; gary.engler@epa.state.oh.us; Fenlon, Dennis (MPCA); 'fitznerc@michigan.gov'; Giwojna, Benjamin; Good, Gail - DNR; Hetherington, Grant D - DNR; Greg.bunker@mohican-nsn.gov; gshubel@itcmi.org; randy.hock@epa.state.oh.us; hooverb2003@yahoo.com; jhupp@cantonhealth.org; jane.rohl@gtbindians.com; Treutel, Jason A - DNR; jesse.anderson@lowersioux.com; jlyons@mitw.org; jmears@oneidanation.org; Joe.Cebe@fcpotawatomi-nsn.gov; Jonathan Knight; joywiecks@fdlrez.com; jrodwan@nhbpi.com; kaleel@ladco.org; Karen Moore-Wright (Environmental Control); kari.palmer@state.mn.us; katies@stcroixtribalcenter.com; kbrosemer@saulttribe.net; Anna.Kelley@hamilton-co.org; kellie.gavin@pca.state.mn.us; kenski@ladco.org; kgunderson@ho-chunk.com; kjomac2000@yahoo.com; kmackety@nhbpi.com; Lacka, Monika; land@ccsmdc.org; Lengerich, Steve; lmorckel@cantonhealth.org; linda.katchenago@mohican-nsn.gov; Lynn Schmitt (Environmental Control); Mertes, Mary - DNR; Mayo, Kathleen; mctwg@arvig.net; meloneemontano@hotmail.com; Meyer, Cynthia; Moran, Eileen; mrogers@city.cleveland.oh.us; natalene.cummings@fcpotawatomi-nsn.gov; PARKS, JAMES; chris.price@illinois.gov; Rick Strassman; Robinson, Amy (DEQ); srubens@schd.org; skniffen@sagchip.org; soberg@boreal.org; stan.ellison@shakopeedakota.org; Steve Blaser; nathan.stroup@hamilton-co.org; kilmers@michigan.gov; Tara Cioffi; tdzienis@cantonhealth.org; terry.sanner@epa.state.oh.us; Thomas Shepard; thurlow.mcclellan@gtbindians.com; tmaki@itcmi.org; tomf@stcroixtribalcenter.com; travismaki906@gmail.com; twarner@kbic-nsn.gov; Tyson, MaryPat; whitmava@rapca.org; waynedupuis@fdlrez.com; wrc4pres@yahoo.com; yvettec@boreal.org; R5 ARD-ATAB-AMAS; Molnar, Eve; Worsham, Luke R - DNR; Helen.Waquiu@state.mn.us; cassie.mcmahon@state.mn.us; JOHN WICKER (JWICKER@idem.IN.gov); Bloomberg, David E.; Compher, Michael; Kevin Schnoes (Environmental Control) (Kevin.Schnoes@cookcountyil.gov)
Cc: Ross, Anthony; Fuoco, Marta; McEvoy, Chad; Caudill, Motria; Engler, Gary; Rodger, Bruce C - DNR; Delisio, Edward; Hamilton, Scott; McGrath, Jesse; Scott Wold
Subject: State, Local, and Tribal Monthly Conference Call

To all,

We will be having our SLT call on February 25, 1-2 CST.

Date: 2-25-15
Time: 1-2 (CST)

Where: 1813A

Call in number: 877-226-9607

Conference Code: 5770738038

Region 5 Items

-Phase 3 Near Road Update
-AQS Update
-Update on Ozone Traceability Best Practices
-Poll of those who are conducting Ultra-Fine Particle (UFP) monitoring

SLT Items

-MDEQ would like to discuss how other states are documenting the extended certifications of their cylinders
-IDEM would like to discuss how other states are validating their data
-Information sharing with SWOAQA and CCDEC

Bilal Qazzaz
Air & Radiation Division
Air Monitoring & Analysis Section
US EPA Region 5
(312) 353-2325

Message

From: Compher, Michael [compher.michael@epa.gov]
Sent: 3/25/2015 2:59:26 PM
To: Tyson, MaryPat [tyson.marypat@epa.gov]
Subject: FW: quick questions - data validation
Attachments: removed.txt

Mary Pat - See Anna's response, from this morning. Did you hear back from Nealson?

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Kelley, Anna [mailto:Anna.Kelley@hamilton-co.org]
Sent: Wednesday, March 25, 2015 9:18 AM
To: Compher, Michael
Subject: RE: quick questions - data validation

Good Morning Michael,

No worries in sharing this with others. I'm glad you are addressing and hopefully we can put this to rest.
Sorry for the delay in replying. I've read the questions and message twice – at separate times and concur with what Mike is saying.
Additionally, this is exactly how we run operations.
With regard to Question #3: we don't wait a long time to troubleshoot the analyzer – longest is usually 24 hours – yes even on weekends. I've been at sites where we have weekend access troubleshooting equipment. If we don't have access then it's the next day we do.

Also, I believe the procedures are consistent how other states and locals operate their equipment/operations.

Thanks –

Anna L. Kelley
Monitoring & Analysis Supervisor
Southwest Ohio Air Quality Agency
A division of the Hamilton County Department of Environmental Services

250 William Howard Taft Road
Cincinnati, Ohio 45219
p 513.946.7725
f 513.946.7778

anna.kelley@hamilton-co.org
SouthwestOhioAir.org

From: Compher, Michael [mailto:compher.michael@epa.gov]
Sent: Wednesday, March 25, 2015 7:58 AM
To: Kelley, Anna
Subject: FW: quick questions - data validation

Good morning Anna,

I've continued working to bring this data validation issue to closure. After several discussions, I narrowed down the specific questions where there are differences of approach by individuals in my group and posed those questions to Mike Papp. Could you look at my questions and Mike Papp's responses and let me know if this is consistent with your current practice at Hamilton County. Also, do you have other thoughts for clarification?

