

How AQS Relates to the Ambient Monitoring Program



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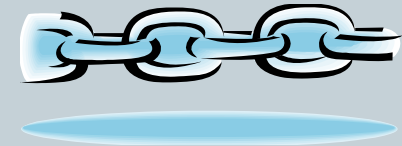
AQS CONFERENCE

AUGUST 22, 2012

Goal of Class

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- Show where and how AQS is linked to policy

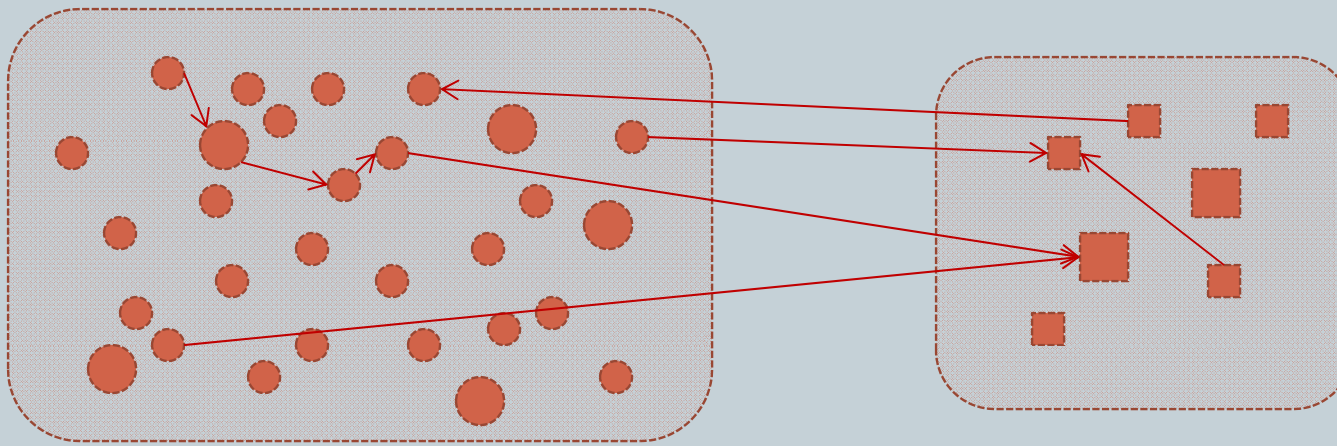


- Monitoring program

- Regulations / Guidance
 - Do things
 - Report things

- Resources

- Grants
- Regional Offices
- HQ Offices
- Systems: AQS



The “Aha” Moment

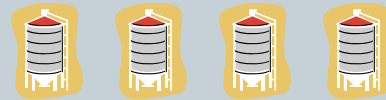
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- There is much to keep track of in the ambient air monitoring program (somewhat complex system)
- In reading various documents, apparent that there are at least three different approaches to understanding the issues

NARROW BUT DEEP



- Monitoring is parameter oriented: PM, SO₂...
- Experts are function oriented

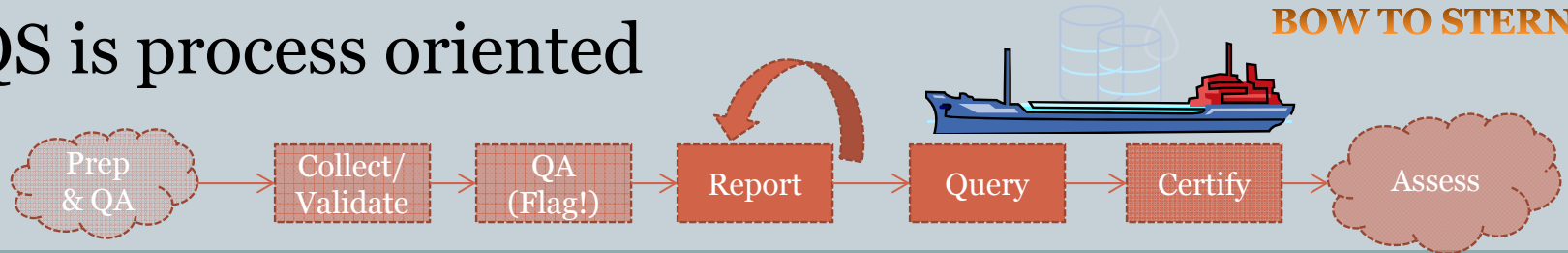


SILOS

- Monitoring, Data, IT, QA/Audit, Cert., Designations, etc.

- AQS is process oriented

BOW TO STERN



The Approach for this Class

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- Since this is an AQS training class, we'll take the AQS approach
- If you think another approach would be better, please speak up (later)
- Roughly chronological through the program from the POV of the data
- Intended audience
 - Those new to the ambient air monitoring program and/or AQS
- **Will take any policy questions under advisement**
- Note, whenever policy/regulation and these materials are in disagreement, these materials are wrong.

Outline

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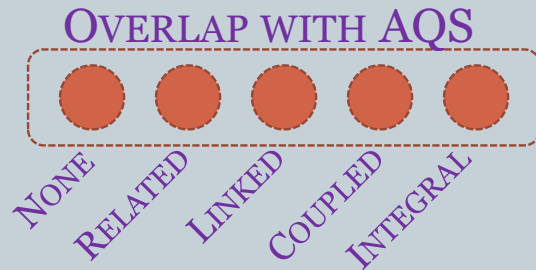
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 - Intended to be a dialogue (RO staff and experienced SLTs here)
 - First time this is being offered, so feedback appreciated
 - Policy questions will be deferred
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- Section 1
 - Roles at EPA
 - Grants
 - National Monitoring Strategy
 - Monitoring Plans
 - Sites, monitors, and metadata
 - Monitoring methods
 - Discussion
 - Section 2
 - QA, QAPPS, Audits, & Performance Assessment
 - Data submission
 - Certification
 - Assessment / NAAQS
 - Analysis and Dissemination
 - Additional data uses (SAND.)
 - Discussion

Each of these could be a multi-hour training class on it's own

Background Information

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- Graphic will appear on all relevant pages



- None – Nada, zip, zilch
- Related – AQS ‘knows’ about but nothing else
- Linked – AQS information corresponds to policy
- Coupled – The relationship is in lockstep
- Integral – AQS bases functioning on same idea



Roles at EPA and References

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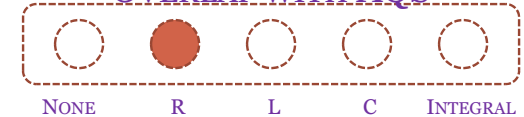
- **AQS is administered at: EPA / OAR / OAQPS / OID / NADG**
 - OAR = Office of Air and Radiation
 - OAQPS = Office of Air Quality Planning and Standards
 - OID = Outreach and Information Division
 - NADG = National Air Data Group

- **Main Roles associated with AQS**
 - Policymaking (Regulations, policies, certification, grants, etc.)
 - ✦ AAMG (another group in a different division) and the Regional Offices
 - Implementation Assistance
 - ✦ Regional Offices
 - Computer Programming (AQS)
 - ✦ NADG
 - Data Collection
 - ✦ NADG and OEI (ENSC)
 - Assessment (Trends, attainment, etc.) and Dissemination (AirData)
 - ✦ AQAG (another group in a different division) and NADG

