



Quality Assurance for Air Sensors

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Primary Quality Assurance Organization
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Presentation Overview

- EPA's 2023 Air Sensor Quality Assurance (QA) Workshop
- Main Take-Aways
- Remaining QA Needs
- Support Resources



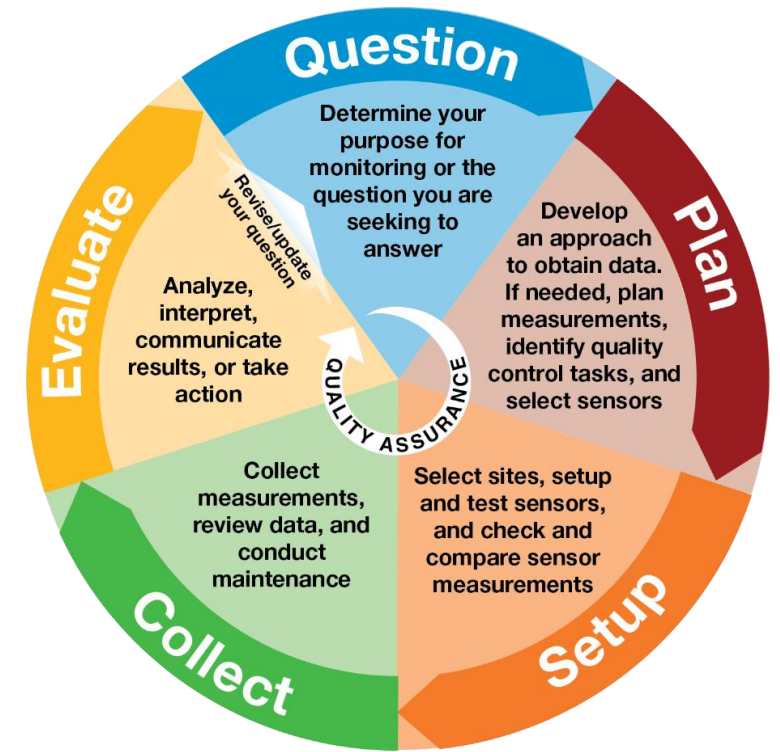
2023 Air Sensors Quality Assurance (QA) Workshop

- **Goal:** Help the air sensor community better **understand established and emerging QA methods** for collecting fit-for-purpose air sensor data
- **Approach**
 - 3-day hybrid workshop welcoming 1000 attendees (250 in-person/750 virtual)
 - Focused on particulate matter (PM), volatile organic compounds (VOC), and gas sensors (e.g., O₃, NO₂, CO)
 - Subject matter experts discussed common applications and QA steps

