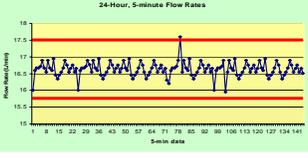


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Ambient Air Quality System Training
QA Strategy Workgroup

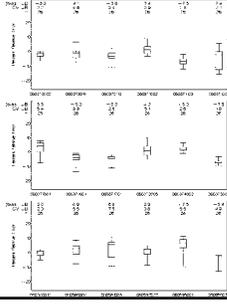




Introduction to Ambient Air Monitoring Quality Systems

2008 Conference on Managing Environmental Quality Systems





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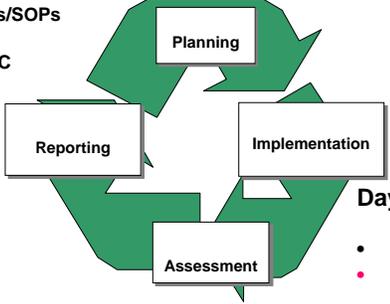
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Overview



Day 1 Monday

- Background on Quality Systems
- **Planning**
 - DQOs/DQIs/MQOs
 - QMPs/QAPPs/SOPs
- **Implementation**
 - MQOs and QC



Day 2 Tuesday

- Data Validation
- **Assessments**
 - NPEP- NPAP/PEP/PTs/SRP
 - MSRs and TSAs
 - Statistical data assessment
- **Reporting and closing the loop**

2

Training Goal

- Provide the big picture
- Don't expect details
- You are the first!
 - Provide feedback- in the context of a 1-day session
 - What worked, what did not, what would you skip, where would you want more information?



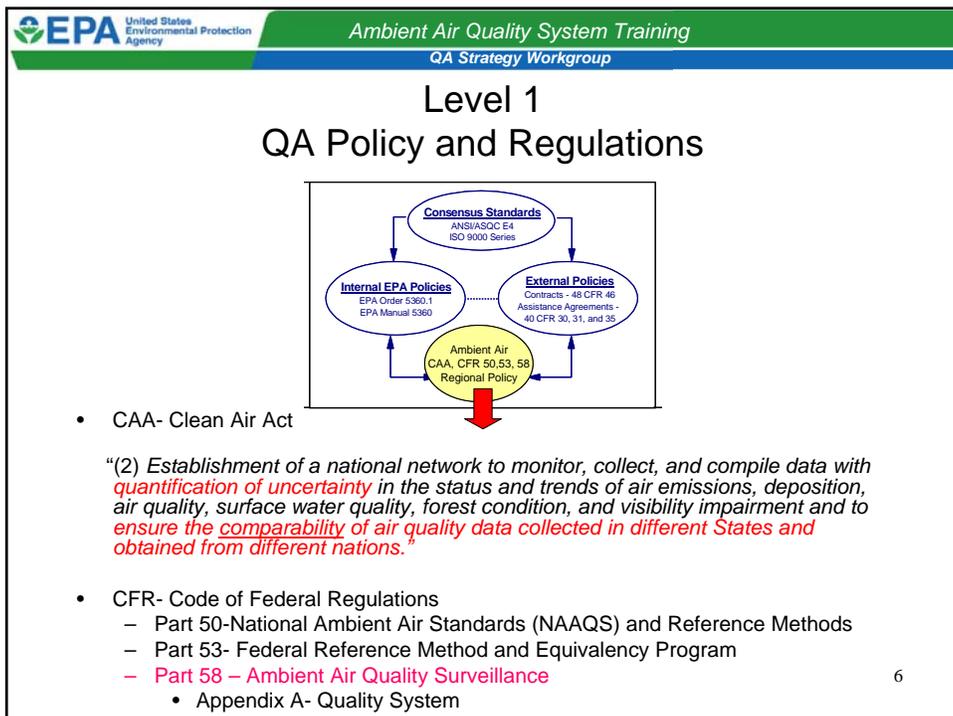
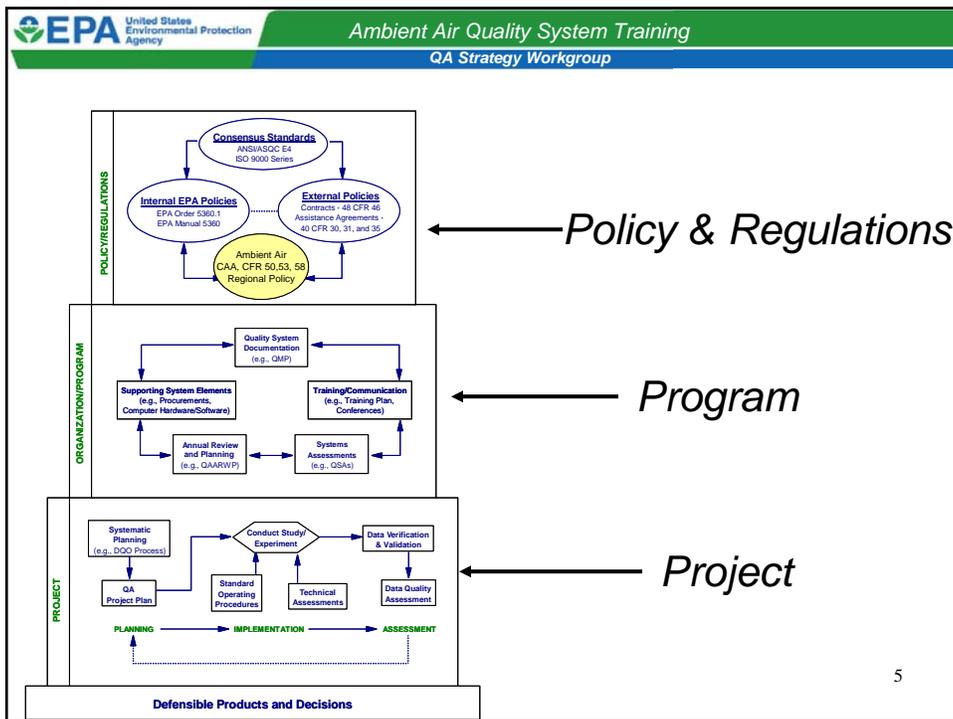
3