- **Relevant Regulations**
 - 40 CFR (Code of Federal Regulations)
 - ✦ Part 49 – Indian Country (treatment as a state)
 - ✦ Part 50 – NAAQS
 - ✦ Part 53 – Methods
 - ✦ Part 58 – Surveillance (Monitoring)

Grants and Funding

OVERLAP WITH AQS

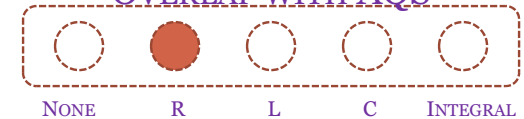


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- EPA knows you need money to run your program
 - Regional Grant Coordinators meet with SLT representatives to set priorities and address evolving situations
 - Factors in relevance, feasibility, transparency, and stability
 - Recognizes different needs and priorities of Tribes
 - Matching funds: EPA may provide up to 3/5 of cost
- CAA section 103
 - **Purpose:** Supports research to determine the environmental effects of air quality ... to explore and develop strategies and mechanisms for environmental management decisions
- CAA section 105
 - **Purpose:** Assists in planning, developing, establishing, improving, and maintaining adequate programs for prevention and control of air pollution or implementation of national primary and secondary air quality standards
- Ambient monitoring one component of work allowed under these grants – funding levels adjusted with program changes and new NAAQS
- AQS link
 - Sometimes AQS used to track progress (e.g. operating monitors)
 - If grant requirement says to submit data, then that must be done

Air Monitoring Strategy

OVERLAP WITH AQS



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- Document outlining federal view of SLT monitoring (2008)
 - Represented our plan at the time
 - We're well into implementation
 - Continues to evolve – e.g., all NAAQS have been updated since then
- Updated information now in National Program Manager guidance
- Topics
 - Network descriptions
 - NCore system
 - Maintaining and updating existing networks
 - ✦ Ozone, PM_{2.5}, Lead, PAMS, Speciation, Toxics, Near Roadway, RadNet
 - Tribal programs
 - Quality assurance
 - Monitoring technology
 - ✦ High sensitivity gas analyzers
 - Network Management and Common Elements
 - ✦ Regulatory Framework
 - ✦ Planning and Assessment
 - ✦ Data Access
 - ✦ Data Analysis
 - ✦ Funding
- Purpose: optimize networks to be responsive to current and future needs
 - Trends
 - Characterization
 - Multipollutant assessment
 - Improve timeliness
 - Improve science and models

Networks – Big Picture

OVERLAP WITH AQS



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- **SLAMS**

- State and Local Air Monitoring Stations operated to meet requirements
- Sites ‘primarily needed for NAAQS determinations’ [f58.1]
- Include NCORE and PAMS and any other SL operated that is not SPM (e.g., excludes SPMs)
- Supplement NCORE with ‘single-pollutant’ sites [f58 App D.2(d)]

- **NCORE**

- National Core Multipollutant Monitoring Stations, subset of SLAMS
- Required to have (speciated) PM_{2.5}, (speciated) PM_c, Ozone, SO₂, CO, NO, NO₂, NO_y, Pb (if CBSA pop > 500k), wind spd, wind dir, RH, and temperature [f58 App D.3(b)]
- At least one in each state [f58 App D.3(a)]
- California, Florida, Illinois, Michigan, New York, North Carolina, Ohio, Pennsylvania, and Texas must have more

- **PAMS**

- Photochemical Assessment Monitoring Stations, subset of SLAMS
- Looking at ozone formation [f58 App D.5.1]
- Ozone, NO_x, CO, Meteorology, and Speciated VOCs (hydrocarbons and carbonyls), slightly different by type (1-4) [f58 App D.5.1 – D.5.3]

- **STN**

- Speciation trends network

- **NATTS**

- National Air Toxics Trends Sites

- **IMRPOVE, CASTNET**

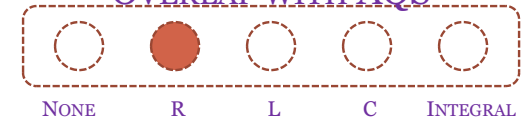
- **AQS Link**

- Monitor type holds this information
- A monitor can have multiple types
- ‘Monitor type’ is overloaded (defined as administrative classification), will be fixed in metadata redesign
 - × CASTNET, IMPROVE, INDEX SITE, INDUSTRIAL, NATTS, NCORE, NON-EPA FEDERAL, NON-REGULATORY, PAMS, PROPOSED NCORE, QA COLLOCATED, SCHOOL AIR TOXICS, SLAMS, SPECIAL PURPOSE, SUPLMNTL SPECIATION, TRENDS SPECIATION, TRIBAL MONITORS, UNOFFICIAL PAMS

