

Complementary and Emerging Techniques for Fenceline Monitoring

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Sonoma Technology

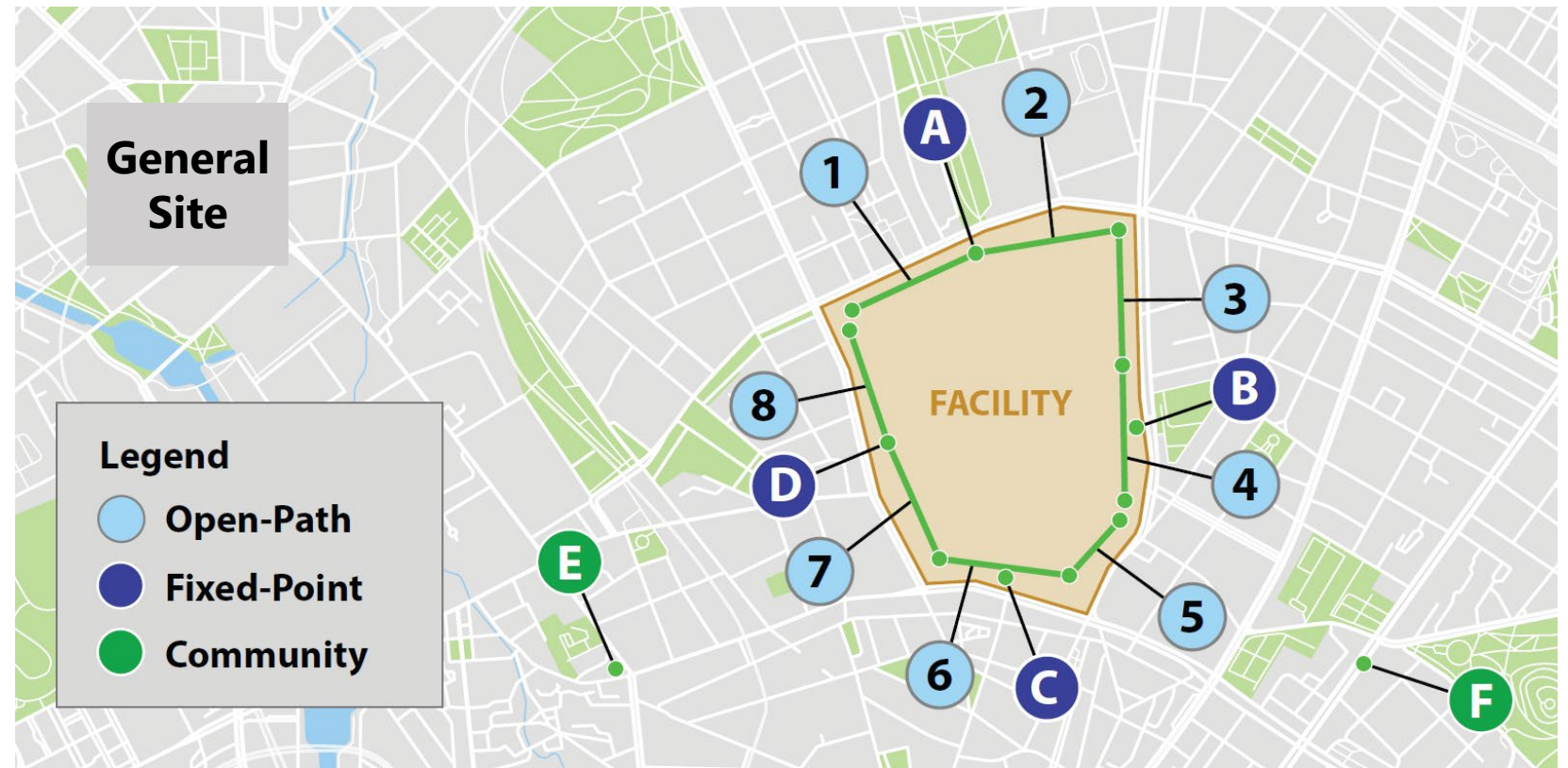
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Fenceline Monitoring Definition