Quality System Training Module 1 Background

Mike Papp

EPA - Office of Air Quality Planning and Standards

2008 Conference on Managing Environmental Quality Systems



Major 40 CFR Pt. 58 App. A QA Requirements

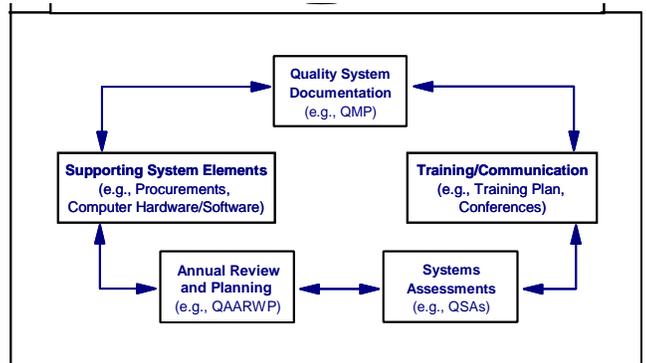
* EPA QA Policy

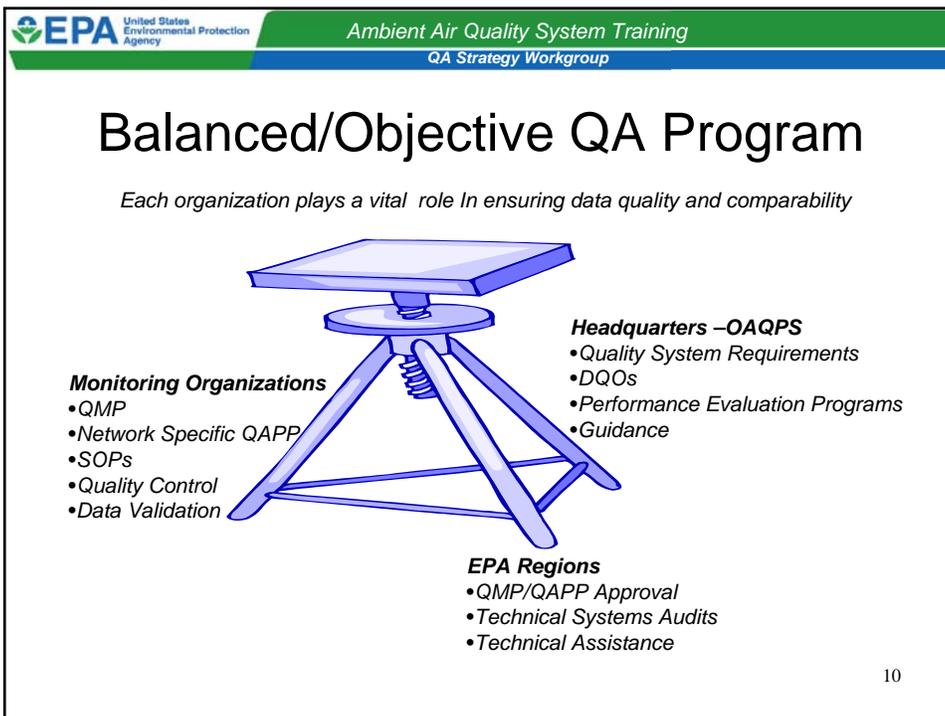
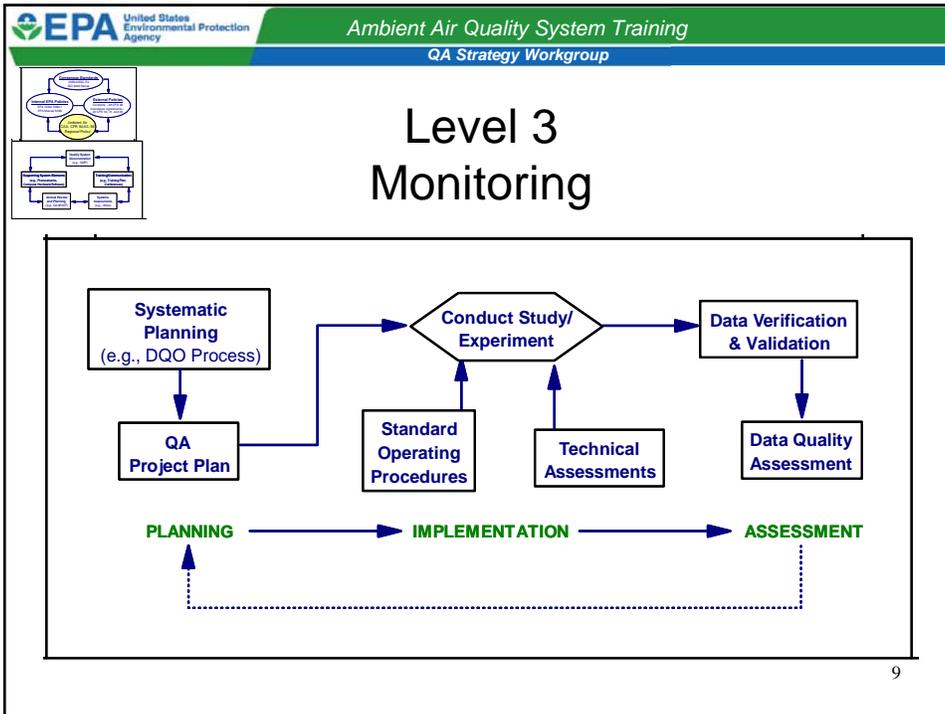
- **Section 1**
 - General Info
 - Applicability
 - Definitions
 - Differences SLAMs/PSD
- **Section 2**
 - QMPs/QAPPs*
 - Independent quality management function*
 - DQOs- (EPA)
 - PM_{2.5}, O₃, PM_{10-2.5}
 - NPAP/PEP
 - TSAs-(EPA Regions)
 - NIST Traceable Standards
- **Section 3**
 - PQAQO definition
 - Quality Control and Assessment
 - 1-point QC } Gaseous pollutants
 - Annual PE } PM/Pb
 - Flow Rate Verification } PM/Pb
 - Flow Rate Audit } PM/Pb
 - Collocated Sampling } PM/Pb
 - PEP } PM/Pb
- **Section 4**
 - QA Stats
- **Section 5-**
 - Reporting Req.
 - List- Site ID/PQAQO by pollutant
 - Quarterly submission of QA per 58.16 reporting requirements
 - Calculation of QA (EPA) once annual submission occurs