‘Network’ definition: a collection of monitors that address a common objective

Networks - Objective

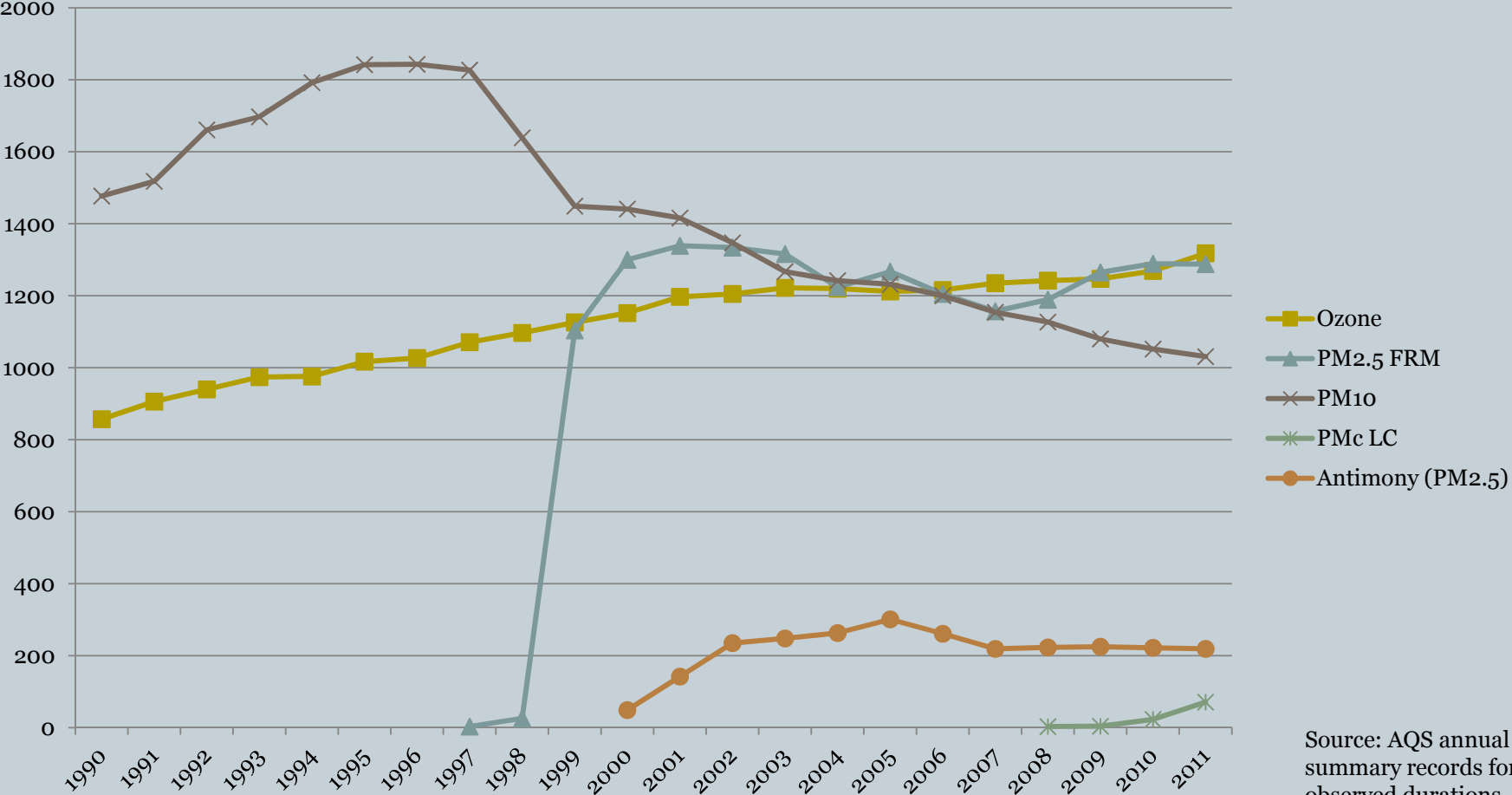
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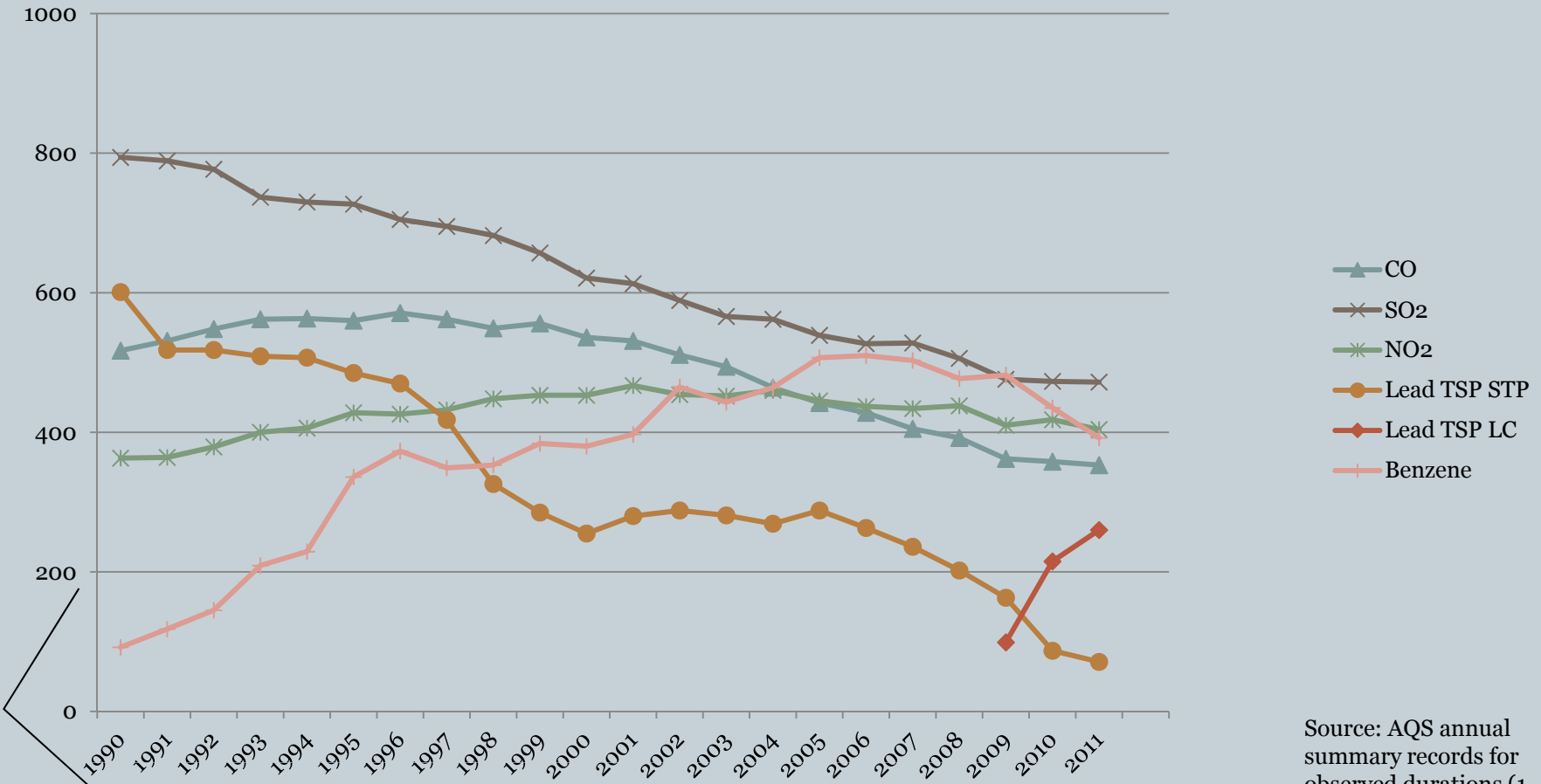
- **Purpose / objectives [58 App D.1.1]**
 - Provide air pollution data to the general public in a timely manner
 - Support compliance with ambient air quality standards and emissions strategy development
 - Support for air pollution research studies
- **Site Types [58 App D.1.1.1]**
 - Highest concentration
 - Typical concentration at high population density
 - Source oriented
 - Background concentrations
 - Regional transport / Secondary standards
 - Visibility, vegetation, and welfare impacts
- **Spatial scale represented [58 App D.1.2]**
- **Number of monitors**
 - Each SLAMS parameter has siting criteria
 - Leads to minimum number of required monitors
- **AQS Link**
 - To keep it simple, we call the 'type' the 'objective' in the system.
 - ✦ The above objective is for networks
 - ✦ The type is for each monitor
 - Scale represented also stored in AQS

Monitors Over Time: Ozone and Particulates



Source: AQS annual summary records for observed durations

Monitors Over Time: Other Criteria Gases, Lead, and Benzene

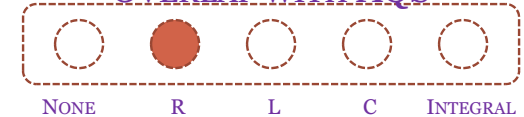


Note: scale is 1/2 of last slide

Source: AQS annual summary records for observed durations (1-hour only for SO2)

Monitoring Plans

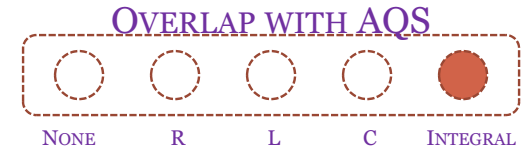
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- **Annual plan due July 01**
 - Provide ‘a statement of purposes for each monitor and evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of this part, where applicable.’ §58.10(a)(1)
 - SLT puts out for public inspection, submits to RA for approval
 - Siting requirements (App D) not reflected in AQS
 - ✦ Populations, scales, objectives, near roads (NO₂), emissions (SO₂, Pb), etc.
 - ✦ Good example of by-pollutant thinking
- **5 year network assessment also due on years ÷ by 5**
 - Must ‘determine, at a minimum, if the network meets the monitoring objectives defined in appendix D to this part, whether new sites are needed, whether existing sites are no longer needed and can be terminated, and whether new technologies are appropriate for incorporation into the ambient air monitoring network.’ §58.10(d)
- **Most plans available at:**
 - <http://www.epa.gov/ttn/amtic/plans.html>
- **AQS link**
 - Site number and other info (AKA “metadata”)
 - Basis for setting up information in AQS
 - Could eventually be entered/retrieved via AQS. No promises (threats?)