- Ambient monitoring for airborne compounds crossing a facility perimeter
- Detecting at what time and in what quantities they exist
- Often uses complementary measurement techniques



Motivation for Fenceline Monitoring

- Growing awareness of air quality and health impacts
- Increasing desire for transparency
- Accountability and oversight
- Focus on environmental justice (EJ) communities

Community Concerns

Advances in Technology

Regulatory Requirements

Industry Participation

- Better detection of trace species
- Increasingly robust with decreasing costs
- Mutually beneficial for industry and neighboring communities
- Builds trust; leads to more positive interactions

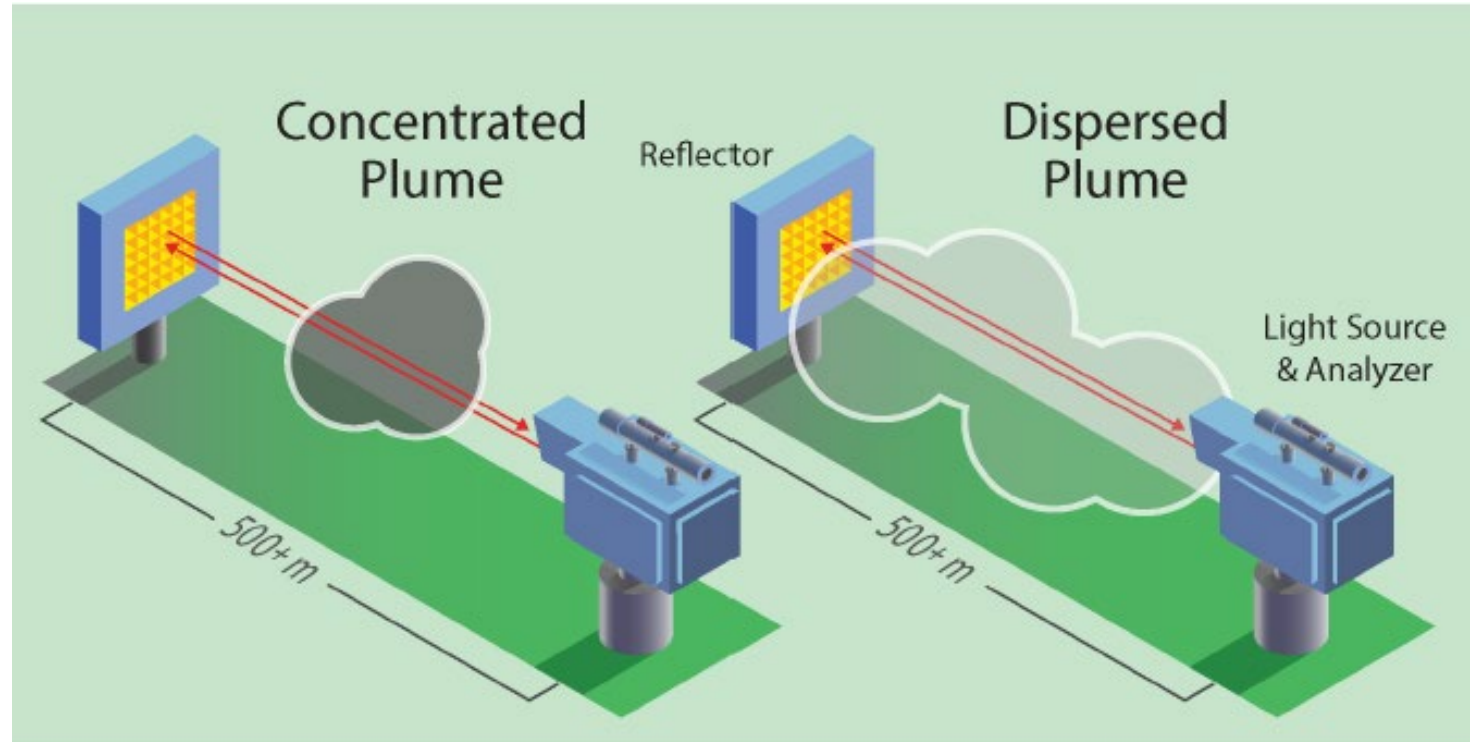
Measurement Techniques

Technique	Gases/Toxics	Particles	Metals
Open-Path Absorption Analyzers	X		
Point Monitors	X	X	X
Low-Cost Sensors	X	X	