There is so much more to
QA beyond Appendix A



Level 2 Program



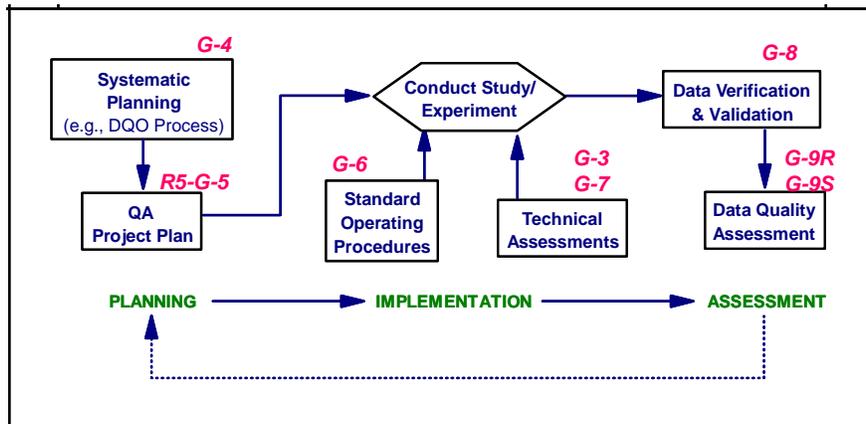


Regulations vs Guidance

- Regulations
 - Must be followed
 - Usually minimum requirements.. more is better
- Guidance
 - More details on regulations
 - Provides additional suggestions or strongly suggests
 - Are not mandatory, but you need an acceptable alternative
- EPA Regs
 - QA Policy
 - CFR Contract and Grants
 - R2- QMP
 - R5 – QAPPs
 - 40 CFR Part 58 App A
- Guidance
 - G2- QMP
 - G5-QAPP
 - QA Handbook Vol II
 - QA Handbook Volume IV
 - TADs, White Papers, etc

EPA Guidance for planning, implementation, and assessment activities.

http://www.epa.gov/quality1/qa_docs.html



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EPA Quality Assurance Handbook for Air Pollution

EPA Quality Assurance Handbook for Measurement Systems

Technical Assistance Document (TAD) for Precursor Gas Measurements in the NCN Multi-pollutant Monitoring Network
Version 4

Guideline on the Meaning and the Use Of Precision and Bias Data Required by 40 CFR Part 58 Appendix A
Version 1.1

EPA Quality Assurance Guidance Document 2.12
Monitoring $PM_{2.5}$ in Ambient Air Using Designated Reference or Class I Equivalent Methods

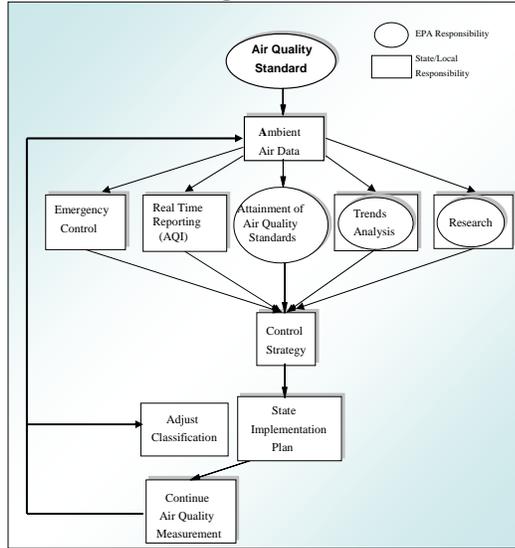
Section	Title	Pages	No. of Pages
1.0	Scope and Applicability	1	1
1.1	Background	2	2
1.2	Terminology	3	3
1.3	Development of Equipment and Supplies	4	4
1.4	Installation	5	5
1.5	Calibration Procedures	11	11
1.6	Filter Measurement and Analysis	12	12
1.7	Field Operations	13	13
1.8	Sample Management and Analysis	14	14
1.9	Method Performance Evaluation	15	15
1.10	Collection, Validation, and Reporting of $PM_{2.5}$ Monitoring Data	16	16
1.11	Data and Records Management	17	17
1.12	Accuracy of Measurements Summary for Reference Sites	18	18
1.13	Summary Data	19	19
1.14	References	20	20
1.15	Index	21	21
Appendix			
A	Meaning of Precision and Bias	22	22

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Monitoring Networks
(See Fact Sheets)

Monitoring Objectives



15

SLAMS Monitoring Network

Network Size- ~3600 monitors

Pollutants Measured- Criteria- CO, SO₂, NO₂, O₃, PM_{2.5}, PM₁₀, Pb

Objectives - primarily needed for NAAQS comparisons, but serve other data purposes