Please keep this message between you and I, since there are still opposing views on this approach among individuals in my group.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

From: Papp, Michael
Sent: Tuesday, March 24, 2015 8:35 AM
To: Compher, Michael
Subject: RE: quick questions

1. Does the HA Handbook require the invalidation of any QC point that is outside the upper bounds of the goal for bias or precision, plus the invalidation of the concentration data back to the last QC point within bounds?

   Ans: No but they better have a really good reason not to. A QC point is critical criteria. Criteria that were deemed critical to maintaining the integrity of sample or group of samples were placed on the first table. *Observations that do not meet each and every criterion on the Critical Criteria Table should be invalidated unless there are compelling reason and justification for not doing so.* The sample or group of samples for which one or more of these criteria are not met is invalid until proven otherwise. The cause of not operating in the acceptable range for each of the violated criteria must be investigated and minimized to reduce the likelihood that additional samples will be invalidated.

   So.... I'd be looking for documentation of exactly why a QC check failed and why they kept the check and routine data AND there should not be multiple failures of the QC check if there is one failure corrective action should be documented and occur before the next check

2. If no to #1: QC points are invalidated only after routine data are invalidated.

   Ans: Yes. If the routine data stays the QC check stays. There might be some flag on the failed QC even if the routine data stayed to signify what the reason was for the QC check failure and why it did not invalidate the routine data.

3. If a QC check is performed and out of spec from the validation template, many of our monitoring organizations troubleshoot (try again, use other equipment, send out another auditor, etc). If they can identify the issue and when it occurred, they will invalidate the correct portion of the data and associated QC check. Is this approach consistent with the data validation template and other QA documents?

Ans Yes. However they should not be failing multiple weeks of data before they decide lets go out a trouble shoot. But yes… a QC check fails you find out why. If there is compelling reason to keep the data and they document it (and you can confirm this later with a TSA) then they are following good QC practice.

4. If no cause is identified, (within the monitor, operator, traceability system, etc) should the ambient concentration data (and associated failed QC check) be invalidated back to the last valid QC check? Is this a hard and fast rule, or could there be case by case situations where the answer would be different?

   Ans Yes. If there is no compelling reason we'd expect the routine data and the check to be invalidated. Why case by case; if there is no compelling reason the QC check speaks for itself

   If you want to talk more about this that's fine. However I'll be out for the rest of the week after 2:00

From: Compher, Michael
Sent: Tuesday, March 24, 2015 9:01 AM
To: Papp, Michael
Subject: quick questions

Hi Mike,

I have a few hopefully very straightforward questions for you to help me resolve internal debate. What you say is how I'm going to proceed to provide clarification for my section as well as our states/locals. I have read the QA EYE about when QC data should be removed from AQS, and totally understand that the reported QC information should reflect the valid/reported data. Part of my direction to the states will reiterate the QA Eye recommendation to "include wording in QAPPS that addresses when to retain and when to exclude QA and QC data from AQS and when to conduct replacement QA/QC checks."

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Thanks for your help on this.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

Message

From: Compher, Michael [compher.michael@epa.gov]
Sent: 3/24/2015 3:19:48 PM
To: Tyson, MaryPat [tyson.marypat@epa.gov]
Subject: FW: quick questions

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

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Thanks for your help on this.

Michael Compher
Chief, Air Monitoring and Analysis Section
Region 5 Air and Radiation Division
U.S. Environmental Protection Agency
Phone: 312-886-5745

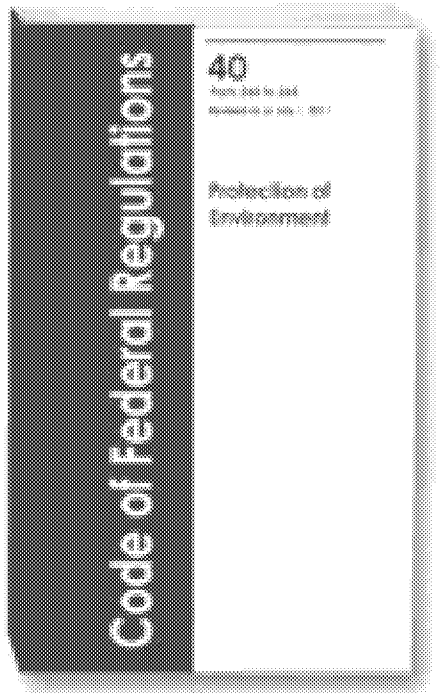
Overview of Proposal: Revisions to Ambient Monitoring QA and Other Requirements

ENVIRONMENTAL PROTECTION AGENCY
40 CFR Part 58
[EPA–HQ–OAR–2013–0619; FRL–9915–16–OAR]
RIN 2060–AR59
Revisions to Ambient Monitoring Quality Assurance and Other Requirements
AGENCY: Environmental Protection Agency (EPA).
ACTION: Proposed rule.

Lewis Weinstock & Mike Papp
Office of Air Quality Planning and Standards

Summary

- Proposes revisions to ambient air monitoring requirements for criteria pollutants to provide clarifications to existing requirements to reduce the compliance burden of monitoring agencies operating ambient networks.
  - Clarifies the annual monitoring network plan public notice requirements
  - Simplifies and reduces data reporting and certification requirements
  - Reduces network design criteria for nonsource lead monitoring
  - Reorganizes and clarifies quality assurance requirements for SLAMS and PSD
- Published September 11, 2014 at 79 FR 54356-54395
- Public comment period open for 60 days at Docket ID No. EPA-HQ-OAR-2013-0619 until November 10, 2014



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Ambient Monitoring Quality Assurance and Other Requirements

This Proposed Rule document was issued by the **Environmental Protection Agency** (EPA)

For related information, Open Docket Folder

Comment Now!
Due Nov 10 2014, at 11:59 PM ET

Action

Proposed rule.

Summary

This action proposes revisions to ambient air monitoring requirements for criteria pollutants to provide clarifications to existing requirements to reduce the compliance burden of monitoring agencies operating ambient networks. This proposal focuses on reorganizing and clarifying quality assurance requirements, simplifying and reducing data reporting and certification requirements, clarifying the annual monitoring network plan public notice requirements, revising certain network design criteria for nonsource lead monitoring, and addressing other issues in part 58 Ambient Air Quality Surveillance Requirements.