- Wide variety of techniques necessary to meet diverse needs
- Goal is to leverage complementary techniques to create a comprehensive understanding of emissions around a given facility

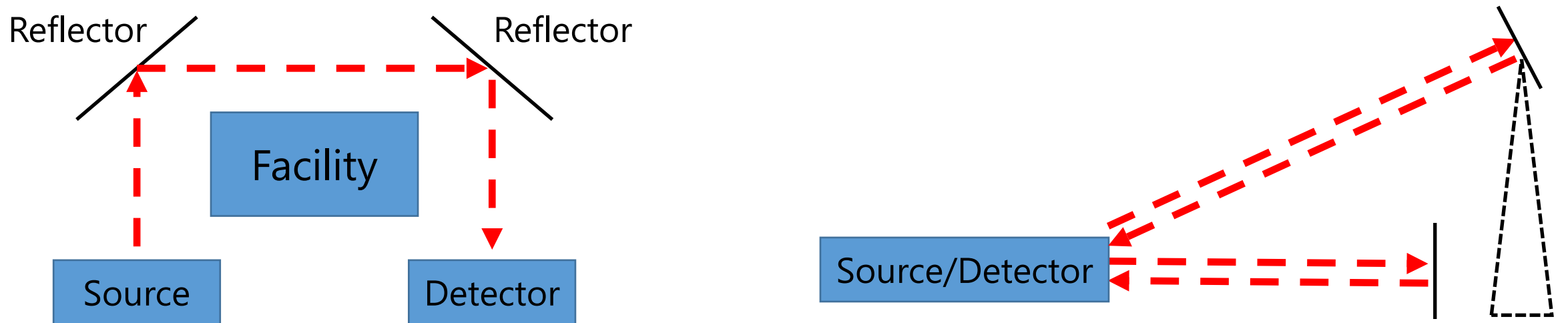
Open-Path Absorption Analyzers

- Light from source is absorbed by compounds along path
- Path is open to the environment
- Any absorbing compound within path is detected
- Path length determines detection limits



Open-Path “Next Frontiers”

- Achieve lower method detection limits
- Measure broader scope of compounds
- Novel design implementations



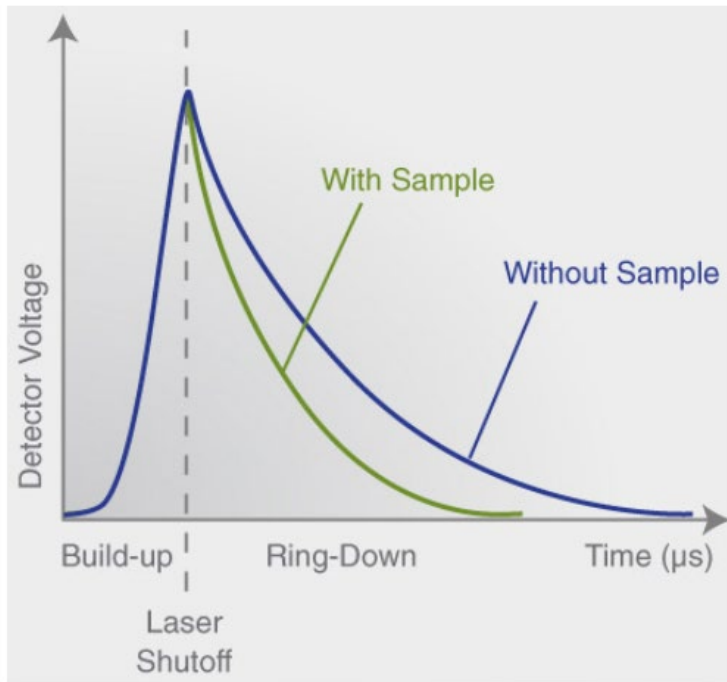
Overview of Point Monitors

- Wide ranging applications
- Provide measurements at a single point
- Typically closed path
- Often used as regulatory standards (FRM/FEM)