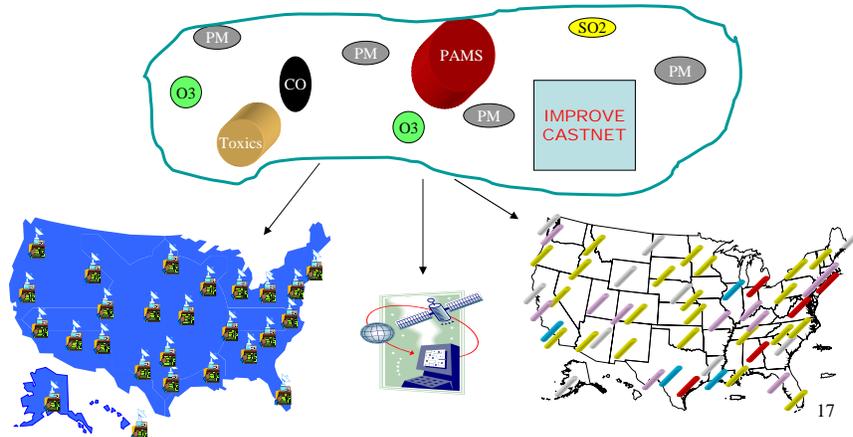


- **Must be FRM/FEM/ARM**
- **Must Follow 40 CFR Part 58 App A including:**
 - **Special Purpose Monitors (SPMs)- if FRM/FEM and meet siting criteria**
 - **NCore- If FRM/FEM/ARM**

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National Core Network: NCore

Goal: Move from loosely tied single-pollutant networks to coordinated, highly leveraged multi-pollutant networks with real time reporting capability



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NCore

Network Size- 75 sites urban (about 55 sites) and rural (about 20 sites)

Pollutants Measured- SO₂, CO, NO and NO_y, and O₃, PM_{2.5}, PM_{10-2.5}, basic meteorological parameters

Objectives

maximize the multi-pollutant information for:

- future health studies,
- NAAQS revisions,
- validation of air quality models,
- assessment of emission reduction programs,
- and studies of ecosystem impacts of air pollution.



PM Chemical Speciation Network



Network Size – 195 active sites

Pollutants measured- ions, metals, carbon species, and organic compounds

Objectives:

- Reveals annual or seasonal PM component variations that can serve as emission source indicators.
- Identification and quantification of compounds that make up the PM_{2.5} aerosols.
- Integrates/cooperates with the Interagency Monitoring of Protected Visual Environments (IMPROVE) network.

Filter Media	Target Analytes
Teflon (PTFE)	Gravimetric mass, 48 elements (sodium through lead)
Nylon	Sulfate, nitrate, ammonium, sodium, potassium
Quartz	Organic, elemental, and carbonate carbon



Photochemical Air Monitoring Stations (PAMS)

Network Size- ~ 100 Sites (official and unofficial sites)

Pollutants Measured- ozone, oxides of nitrogen (NO_x), and volatile organic compounds (VOC)

Objectives

- Aid in tracking VOC and NO_x emissions
- Provide an improved database for evaluating photochemical model performance for:
 - future control strategy
 - mid-course corrections as part of the continuing air quality management process
 - inventory reductions



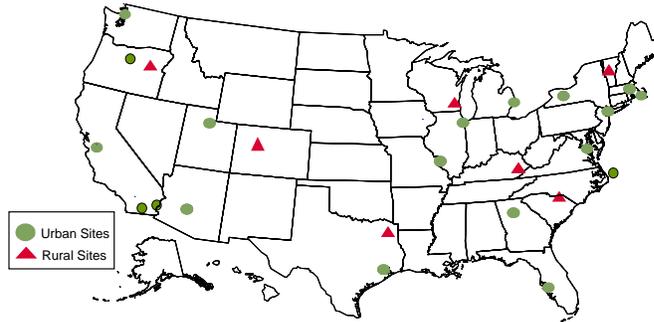
National Air Toxics Network (NATTS)

Network Size- 20 sites urban and 7 rural

Pollutants Measured: 33 HAPS which include: metals, VOCs and Carbonyls

Primary Objective:

To be able to detect a 15% difference (trend) between two successive 3-year annual mean concentrations within acceptable levels of decision error.



Other Objectives

- evaluating public exposure & environmental impacts in the vicinity of monitors;
- risk characterization;
- assessing the effectiveness of emission reduction activities; and
- improving air toxics emission inventories and models.