Dates

Comments must be received on or before November 10, 2014.

Addresses

Submit your comments, identified by Docket ID No. EPA-HQ-OAR-2013-0619, by one of the following methods:

- Federal eRulemaking Portal: *http://www.regulations.gov.* Follow the online instructions for submitting comments.
- Email: *A-and-R-Docket@epa.gov.* Include docket ID No. EPA-HQ-OAR-2013-0619 in the subject line of the message.
- Fax: (202) 566-9744

ID: EPA-HQ-OAR-2013-0619-0001

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Document Information

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Sep 11, 2014

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CFR:
40 CFR Part 58

Federal Register Number:
2014-19758

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Comments

0
Comments Received*

How To Use These Slides

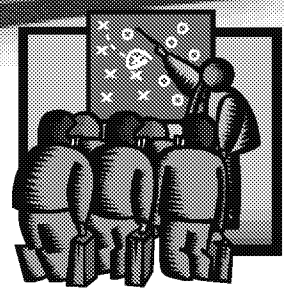
Element	CFR Cite	FR Page #
Refers to KEY issues in 40 CFR part 58 addressed in this proposal.	Citation location in proposal	Page reference in September 11, 2014 FR notice

NOTE: This presentation is not all inclusive – some minor changes are not included in the following slides. The preamble must be read to get a complete list of proposed changes.

Definitions

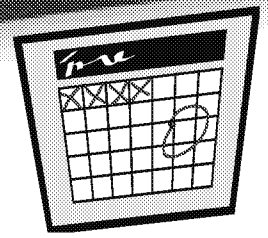
Element	CFR Cite	FR Page #
Various revisions, additions, and deletions to harmonize usage with AQS and ensure consistent interpretations with language elsewhere in Part 58.	§ 58.1	54357-54358

Annual Monitoring Network Plan (ANP)



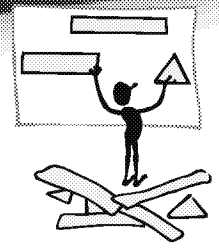
Element	CFR Cite	FR Page #
Revise public inspection requirement to include comments and explanation of how addressed	§ 58.10(a)(1)	54358-54359
Specifically call-out PAMS network description as required element of ANP* *(note: already mentioned in Appendix D, section 5)	§ 58.10(a)(9)	54359
Identify long-term SPM's with rationale for keeping as SPM's or converting to SLAMS as required element	§ 58.10(b)(14)	54359

Operating Schedules



Element	CFR Cite	FR Page #
Manual PM2.5 samplers at required SLAMS may have sampling frequency reduced from 1-in-3 day – based on waiver request (with or without collocated continuous analyzer)	§ 58.12(d)(1)(i) § 58.12(d)(1)(ii)	54360
NAAQS driven changes in sampling frequency must be maintained until design values no longer meet criteria for 3 years	§ 58.12(d)(1)(ii) § 58.12(d)(1)(iii)	54361
Changes in sampling frequency attributable to design values must be implemented no later than Jan 1 of calendar year following data certification	§ 58.12(d)(1)(iv)	54361-54362
STN sites in the Chemical Speciation Network may have sampling frequency reduced from 1-in-3 day – based on waiver request	§ 58.12(d)(3)	54360

System Modification



Element	CFR Cite	FR Page #
Network modification plan to be submitted as part of annual monitoring network plan (ANP). Due no later than 1 year following the due date of the 5-year network assessment. Clarifies that a separate ANP-like process is not needed for consideration of assessment results and provides additional year for consideration.	§ 58.14(a)	54362

Annual Air Monitoring Data Certification

Element	CFR Cite	FR Page #
Breadth of data certification requirements narrowed to FRM, FEM, and ARM monitors at SLAMS (or SPM) rather than applicable to all SLAMS.	§ 58.15(a)	54362-54363
Responsibility for reviewing data certification packages delegated to EPA Regional Offices from HQ.	§ 58.15(b) § 58.15(c)	54363

Data Submittal and Archiving Requirements

Element	CFR Cite	FR Page #
Removed data reporting requirement for average daily temperature and average daily pressure from manual PM2.5 samplers, as well as meteorological data reporting from nearby airports in support of Pb sampling.	§ 58.16(a)	54363
Changed data reporting schedule for PM2.5 chemical speciation data to 6 months after end of quarter (from 90 days).	§ 58.16(c) § 58.16(d)	54363-54364

Network Design Criteria (Appendix D)

Element	CFR Cite	FR Page #
Removed requirement for NCore sites to measure speciated PM10-2.5 (cleanup from 2013 PM NAAQS Final Rule) to align with previous changes to § 58.16(a).	§ 58 Appendix D Section 3(b)	54364
Removed requirement for urban NCore sites to measure Lead (Pb). Monitors eligible to be discontinued after collecting 3 years of data per approval by Regional Office and showing compliance with 58.14(c).	§ 58 Appendix D Section 4.5(b) and 4.5(c)	54364

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Removing PSD from Appendix A; placing back in Appendix B	NA	54365
Added requirement that the agency identified as the PQAO is responsible or oversight of local monitoring agencies within PQAO	§ 58 App A Sec 1.2.1	54365
Removal of $PM_{10-2.5}$ QA Requirements	NA	54365
Removing the QA Requirement for Pb Monitoring at non-source NCore sites	NA	54365

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Reporting of QMPs and QAPPS to AQS	§ 58 App A Sec 2.1.1 and 2.1.2	54366
Adding definition of independent assessment to the NPEP	§ 58 App A Sec 2.4.1	54366
Requiring that TSAs of monitoring organizations within a PQAO be completed within six years (TSAs are required of each PQAO every 3 years)	§ 58 App A Sec 2.5	54366
Completing the Ambient Air Protocol Gas Survey and participating in the program at the request of EPA every 5 years	§ 58 App A Sec 2.6.1	54366