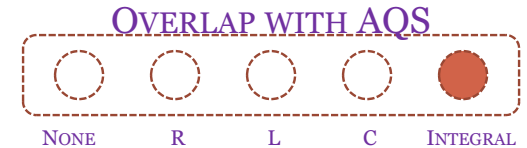
Sites and Metadata



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- In AQS a “site” is a distinct geographic location
- AQS site identifier is key reference for location (inside and outside of AQS)
 - FIPS State Code + FIPS County Code + Site Number within county
 - Format: XX – XXX – XXXX
 - AQS allows for Tribal ID option: Tribal Code + Site Number within tribal land
 - Format: TT – XXX – XXXX
- Site data consists of
 - Latitude and Longitude (and associated method / accuracy data)
 - Overlapping political entities (state, tribe, AQCR, CBSA, Census tracts, etc.)
 - Tangent roads
 - Local site name
 - Comments
- Ongoing “metadata” discussions were kicked off at monitoring conference and will continue here and beyond

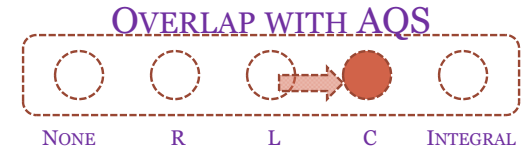
Monitors



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- In AQS a “monitor” is a parameter measured at a site
 - Not necessarily a physical device
 - Example: PM speciation – many species become individual AQS monitors resulting from the operation of one physical sampler (ditto multiple analysis toxics)
- AQS monitor identifier is an extension of the site ID
 - FIPS State Code + FIPS County Code + Site Number + Parameter Code + POC
 - Format: XX – XXX – XXXX – XXXXX – X
- POC = parameter occurrence code
 - Use to distinguish multiple (collocated) monitors
- Monitor data consists of
 - Operating schedules
 - Collocations
 - Administrative information (monitor type, responsible organizations)
 - A tiny bit of additional physical description (probe height, distance to roadway)
 - Note: Nothing about the sampler / method

Sampling Schedules



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- **Operating Schedules**

- Continuous: collect hourly except maint., cal., off-season [f58.12(a)]
- Ozone seasons [f58 App D.4.1(i)]
 - ✦ Defined state by state (except TX & LA: AQCR) (some year round)
 - ✦ Example, RI is April through September
- Pb manual methods: 1 day in 6 [f58.12(b)]
- PAMS VOC: area specific, App D.
- PM2.5 manual: at least 1 day in 3 [f58.12(d)(1)(i)]
 - ✦ Can request 1 day in 6 [f58.12(d)(1)(ii)]
 - ✦ May be upped to every day (DV determiner & w/in 5% of daily NAAQS) [f58.12(d)(1)(iii)]
 - ✦ No changes for STN samplers [f58.12(d)(2)]
- PM10 schedule depends on values w•r•t 24-hour NAAQS: daily, 1-in-3, 1-in-6 [f58.12(e)]
- PM10-2.5: mass at least 1 day in 3 [f58.12(f)]
- SO2: 5-min block average [f58.12(g)]

- **AQS link**

- Monitor Sample Schedule transaction / tab (MF transaction)
- Required collection frequency field
 - ✦ Required for PM10, PM2.5, and PAMS VOC monitors
- Begin and end dates for sampling frequency
- Used to determine (quarterly PM10 and PM2.5) completeness

Methodologies

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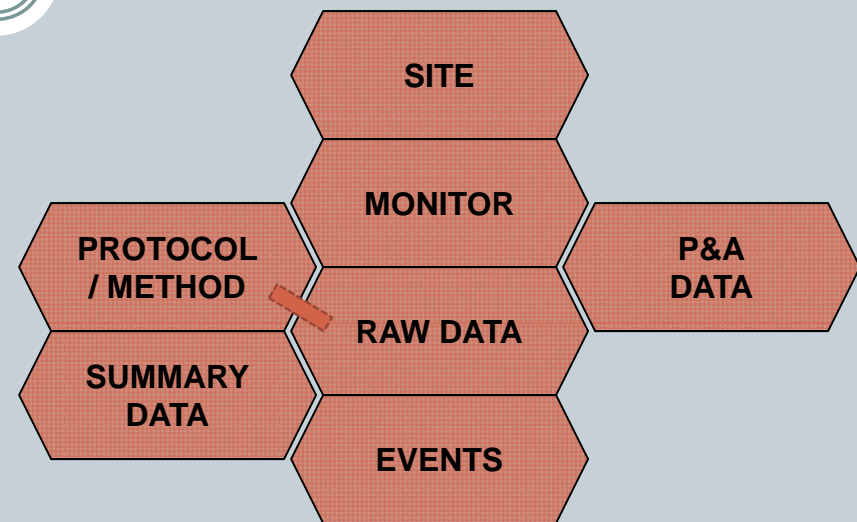


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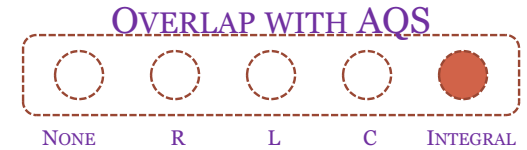
- Finally, we get to the measurer!
- Methods
 - FRM
 - FEM
 - ARM
 - Non-FRM (the rest)

- AQS link

- AQS 'hierarchy of data'
 - ✦ Site : monitor : protocol : sample : qualifier
 - ✦ A site can have many monitors, a monitor can have many protocols...
- Protocol = Duration + Unit + Method + Alt MDL (DUMA)
 - ✦ Aside: this means AQS cannot answer the question: What method does monitor X use?
 - It can only answer: What method did monitor X use to collect sample Y?
- Every method has a code (not necessarily the RM# - trace gas)
- Method = sample method + analysis method
- AQS must be set up to accept that method for that pollutant
 - ✦ We try to keep up to date with new allowable methods
 - ✦ Email helpdesk or AQSTeam if you need one connected
 - ✦ Lists available on the TTN



Monitors Redux



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- Recall, in AQS a “monitor” is a parameter measured at a site, not an instrument
- What is a parameter?
 - Something that can be compared to itself (“para•metric”)
 - There is not one parameter for PM_{2.5}
 - PM_{2.5} is a “method specific parameter”
- AQS has different codes for the different method groupings
 - Pb is another example; mercury, carbon, etc.
- More (probably) in the future