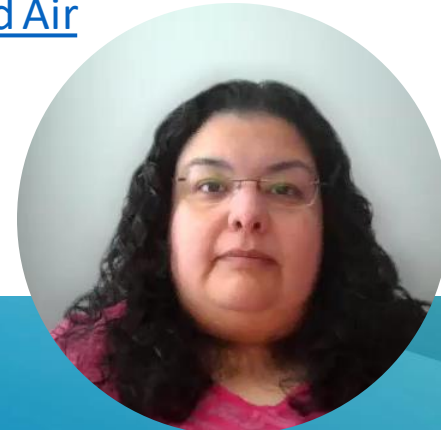


Take-Away: QA Considerations for Planning

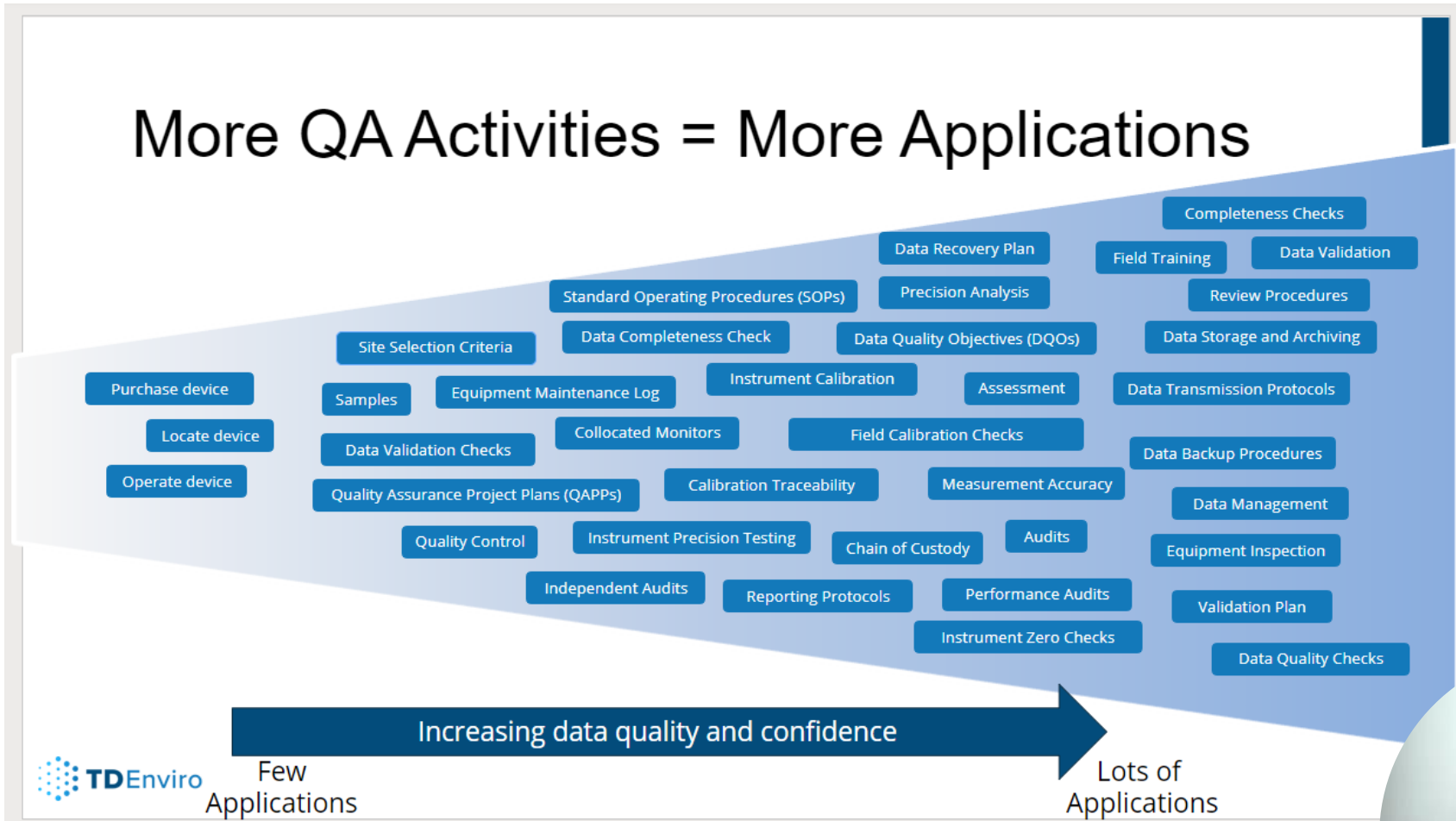
- **QA should be a part of every project phase**
 - **Question:** start with objectives; don't buy equipment before knowing data quality needs
 - **Plan:** develop Quality Assurance Project Plans (QAPPs); determine the right tool for the job; budget 25% for hardware and 75% for people, data processing, and communications
 - **Setup:** include hands-on training; collocate
 - **Collect:** develop corrections; document data processing; consider data storage and access
 - **Evaluate:** spend time meeting, listening, and discussing; build capacity; engage the stakeholders throughout the project



Source: [EPA's Enhanced Air Sensor Guidebook](#)



Take-Away: More QA = More Useful Data

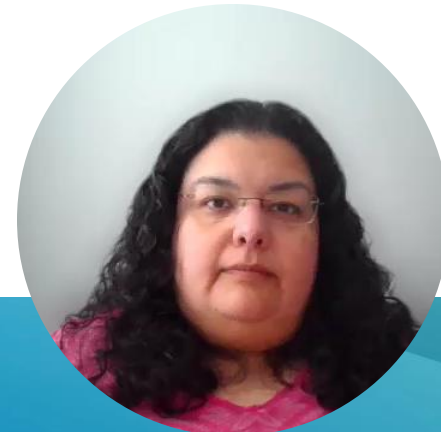


Source: Tim Dye's presentation during the intro session



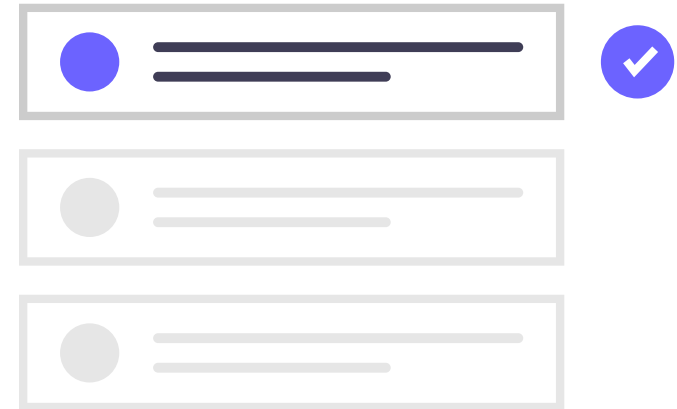
Take-Away: Common QA Steps

- Write QAPP
- Check sensor operation
- Harmonize sensor response
- Collocate sensors
- Build corrections
- Carefully site sensors
- Train staff
- Manage data
- Check data completeness
- Perform maintenance
- Revisit corrections
- Check for drift and aging
- Document everything
- Conduct independent audits



Take-Away: Remaining QA Needs

- Field performance testing
- Data and metadata standardization
- Transparency and documentation of data processing methods
- Streamlined, automated QA/QC and established protocols
- QA designed into sensor technology lowering the burden for sensor users



Resources

[Air Sensor Toolbox](#)

Provides the latest science on the performance, operation, and use of air sensors; select resources are now available [in Spanish](#)



[Air Sensor Quality Assurance](#)

Discusses key components and links to resources for the development of quality assurance project plans; lists common quality control checks; links to recorded presentations from EPA's QA workshop



[Enhanced Air Sensor Guidebook](#)

Comprehensive resource providing guidance on the effective use of air sensors for conducting air quality monitoring



Thank You

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