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Lowering 1-point QC Check to 0.005 - 0.08 ppm for SO2, NO2, and O3, and 0.5 - 5 ppm for CO monitors (currently 1 and 10 ppm). In addition, language clarified to be clear that this QC check concentration "… *must be related* to the mean or median of the ambient concentrations normally measured…"	§ 58 App A Sec 3.1.1	54366
Removal of language to perform Annual PE in all four quarters when a PQAO has less than 4 sites operating for a gaseous criteria pollutant	NA	54366
Expanding Annual Performance Evaluation (PE) Audit from five to ten concentration ranges	§ 58 App A Sec 3.1.2.1	54367
Revise Annual PE language so that two of the audit levels selected represent a range of 10-80 percent of the typical ambient air concentrations and the third point at the NAAQS or above the highest 3-year routine concentration, whichever is greater.	§ 58 App A Sec 3.1.2.1	54367

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Removal of requirement for maintaining a minimum of 0.08 ppm excess NO during audits using gas phase titration.	§ 58 App A Sec 3.1.2.2	54367
Added information on NPAP program requirements for self implementation	§ 58 App A Sec 3.1.3	54367
Requiring flow rate verifications be reported to AQS	§ 58 App A Sec 3.2.1	54367
Clarification of PM2.5 collocation requirement to ensure that a collocated monitor for QA is associated with only the primary monitor at the site an therefore can only count as one collocation for the PQAO.	§ 58 App A Sec 3.2.3.3	54368

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Revision of PM2.5 collocation to provide a less restrictive requirement on site selection relative to higher concentration sites	§ 58 App A Sec 3.2.3.4 (b)	54368
Removing TSP concentration cut-off value since TSP is no longer a NAAQS	NA	54368
Providing two cut-off values for Pb evaluations due to new methods; 1) 0.02 ug/m^3 for methods approved before 3/04/2012 and the manual equivalent method EQLA-0813-803 and, 2) 0.002 ug/m^3 for methods approved after 3/04/2010 with the exception of manual equivalent method EQLA-0813-803.	§ 58 App A Sec 4(c)	54368
Removal of statistical methods for comparing the gaseous Annual PE against 1-point QC checks	NA	54368

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Removal of statistical methods for comparing the PM flow rate audit data against flow rate verification data	NA	54368

Quality Assurance Proposals § 58 App B

Element	CFR Cite	FR Page #
Providing the reviewing authority flexibility on the implementation of the NPEP program based on whether data needs to be used for comparison to the NAAQS.	§ 58 App B Sec 1.1 (b)	54369
Clarification of primary quality assurance organization (PQAO) in that the PQAO must be associated with only one reviewing authority.	§ 58 App B Sec 1.2	54369
Removal of $PM_{10-2.5}$ QA requirements	NA	54370
Removal of Pb QA requirements for non-source NCore sites	NA	54370

Quality Assurance Proposals § 58 App B

Element	CFR Cite	FR Page #
Revision to provide flexibility to combine QMP and QAPPs into one document	§ 58 App B Sec 2.1.3	54370
Revision to allow reviewing authority to determine the data quality objectives for PSD monitoring if the data is not used for NAAQS decisions.	§ 58 App B Sec 2.3.1	54370
Adding definition of independent assessment to the NPEP.	§ 58 App B Sec 2.4.1	54370
Requiring PSD PQAO to provide information on gas standards used for monitoring to the reviewing authority.	§ 58 App B Sec 2.6.1	54371

Quality Assurance Proposals
§ 58 App B

Element	CFR Cite	FR Page #
Lowering 1-point QC Check to 0.005 - 0.08 ppm for SO2, NO2, and O3, and 0.5 - 5 ppm for CO monitors (currently 1 and 10 ppm). In addition, language clarified to be clear that this QC check concentration "… *must be related* to the mean or median of the ambient concentrations normally measured…"	§ 58 App B Sec 3.1.1	54371
Expanding Annual PE audit levels from five to ten concentration ranges	§ 58 App B Sec 3.1.2	54371
Revising Annual PE language so that two of the audit levels selected represent a range of 10-80 percent of the typical ambient air concentrations and the third point at the NAAQS or above the highest 3-year routine concentration, whichever is greater	§ 58 App B Sec 3.1.2.1	54371
Removal of requirement for maintaining a minimum of 0.08 ppm excess NO during audits using gas phase titration.	§ 58 App B Sec 3.1.2.2	54371

Quality Assurance Proposals
§ 58 App B

Element	CFR Cite	FR Page #
Adding information on NPAP program requirements for self implementation	§ 58 App B Sec 3.1.3	54371
For consistency revising all flow rate verifications to be implemented monthly	§ 58 App B Sec 3.2.1	54372
Providing flexibility (with a waiver) to collocate an FEM with another FEM rather than initially collocating with an FRM	§ 58 App B Sec 3.2.3.1	54372
Allowing a waiver of minimum concentration in the PM2.5 PEP program of 3 ug/m^3 in the last quarter of monitoring	§ 58 App B Sec 3.2.4	54372

Quality Assurance Proposals § 58 App B

Element	CFR Cite	FR Page #
Providing two cut-off values for Pb evaluations due to new methods; 1) 0.02 ug/m^3 for methods approved before 3/04/2012 and the manual equivalent method EQLA-0813-803 and, 2) 0.002 ug/m^3 for methods approved after 3/04/2010 with the exception of manual equivalent method EQLA-0813-803.	§ 58 App B Sec 4	54372
Removing TSP concentration cut-off value since TSP is not a NAAQS	NA	54372
Removal of statistical methods for comparing the gaseous Annual PE against 1-point QC checks	NA	54372
Removal of statistical methods for comparing the PM flow rate audit data against flow rate verification data	NA	54373

Quality Assurance Proposals
§ 58 App B

Element	CFR Cite	FR Page #
Removal of QA reporting requirements since PSD organizations are not required to report/certify data to EPA	NA	54373