Break

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SEE YOU IN A FEW MINUTES

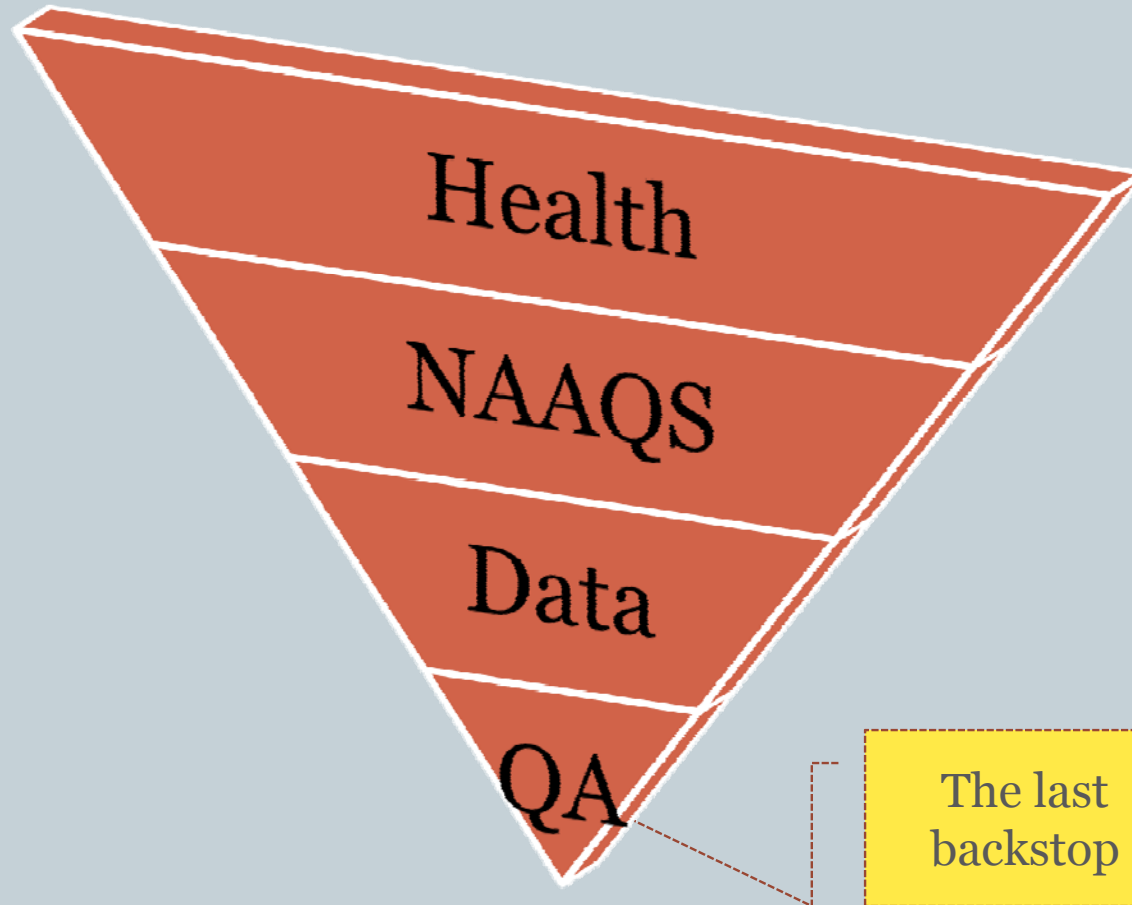
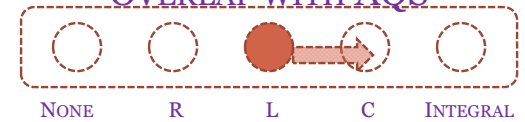
Check In – Are We on Plan?

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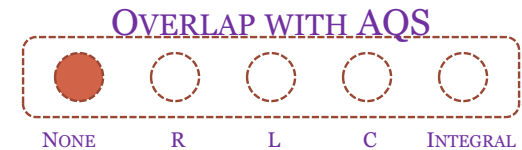
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A 'QA' Interlude

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QA, QAPPS, Audits, & All That

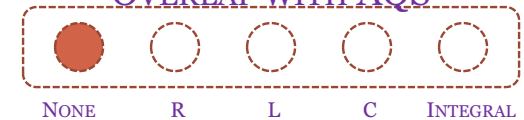


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- QA covered in
 - 40 CFR Part 58 Appendix A
 - Quality Assurance Handbook for Air Pollution Measurement Systems
- For simplification we will not discuss PSD monitors
- Responsibility: You (the agency)
- The QMP describes the quality system in terms of the organizational structure, functional responsibilities of management and staff, lines of authority, and required interfaces... [58 App A.2.1.1]
 - Management structure / responsibilities / resources
- The QAPP is a formal document describing, in sufficient detail, the quality system that must be implemented to ensure that the results of work performed will satisfy the stated objectives [58 App A.2.1.2]
 - Procedures

QA Overview

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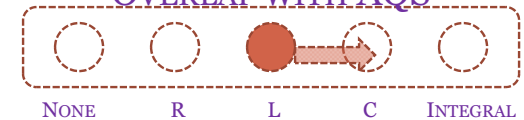


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- **DQOs/DQIs w•r•t Uncertainty: [58 App A.1.2]**
 - Precision – mutual agreement
 - Bias – systematic distortion
 - Accuracy – agreement between observation and reference (P + B)
 - Completeness – data obtained v. data expected (generally 75%)
 - Detectability – low value discernment (noise ~ signal)
- **Performance Requirements [58 App A.2.3]**
 - Confidence and bias of various measurements (params)
- **Two types of QA [58 App A.1.2]**
 - Measurement Quality Checks (monitors/data) [58 App A.3]
 - ✦ Table A-2 and the QAPP
 - Assessments and Reports (networks)
 - ✦ “...the QAPP shall provide for the implementation of a program of independent and adequate audits of all monitors providing data...” [58 App A.2.4]
 - ✦ “Technical systems audits of each ambient air monitoring organization shall be conducted at least every 3 years by the appropriate EPA Regional Office and reported to the AQS.” [58 App A.2.5]
- **Somewhat difficult to talk about vis-à-vis AQS**
 - QA subsystem being completely overhauled
 - Main sessions later in conference
 - Not as far along as planned at this time

QA - Measurement Checks

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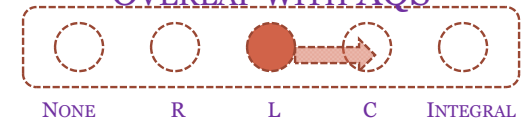


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- **Measurement Quality Checks [§58 App A.3.2]**
 - **One point QC Check**
 - × SO₂, NO₂, O₃, CO
 - × At least once every two weeks
 - × Challenge monitor with known concentration gas
 - @ routinely monitored levels w/in network
 - × Zero – Span Check; Non-regulatory (QA handbook / QAPP)
 - **Flow Rate Verification**
 - × PM (10, 2.5, 10-2.5), lead – measure the flow rate
 - × At least once per month on each automated analyzer
 - × High volume only required quarterly
 - **Semi-Annual Flow Rate Audit**
 - × PM (10, 2.5, 10-2.5), lead – measure the flow rate with two different standard methods
 - × Every 6 months (at least!) on each analyzer
 - × “Should” be done by other than routine operator
 - **Collocated Sampling**
 - × PM (10, 2.5, 10-2.5), lead
 - × One primary, one audit (all others, non-primary) -> precision pairs in AQS
 - × Each FRM/FEM in a PQAQO
 - 15% collocated (at least 1), distributed by observed values
 - × FRM primary must have same FRM audit
 - × FEM primary, 50% same FEM, 50% with FRM (FRM first)
 - × Priority given to sites near the standard
 - × Frequency goal: 25 valid sample pairs per year, (or more!)
- **AQS Link**
 - Data will be reported as part of new QA transaction set
 - Data due on same quarterly schedule as raw data
 - Monitor primary designation flags
 - PQAQO