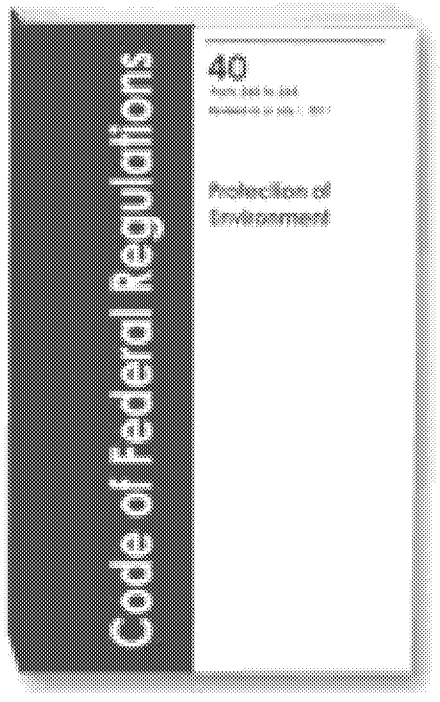
Overview of Proposal: Revisions to Ambient Monitoring QA and Other Requirements

ENVIRONMENTAL PROTECTION AGENCY
40 CFR Part 58
[EPA–HQ–OAR–2013–0619; FRL–9915–16–OAR]
RIN 2060–AR59
Revisions to Ambient Monitoring Quality Assurance and Other Requirements
AGENCY: Environmental Protection Agency (EPA).
ACTION: Proposed rule.

Lewis Weinstock & Mike Papp
Office of Air Quality Planning and Standards

Summary

- Proposes revisions to ambient air monitoring requirements for criteria pollutants to provide clarifications to existing requirements to reduce the compliance burden of monitoring agencies operating ambient networks.
  - Clarifies the annual monitoring network plan public notice requirements
  - Simplifies and reduces data reporting and certification requirements
  - Reduces network design criteria for nonsource lead monitoring
  - Reorganizes and clarifies quality assurance requirements for SLAMS and PSD
- Published September 11, 2014 at 79 FR 54356-54395
- Public comment period open for 60 days at Docket ID No. EPA-HQ-OAR-2013-0619 until November 10, 2014



Ambient Monitoring Quality Assurance and Other Requirements

This Proposed Rule document was issued by the **Environmental Protection Agency** (EPA)

For related information, Open Docket Folder

Comment Now!

Due Nov 10 2014, at 11:59 PM ET

Action

Proposed rule.

Summary

This action proposes revisions to ambient air monitoring requirements for criteria pollutants to provide clarifications to existing requirements to reduce the compliance burden of monitoring agencies operating ambient networks. This proposal focuses on reorganizing and clarifying quality assurance requirements, simplifying and reducing data reporting and certification requirements, clarifying the annual monitoring network plan public notice requirements, revising certain network design criteria for nonsource lead monitoring, and addressing other issues in part 58 Ambient Air Quality Surveillance Requirements.

Dates

Comments must be received on or before November 10, 2014.

Addresses

Submit your comments, identified by Docket ID No. EPA-HQ-OAR-2013-0619, by one of the following methods:

- Federal eRulemaking Portal: *http://www.regulations.gov.* Follow the online instructions for submitting comments.
- Email: *A-and-R-Docket@epa.gov.* Include docket ID No. EPA-HQ-OAR-2013-0619 in the subject line of the message.
- Fax: (202) 566-9744

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How To Use These Slides

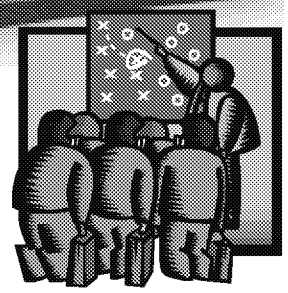
Element	CFR Cite	FR Page #
Refers to KEY issues in 40 CFR part 58 addressed in this proposal.	Citation location in proposal	Page reference in September 11, 2014 FR notice

NOTE: This presentation is not all inclusive – some minor changes are not included in the following slides. The preamble must be read to get a complete list of proposed changes.

Definitions

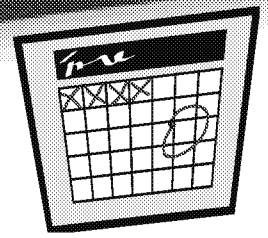
Element	CFR Cite	FR Page #
Various revisions, additions, and deletions to harmonize usage with AQS and ensure consistent interpretations with language elsewhere in Part 58.	§ 58.1	54357-54358

Annual Monitoring Network Plan (ANP)



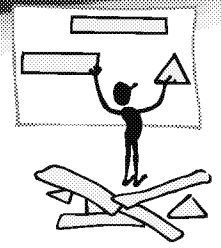
Element	CFR Cite	FR Page #
Revise public inspection requirement to include comments and explanation of how addressed	§ 58.10(a)(1)	54358-54359
Specifically call-out PAMS network description as required element of ANP* *(note: already mentioned in Appendix D, section 5)	§ 58.10(a)(9)	54359
Identify long-term SPM's with rationale for keeping as SPM's or converting to SLAMS as required element	§ 58.10(b)(14)	54359

Operating Schedules



Element	CFR Cite	FR Page #
Manual PM2.5 samplers at required SLAMS may have sampling frequency reduced from 1-in-3 day – based on waiver request (with or without collocated continuous analyzer)	§ 58.12(d)(1)(i) § 58.12(d)(1)(ii)	54360
NAAQS driven changes in sampling frequency must be maintained until design values no longer meet criteria for 3 years	§ 58.12(d)(1)(ii) § 58.12(d)(1)(iii)	54361
Changes in sampling frequency attributable to design values must be implemented no later than Jan 1 of calendar year following data certification	§ 58.12(d)(1)(iv)	54361-54362
STN sites in the Chemical Speciation Network may have sampling frequency reduced from 1-in-3 day – based on waiver request	§ 58.12(d)(3)	54360

System Modification



Element	CFR Cite	FR Page #
Network modification plan to be submitted as part of annual monitoring network plan (ANP). Due no later than 1 year following the due date of the 5-year network assessment. Clarifies that a separate ANP-like process is not needed for consideration of assessment results and provides additional year for consideration.	§ 58.14(a)	54362

Annual Air Monitoring Data Certification

Element	CFR Cite	FR Page #
Breadth of data certification requirements narrowed to FRM, FEM, and ARM monitors at SLAMS (or SPM) rather than applicable to all SLAMS.	§ 58.15(a)	54362-54363
Responsibility for reviewing data certification packages delegated to EPA Regional Offices from HQ.	§ 58.15(b) § 58.15(c)	54363

Data Submittal and Archiving Requirements

Element	CFR Cite	FR Page #
Removed data reporting requirement for average daily temperature and average daily pressure from manual PM2.5 samplers, as well as meteorological data reporting from nearby airports in support of Pb sampling.	§ 58.16(a)	54363
Changed data reporting schedule for PM2.5 chemical speciation data to 6 months after end of quarter (from 90 days).	§ 58.16(c) § 58.16(d)	54363-54364

Network Design Criteria (Appendix D)

Element	CFR Cite	FR Page #
Removed requirement for NCore sites to measure speciated PM10-2.5 (cleanup from 2013 PM NAAQS Final Rule) to align with previous changes to § 58.16(a).	§ 58 Appendix D Section 3(b)	54364
Removed requirement for urban NCore sites to measure Lead (Pb). Monitors eligible to be discontinued after collecting 3 years of data per approval by Regional Office and showing compliance with 58.14(c).	§ 58 Appendix D Section 4.5(b) and 4.5(c)	54364

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Removing PSD from Appendix A; placing back in Appendix B	NA	54365
Added requirement that the agency identified as the PQAO is responsible or oversight of local monitoring agencies within PQAO	§ 58 App A Sec 1.2.1	54365
Removal of $PM_{10-2.5}$ QA Requirements	NA	54365
Removing the QA Requirement for Pb Monitoring at non-source NCore sites	NA	54365

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Reporting of QMPs and QAPPS to AQS	§ 58 App A Sec 2.1.1 and 2.1.2	54366
Adding definition of independent assessment to the NPEP	§ 58 App A Sec 2.4.1	54366
Requiring that TSAs of monitoring organizations within a PQAO be completed within six years (TSAs are required of each PQAO every 3 years)	§ 58 App A Sec 2.5	54366
Completing the Ambient Air Protocol Gas Survey and participating in the program at the request of EPA every 5 years	§ 58 App A Sec 2.6.1	54366

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Lowering 1-point QC Check to 0.005 - 0.08 ppm for SO2, NO2, and O3, and 0.5 - 5 ppm for CO monitors (currently 1 and 10 ppm). In addition, language clarified to be clear that this QC check concentration "… *must be related* to the mean or median of the ambient concentrations normally measured…"	§ 58 App A Sec 3.1.1	54366
Removal of language to perform Annual PE in all four quarters when a PQAO has less than 4 sites operating for a gaseous criteria pollutant	NA	54366
Expanding Annual Performance Evaluation (PE) Audit from five to ten concentration ranges	§ 58 App A Sec 3.1.2.1	54367
Revise Annual PE language so that two of the audit levels selected represent a range of 10-80 percent of the typical ambient air concentrations and the third point at the NAAQS or above the highest 3-year routine concentration, whichever is greater.	§ 58 App A Sec 3.1.2.1	54367

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Removal of requirement for maintaining a minimum of 0.08 ppm excess NO during audits using gas phase titration.	§ 58 App A Sec 3.1.2.2	54367
Added information on NPAP program requirements for self implementation	§ 58 App A Sec 3.1.3	54367
Requiring flow rate verifications be reported to AQS	§ 58 App A Sec 3.2.1	54367
Clarification of PM2.5 collocation requirement to ensure that a collocated monitor for QA is associated with only the primary monitor at the site an therefore can only count as one collocation for the PQAO.	§ 58 App A Sec 3.2.3.3	54368

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Revision of PM2.5 collocation to provide a less restrictive requirement on site selection relative to higher concentration sites	§ 58 App A Sec 3.2.3.4 (b)	54368
Removing TSP concentration cut-off value since TSP is no longer a NAAQS	NA	54368
Providing two cut-off values for Pb evaluations due to new methods; 1) 0.02 ug/m^3 for methods approved before 3/04/2012 and the manual equivalent method EQLA-0813-803 and, 2) 0.002 ug/m^3 for methods approved after 3/04/2010 with the exception of manual equivalent method EQLA-0813-803.	§ 58 App A Sec 4(c)	54368
Removal of statistical methods for comparing the gaseous Annual PE against 1-point QC checks	NA	54368

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Removal of statistical methods for comparing the PM flow rate audit data against flow rate verification data	NA	54368

Quality Assurance Proposals § 58 App B

Element	CFR Cite	FR Page #
Providing the reviewing authority flexibility on the implementation of the NPEP program based on whether data needs to be used for comparison to the NAAQS.	§ 58 App B Sec 1.1 (b)	54369
Clarification of primary quality assurance organization (PQAO) in that the PQAO must be associated with only one reviewing authority.	§ 58 App B Sec 1.2	54369
Removal of $PM_{10-2.5}$ QA requirements	NA	54370
Removal of Pb QA requirements for non-source NCore sites	NA	54370

Quality Assurance Proposals § 58 App B

Element	CFR Cite	FR Page #
Revision to provide flexibility to combine QMP and QAPPs into one document	§ 58 App B Sec 2.1.3	54370
Revision to allow reviewing authority to determine the data quality objectives for PSD monitoring if the data is not used for NAAQS decisions.	§ 58 App B Sec 2.3.1	54370
Adding definition of independent assessment to the NPEP.	§ 58 App B Sec 2.4.1	54370
Requiring PSD PQAO to provide information on gas standards used for monitoring to the reviewing authority.	§ 58 App B Sec 2.6.1	54371