QA - Assessments

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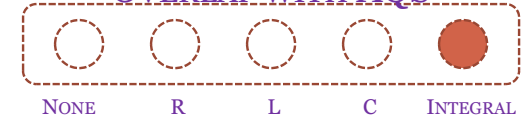
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- **Regulatory Evaluations**
 - Annual Performance Evaluation [58 App A3.2.2]
 - ✦ SO₂, NO₂, O₃, CO
 - ✦ Each quarter, evaluate at least 25% of monitors, so that each evaluated at least once per year
 - ✦ “Should” be done by other than routine operator
 - ✦ Challenge monitor with known concentration gas from at least three audit levels
 - Nominally bracket of 80% of ambient measurements (are moving to 10 ranges from 5)
 - 4th level encouraged if potential to exceed highest audit level
 - PM_{2.5} PEP [58 App A.3.2.7]
 - ✦ PM_{2.5}, PM_{10-2.5}, lead ([58 App A.3.4])
 - ✦ 5 or 8 sites audited per year, all every 6 years
 - ✦ At least once every two weeks
 - ✦ Challenge monitor with known concentration gas
 - @ routinely monitored levels
 - NPAP – way to meet independent audit requirement [58 App A.2.4 & QA Handbook Vol. II 15.2.1]
 - ✦ Through the probe audits
 - ✦ 20% of monitors per year, all monitors each 5-7 years
 - Lead (Pb) Strips [58 App A.3.4]
 - ✦ Quarterly audit of analytical procedure
- **AQS Link**
 - Still quarterly reporting for Annual Performance Evaluation
 - For NPAP and PEP, the data is entered into AQS by EPA QA staff



Data Submission – Raw Data

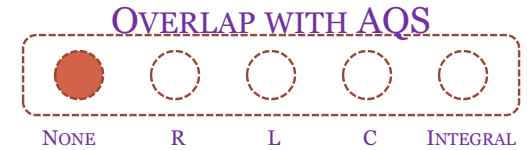
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- The...agency, shall report to...AQS all ambient air quality data and associated quality assurance data for [§58.16(a)]
 - ✦ SO₂; CO; O₃; NO₂; NO; NO_y; NO_x;
 - ✦ Pb-TSP mass concentration; Pb-PM₁₀ mass concentration;
 - ✦ PM₁₀ mass concentration; PM_{2.5} mass concentration;
 - ✦ for filter-based PM_{2.5} FRM/FEM the field blank mass, sampler-generated average daily temperature, and sampler-generated average daily pressure;
 - ✦ chemically speciated PM_{2.5} mass concentration data;
 - ✦ PM_{10-2.5} mass concentration; chemically speciated PM_{10-2.5} mass concentration data;
 - ✦ meteorological data from NCore and PAMS sites; average daily temperature and average daily pressure for Pb sites if not already reported from sampler generated records;
 - ✦ and metadata records and information specified by the AQS Data Coding Manual.
 - ✦ site specific meteorological (data) generated by onsite equipment or...from the nearest airport
- Due: 90 days after end of quarter in which data was collected [§58.16(b)]
- PAMS data (VOC and if collected, carbonyl, NH₃, and HNO₃) 6 months after end of quarter [§58.16(d)]
- Any other voluntary or grant specified data
- **AQS Link**
 - Raw data reporting
 - Lynchpin of AQS
 - Data Completeness Report used to determine if reported on time
 - Filters must be archived for one year – nothing to do with AQS [§58.16(f)]

Submission – Reduced Data

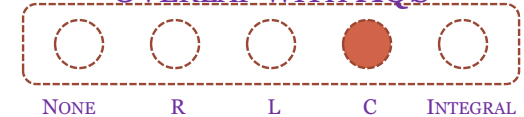


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- Calculated and other data
 - Filters must be archived for one year – nothing to do with AQS [§58.16(f)]
 - AQI (Air Quality Index)
 - ✦ Must report daily to the public [§58.50(a)]
 - ✦ Can use AirNOW (not part of AQS)
 - AQS used to allow for the reporting of annual summary data
 - ✦ Not any more
 - ✦ Composite data still allowed
- AQS Link
 - None

Certification

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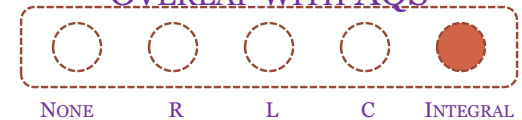


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- Data is complete and accurate [§58.15]
 - The State (or local) Agency...shall submit to the EPA Regional Administrator a...letter to certify data collected at all SLAMS and at all FRM, FEM, and ARM SPM stations that meet criteria in appendix A to this part from January 1 to December 31 of the previous year. The senior air pollution control officer (or) designee, shall certify that the previous year of ambient concentration and quality assurance data are completely submitted to AQS and that the ambient concentration data are accurate ...taking into consideration the quality assurance findings
 - Deadline May 01
 - Materials supplemental to letter
 - ✦ Annual summary report indicating data to be certified
 - ✦ Quality assurance (Precision and Accuracy, P&A) data
- AQS Link
 - Certification flag is added to annual summary record
 - ✦ You certify the data
 - Send in letter and AQS reports as supplemental materials
 - ✦ We flag it
 - ✦ If you change a value, flag is removed (data are de-certified)!
 - Process under review

NAAQS

OVERLAP WITH AQS

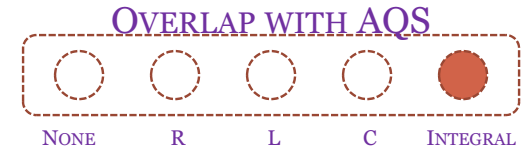


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Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		primary and secondary	Rolling 3 month average	0.15 µg/m ³ (1)	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb (2)	Annual Mean
Ozone [73 FR 16436, Mar 27, 2008]		primary and secondary	8-hour	0.075 ppm (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particulate Pollution [71 FR 61144, Oct 17, 2006]	PM _{2.5}	primary and secondary	Annual	15 µg/m ³	annual mean, averaged over 3 years
			24-hour	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24-hour	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973]		primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

as of October 2011

Data Submission – Qualifiers



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- Annotations on the data

- Informational

- Request Exclusion

- ✦ Exceptional Events

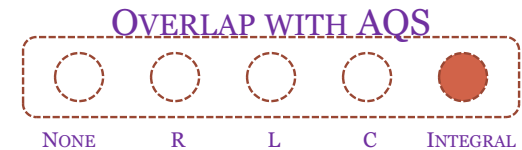
- A State may request EPA to exclude data showing exceedances or violations of the national ambient air quality standard that are directly due to an exceptional event from use in determinations... [§50.14(a)(1)]

- EPA shall exclude data from use in determinations of exceedances and NAAQS violations where a State demonstrates to EPA's satisfaction that an exceptional event caused a specific air pollution concentration in excess of one or more national ambient air quality standards at a particular air quality monitoring location and otherwise satisfies the requirements of this section [§50.14(b)(1)]