Quality Assurance Proposals
§ 58 App B

Element	CFR Cite	FR Page #
Lowering 1-point QC Check to 0.005 - 0.08 ppm for SO2, NO2, and O3, and 0.5 - 5 ppm for CO monitors (currently 1 and 10 ppm). In addition, language clarified to be clear that this QC check concentration "… *must be related* to the mean or median of the ambient concentrations normally measured…"	§ 58 App B Sec 3.1.1	54371
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Quality Assurance Proposals
§ 58 App B

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Quality Assurance Proposals § 58 App B

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Removing TSP concentration cut-off value since TSP is not a NAAQS	NA	54372
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Removal of statistical methods for comparing the PM flow rate audit data against flow rate verification data	NA	54373

Quality Assurance Proposals
§ 58 App B

Element	CFR Cite	FR Page #
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Overview of Proposal: Revisions to Ambient Monitoring QA and Other Requirements

ENVIRONMENTAL PROTECTION AGENCY
40 CFR Part 58
[EPA–HQ–OAR–2013–0619; FRL–9915–16–OAR]
RIN 2060–AR59
Revisions to Ambient Monitoring Quality Assurance and Other Requirements
AGENCY: Environmental Protection Agency (EPA).
ACTION: Proposed rule.

Lewis Weinstock & Mike Papp
Office of Air Quality Planning and Standards

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  - Clarifies the annual monitoring network plan public notice requirements
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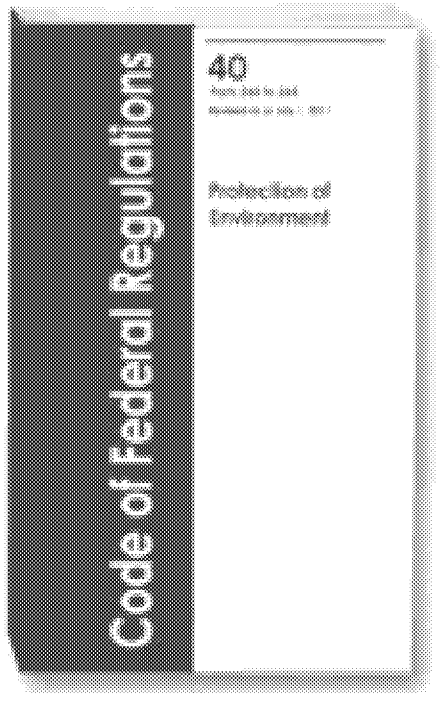

Ambient Monitoring Quality Assurance and Other Requirements

This Proposed Rule document was issued by the **Environmental Protection Agency** (EPA)

For related information, Open Docket Folder

Comment Now!

Due Nov 10 2014, at 11:59 PM ET

Action

Proposed rule.

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This action proposes revisions to ambient air monitoring requirements for criteria pollutants to provide clarifications to existing requirements to reduce the compliance burden of monitoring agencies operating ambient networks. This proposal focuses on reorganizing and clarifying quality assurance requirements, simplifying and reducing data reporting and certification requirements, clarifying the annual monitoring network plan public notice requirements, revising certain network design criteria for nonsource lead monitoring, and addressing other issues in part 58 Ambient Air Quality Surveillance Requirements.

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Addresses

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- Email: *A-and-R-Docket@epa.gov.* Include docket ID No. EPA-HQ-OAR-2013-0619 in the subject line of the message.
- Fax: (202) 566-9744

ID: EPA-HQ-OAR-2013-0619-0001

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How To Use These Slides

Element	CFR Cite	FR Page #
Refers to KEY issues in 40 CFR part 58 addressed in this proposal.	Citation location in proposal	Page reference in September 11, 2014 FR notice

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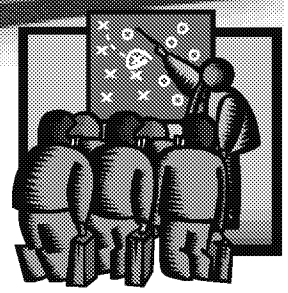

Element	CFR Cite	FR Page #
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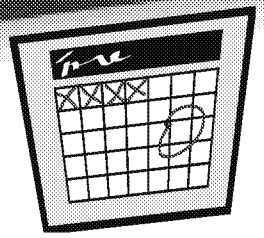
Specifically call-out PAMS network description as required element of ANP* *(note: already mentioned in Appendix D, section 5)	§ 58.10(a)(9)	54359
Identify long-term SPM's with rationale for keeping as SPM's or converting to SLAMS as required element	§ 58.10(b)(14)	54359

Operating Schedules



Element	CFR Cite	FR Page #
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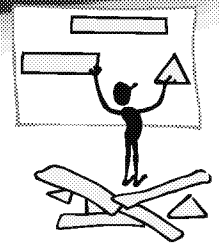
NAAQS driven changes in sampling frequency must be maintained until design values no longer meet criteria for 3 years	§ 58.12(d)(1)(ii) § 58.12(d)(1)(iii)	54361
Changes in sampling frequency attributable to design values must be implemented no later than Jan 1 of calendar year following data certification	§ 58.12(d)(1)(iv)	54361-54362
STN sites in the Chemical Speciation Network may have sampling frequency reduced from 1-in-3 day – based on waiver request	§ 58.12(d)(3)	54360

System Modification



Element	CFR Cite	FR Page #
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Annual Air Monitoring Data Certification

Element	CFR Cite	FR Page #
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Responsibility for reviewing data certification packages delegated to EPA Regional Offices from HQ.	§ 58.15(b) § 58.15(c)	54363

Data Submittal and Archiving Requirements

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Changed data reporting schedule for PM2.5 chemical speciation data to 6 months after end of quarter (from 90 days).	§ 58.16(c) § 58.16(d)	54363-54364