- AQS Link

- Any data value can be flagged with up to 10 qualifiers

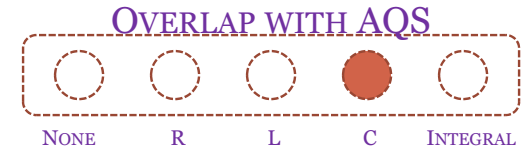
Qualifiers – Exclusion Process



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- Flag data in AQS as request exclusion
- Create event and enter (short) description in AQS
 - Associate flagged data with event in AQS
 - Deadline: July 01 year after data
- Submit Demonstration (w/public comments)
 - Deadline: Lesser of:
 - ✦ 3 years after calendar quarter of data
 - ✦ 1 year prior to required EPA regulatory decision
 - If concurred, EPA (RO) will add approved flag (denied flag if not)
 - ✦ Applies to a particular standard
- AQS Link
 - Any data value can be flagged with up to 10 qualifiers (on-line or transactions)
 - Events and associations must be created on-line (no transactions)
 - ✦ Via maintain events (many values affected) or raw data (few values affected)
 - AQS calculates summaries with
 - ✦ All data
 - ✦ Flagged as Requesting Exclusion
 - ✦ Flagged as Requesting Exclusion and Concurred (Excluded)

Design Values



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- AQS has a ‘design value’ report
 - Monitor or site level calculation in the averaging period and form of the standard
 - ✦ Different for each pollutant [§50.4-50.17 and Appendices]
 - Takes the “quick look” report one step further
 - Provided for your information
 - Can include and exclude based on event flags
 - ✦ Include all
 - ✦ Exclude all
 - ✦ Exclude regionally concurred
 - Missing data routines applied
 - Not binding (designations are a separate process)
- AQS Link
 - Used to only be available from trends site, now in AQS

AQS Calculations

OVERLAP WITH AQS

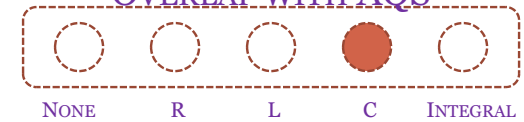


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- AQS aggregations
 - NAAQS
 - Daily / Site Daily (for PM_{2.5} and lead)
 - Monthly / 3 month rolling average (for some)
 - Quarterly
 - Annual
- AQI
- Looking into the future – visibility?
- Calculated when data is posted
 - For each Duration (observed + NAAQS), EDT, Pollutant Standard
 - ✦ So, if you have a day with an ozone value that has a concurred exclusion qualifier...
- AQS Reports
 - 30+ “Standard” reports from within application
 - Discoverer
 - Direct access for internal analysts

Data Dissemination

OVERLAP WITH AQS

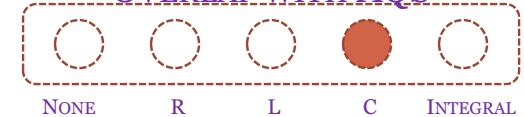


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- Data “public” as soon as posted in AQS
 - AQS Users
 - Internal EPA staff with database access
- Overnight, copied to AQS Data Mart
 - Websites
 - ✦ AirData, RSIG, Data Mart, etc.
 - EN Nodes
 - Requests
- Regular updates
 - Data.gov, EPA’s MyEnvironment, TTN web page, etc
- Users
 - Air pollution control agencies
 - Regulators
 - Analysts – trends, assessments, reports, etc.
 - Academics – epidemiological studies (Dr. Wellenius)
 - Consultants – repackage to other users
 - NGO’s
 - General public
 - ✦ Health concerns, app developers, etc.
- **CY 2011: 330,000+ queries, 7 Billion+ values**
 - Note – AirNOW entirely separate

Additional Data

OVERLAP WITH AQS



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- **IMPROVE data**
 - Voluntarily submitted by NPS
- **SANDWICH**
 - Sulfate, Adjusted Nitrate, Derived Water, Inferred Carbonaceous mass Hybrid material balance
 - Modeled at the sample level at speciation monitors
 - 24 parameters
 - Will be loaded into AQS
- **AirNOW Ozone (real time)**
 - Transferred daily to AQS Data Mart (not AQS)
 - PM cannot be done because of parameter code issues
- **CASTNET Ozone**
 - Voluntarily submitted by EPA / OAP
 - Part 58 compliant since 2011 (<http://www.epa.gov/castnet/javaweb/ozone.html>)
- **AQS Reports**
 - 30+ “Standard” reports from within application
 - Discoverer
 - Direct access for internal analysts

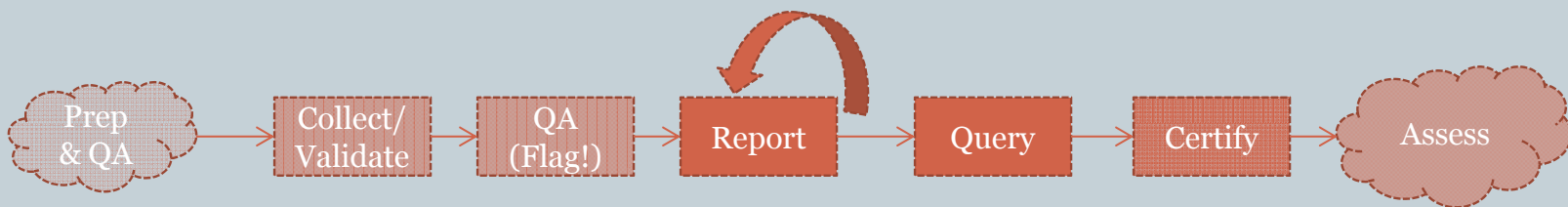
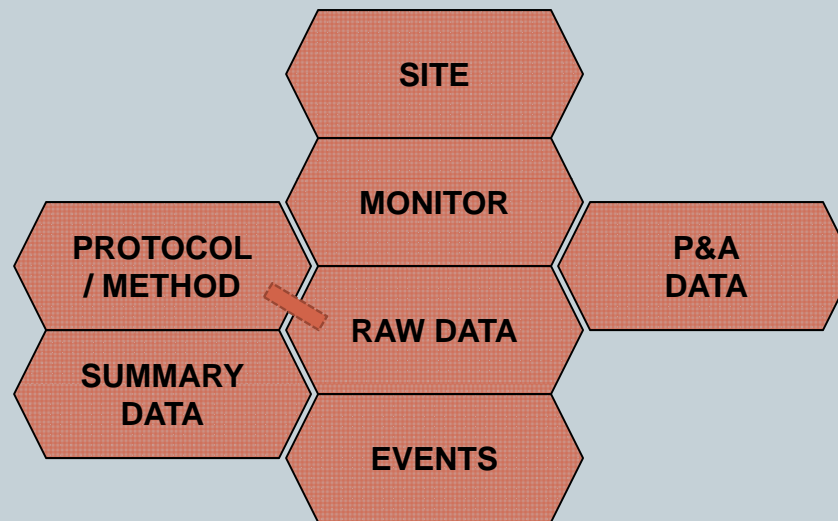
Reminder of Key Dates

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- Annual monitoring plan: July 01
- Data: End of quarter after it was collected
- QA data: Ditto
- Certification: May 01
- 5 Year Network Assessment: July 01, years ÷ by 5

Summary

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Wrap Up

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- **Feedback appreciated**
 - Worthwhile?
 - Any sections that should have more emphasis?
 - Any that should be de-emphasized?
 - Additions?
 - ✦ Data handling? (NAAQS appendices to Part 50)
 - ✦ More AQS Screens? (Or just general discussions about data okay?)
 - Higher level discussions?
 - Lower level discussions?