Network Design Criteria (Appendix D)

Element	CFR Cite	FR Page #
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Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Removing PSD from Appendix A; placing back in Appendix B	NA	54365
Added requirement that the agency identified as the PQAO is responsible or oversight of local monitoring agencies within PQAO	§ 58 App A Sec 1.2.1	54365
Removal of $PM_{10-2.5}$ QA Requirements	NA	54365
Removing the QA Requirement for Pb Monitoring at non-source NCore sites	NA	54365

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Reporting of QMPs and QAPPS to AQS	§ 58 App A Sec 2.1.1 and 2.1.2	54366
Adding definition of independent assessment to the NPEP	§ 58 App A Sec 2.4.1	54366
Requiring that TSAs of monitoring organizations within a PQAO be completed within six years (TSAs are required of each PQAO every 3 years)	§ 58 App A Sec 2.5	54366
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Quality Assurance Proposals § 58 App A

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Removal of language to perform Annual PE in all four quarters when a PQAO has less than 4 sites operating for a gaseous criteria pollutant	NA	54366
Expanding Annual Performance Evaluation (PE) Audit from five to ten concentration ranges	§ 58 App A Sec 3.1.2.1	54367
Revise Annual PE language so that two of the audit levels selected represent a range of 10-80 percent of the typical ambient air concentrations and the third point at the NAAQS or above the highest 3-year routine concentration, whichever is greater.	§ 58 App A Sec 3.1.2.1	54367

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Removal of requirement for maintaining a minimum of 0.08 ppm excess NO during audits using gas phase titration.	§ 58 App A Sec 3.1.2.2	54367
Added information on NPAP program requirements for self implementation	§ 58 App A Sec 3.1.3	54367
Requiring flow rate verifications be reported to AQS	§ 58 App A Sec 3.2.1	54367
Clarification of PM2.5 collocation requirement to ensure that a collocated monitor for QA is associated with only the primary monitor at the site an therefore can only count as one collocation for the PQAO.	§ 58 App A Sec 3.2.3.3	54368

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Revision of PM2.5 collocation to provide a less restrictive requirement on site selection relative to higher concentration sites	§ 58 App A Sec 3.2.3.4 (b)	54368
Removing TSP concentration cut-off value since TSP is no longer a NAAQS	NA	54368
Providing two cut-off values for Pb evaluations due to new methods; 1) 0.02 ug/m^3 for methods approved before 3/04/2012 and the manual equivalent method EQLA-0813-803 and, 2) 0.002 ug/m^3 for methods approved after 3/04/2010 with the exception of manual equivalent method EQLA-0813-803.	§ 58 App A Sec 4(c)	54368
Removal of statistical methods for comparing the gaseous Annual PE against 1-point QC checks	NA	54368

Quality Assurance Proposals § 58 App A

Element	CFR Cite	FR Page #
Removal of statistical methods for comparing the PM flow rate audit data against flow rate verification data	NA	54368

Quality Assurance Proposals § 58 App B

Element	CFR Cite	FR Page #
Providing the reviewing authority flexibility on the implementation of the NPEP program based on whether data needs to be used for comparison to the NAAQS.	§ 58 App B Sec 1.1 (b)	54369
Clarification of primary quality assurance organization (PQAO) in that the PQAO must be associated with only one reviewing authority.	§ 58 App B Sec 1.2	54369
Removal of $PM_{10-2.5}$ QA requirements	NA	54370
Removal of Pb QA requirements for non-source NCore sites	NA	54370

Quality Assurance Proposals § 58 App B

Element	CFR Cite	FR Page #
Revision to provide flexibility to combine QMP and QAPPs into one document	§ 58 App B Sec 2.1.3	54370
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Requiring PSD PQAO to provide information on gas standards used for monitoring to the reviewing authority.	§ 58 App B Sec 2.6.1	54371

Quality Assurance Proposals
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Lowering 1-point QC Check to 0.005 - 0.08 ppm for SO2, NO2, and O3, and 0.5 - 5 ppm for CO monitors (currently 1 and 10 ppm). In addition, language clarified to be clear that this QC check concentration "… *must be related* to the mean or median of the ambient concentrations normally measured…"	§ 58 App B Sec 3.1.1	54371
Expanding Annual PE audit levels from five to ten concentration ranges	§ 58 App B Sec 3.1.2	54371
Revising Annual PE language so that two of the audit levels selected represent a range of 10-80 percent of the typical ambient air concentrations and the third point at the NAAQS or above the highest 3-year routine concentration, whichever is greater	§ 58 App B Sec 3.1.2.1	54371
Removal of requirement for maintaining a minimum of 0.08 ppm excess NO during audits using gas phase titration.	§ 58 App B Sec 3.1.2.2	54371

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Adding information on NPAP program requirements for self implementation	§ 58 App B Sec 3.1.3	54371
For consistency revising all flow rate verifications to be implemented monthly	§ 58 App B Sec 3.2.1	54372
Providing flexibility (with a waiver) to collocate an FEM with another FEM rather than initially collocating with an FRM	§ 58 App B Sec 3.2.3.1	54372
Allowing a waiver of minimum concentration in the PM2.5 PEP program of 3 ug/m^3 in the last quarter of monitoring	§ 58 App B Sec 3.2.4	54372

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Providing two cut-off values for Pb evaluations due to new methods; 1) 0.02 ug/m^3 for methods approved before 3/04/2012 and the manual equivalent method EQLA-0813-803 and, 2) 0.002 ug/m^3 for methods approved after 3/04/2010 with the exception of manual equivalent method EQLA-0813-803.	§ 58 App B Sec 4	54372
Removing TSP concentration cut-off value since TSP is not a NAAQS	NA	54372
Removal of statistical methods for comparing the gaseous Annual PE against 1-point QC checks	NA	54372
Removal of statistical methods for comparing the PM flow rate audit data against flow rate verification data	NA	54373

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Removal of QA reporting requirements since PSD organizations are not required to report/certify data to EPA	NA	54373