Additional / Leftover Slides

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IN CASE NEEDED FOR DISCUSSION

**THESE ARE NOT PART OF THE PLANNED
CLASS MATERIAL**

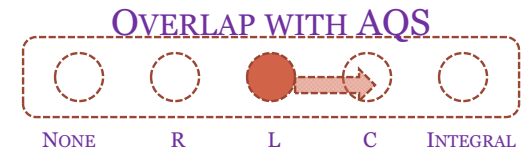
Summary of QA requirements

Table A-2 of Appendix A to Part 58--Minimum Data Assessment Requirements for SLAMS Sites

Method	Assessment method	Coverage	Minimum Frequency	Parameters reported	AQS Trans Type	Reqd Reporting to AQS
Automated Methods						
1-Point QC for SO ₂ , NO ₂ , O ₃ , CO	Response check at concentration 0.01-0.1 ppm SO ₂ , NO ₂ , O ₃ , and 1-10 ppm CO	Each analyzer	Once per 2 weeks _{xx}	Audit concentration ¹ and measured concentration ² .		Y
Annual performance evaluation for SO ₂ , NO ₂ , O ₃ , CO	See section 3.2.2 of this appendix	Each analyzer	Once per year	Audit concentration ¹ and measured concentration ² for each level.		Y
Flow rate verification PM _{2.5} , PM ₁₀ - 2.5	Check of sampler flow rate	Each sampler	Once every month	Audit flow rate and measured flow rate indicated by the sampler.		N
Flow rate verification PM ₁₀	Check of sampler flow rate	Each sampler	Once every month	Audit flow rate and measured flow rate indicated by the sampler.		Y
Semi-annual flow rate audit PM ₁₀ , PM _{2.5} , PM ₁₀ - 2.5.	Check of sampler flow rate using independent standard.	Each sampler	Once every 6 months	Audit flow rate and measured flow rate indicated by the sampler.		Y
Collocated sampling PM _{2.5} , PM ₁₀ - 2.5	Collocated samplers.	15%	Every 12 days	Primary sampler concentration and duplicate sampler concentration.		Y
Performance evaluation program PM _{2.5} , PM ₁₀ -2.	Collocated samplers.	1) 5 valid audits for primary QA orgs, with <= 5 sites. 2) 8 valid audits for primary QA orgs, with > 5 sites. 3) All samplers in 6 years	Over all 4 quarters	Primary sampler concentration and performance evaluation sampler concentration.		Y
Manual Methods						
Collocated sampling PM ₁₀ , TSP, PM ₁₀ - 2.5, PM _{2.5} , Pb-TSP, Pb-PM ₁₀ .	Collocated samplers.	15%	Every 12 days PSD--every 6 days.	Primary sampler concentration and duplicate sampler concentration. ³	RP (OS, RD)	Y
Flow rate verification PM ₁₀ (low Vol), PM ₁₀ -2.5, PM _{2.5} , Pb-PM ₁₀	Check of sampler flow rate.	Each sampler	Once every month	Audit flow rate and measured flow rate indicated by the sampler.		N
Flow rate verification PM ₁₀ (High-Vol), TSP, Pb-TSP	Check of sampler flow rate.	Each sampler	Once every quarter	Audit flow rate and measured flow rate indicated by the sampler.		N
Semi-annual flow rate audit PM ₁₀ , TSP, PM ₁₀ -2.5, PM _{2.5} , Pb-TSP, Pb-PM ₁₀ .	Check of sampler flow rate using independent standard.	Each sampler, all locations.	Once every 6 months.	Audit flow rate and measured flow rate indicated by the sampler		Y
Pb audit strips Pb-TSP, Pb-PM ₁₀	Check of analytical system with Pb audit strips.	Analytical.	Each quarter.	Actual concentration and audit concentration for parameters: 14129 - Pb (TSP) LC FRM/FEM 85129 - Pb (TSP) LC Non-FRM/FEM		Y
Performance Evaluation Program PM _{2.5} , PM ₁₀ -2.5 (PEP)	Collocated samplers.	1) 5 valid audits for primary QA orgs, with <= 5 sites. 2) 8 valid audits for primary QA orgs, with > 5 sites. 3) All samplers in 6 years	Over all 4 quarters	Primary sampler concentration and performance evaluation sampler concentration (EPA's PEP sampler). Use "Agency Performing FRM Audit" field on RP transaction.		S/L/T for primary value RTI for PEP value
Performance Evaluation Program Pb-TSP, Pb-PM ₁₀ (Pb PEP)	Collocated samplers.	1) 1 valid audit for primary QA orgs, with <= 5 sites. 2) 2 valid audits for primary QA orgs with > 5 sites.	Over all 4 quarters	Primary sampler concentration and performance evaluation sampler concentration (EPA's PEP sampler). Use "Agency Performing FRM Audit" field on RP transaction.		S/L/T for primary value RTI for PEP value
Performance Evaluation Program Pb-TSP, Pb-PM ₁₀ (Collocated Pb PEP)	Collocated samplers.	1) 4 collocated samples for primary QA orgs, with <= 5 sites. 2) 6 collocated samples for primary QA orgs with > 5 sites.	Over all 4 quarters	Use duplicate sampler id on RA transaction. Primary monitor reports indicated value, duplicate monitor reports actual value. Use Accuracy Type of "Collocated PEP".		?

New transactions coming

Summary of QA Evaluations



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- **NPAP**
 - National Performance Audit Program provides audit standards for the gaseous pollutants either as devices that the site operator connects to the back of the instrument or through the probe in which case the audits are conducted by presenting audit gases through the probe inlet of ambient air monitoring stations. Flow audit devices and lead strips are also provided through NPAP. NPAP audits are required at 20% of a primary quality assurance organizations sites each year with a goal of auditing all sites in 5-7 years.
- **PM2.5 PEP**
 - Performance Evaluation Program. The strategy is to collocate a portable FRM PM2.5 or PM10-2.5 air sampling audit instrument with an established primary sampler at a routine air monitoring site, operate both samplers in the same manner, and then compare the results. Each year five PEP audits are required for primary quality assurance organizations (PQAOs) with less than or equal to 5 monitoring sites or eight audits are required for PQAOs with greater than five sites. These audits are not required for PM10
- **NATTS PT**
 - A National Air Toxics Trend Sites (NATTS) proficiency test (PT) is a type of assessment in which a sample, the composition of which is unknown to the analyst, is provided to test whether the analyst/laboratory can produce analytical results within the specified acceptance criteria. PTs for volatile organic carbons (VOCs), carbonyls and metals are performed quarterly for the ~22 NATTS laboratories
- **SRP**
 - The Standard Reference Photometer (SRP) Program provides a mechanism to establish traceability among the ozone standards used by monitoring organizations with the National Institute of Standards and Technology (NIST). NIST -> EPA HQ -> EPA RO -> SLT
- **AQS Link**
 - For NPAP and PEP, the data is entered into AQS by EPA QA staff