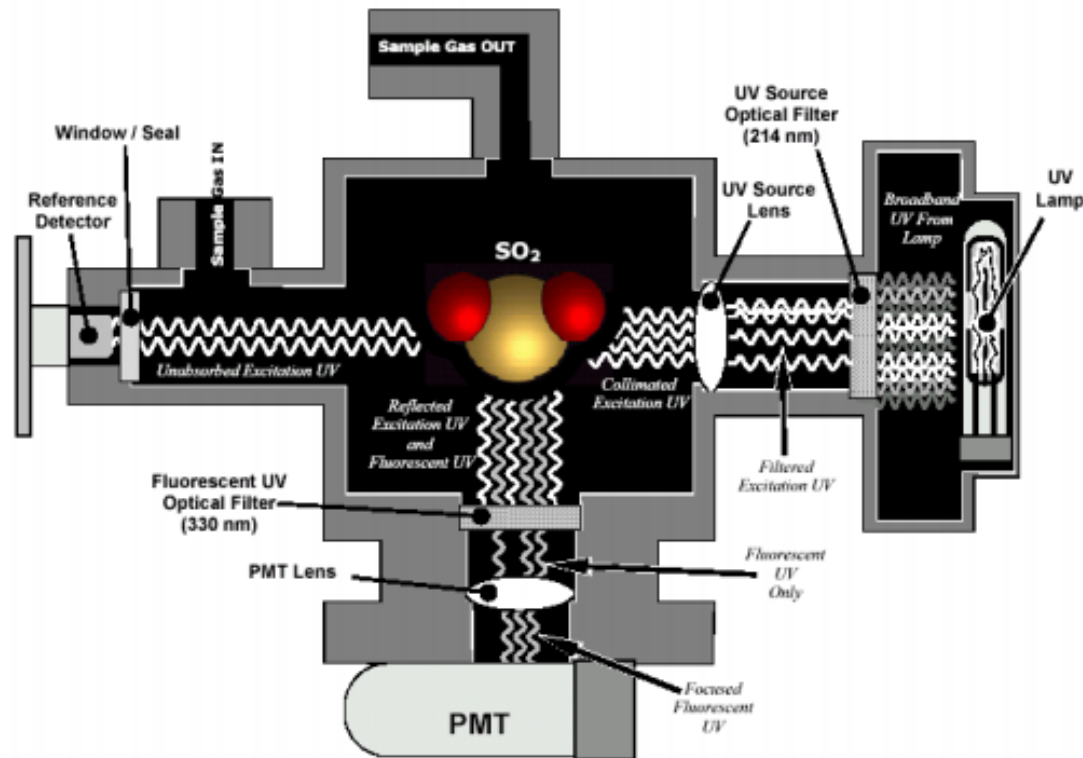


Range of Options for H₂S

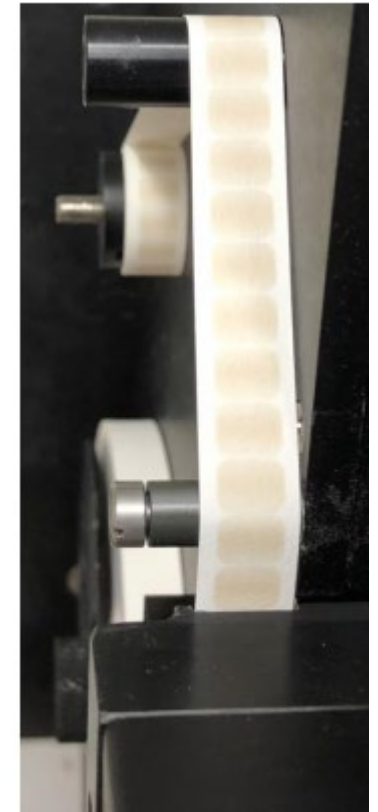
Cavity Ring Down Spectroscopy (CDRS)



UV Fluorescence



Lead Acetate Tape



Low-Cost Sensors

- Cost allows for high-density deployments
- Gaining popularity
- Technology improving rapidly
- Ongoing comparisons to FRM/FEM methods



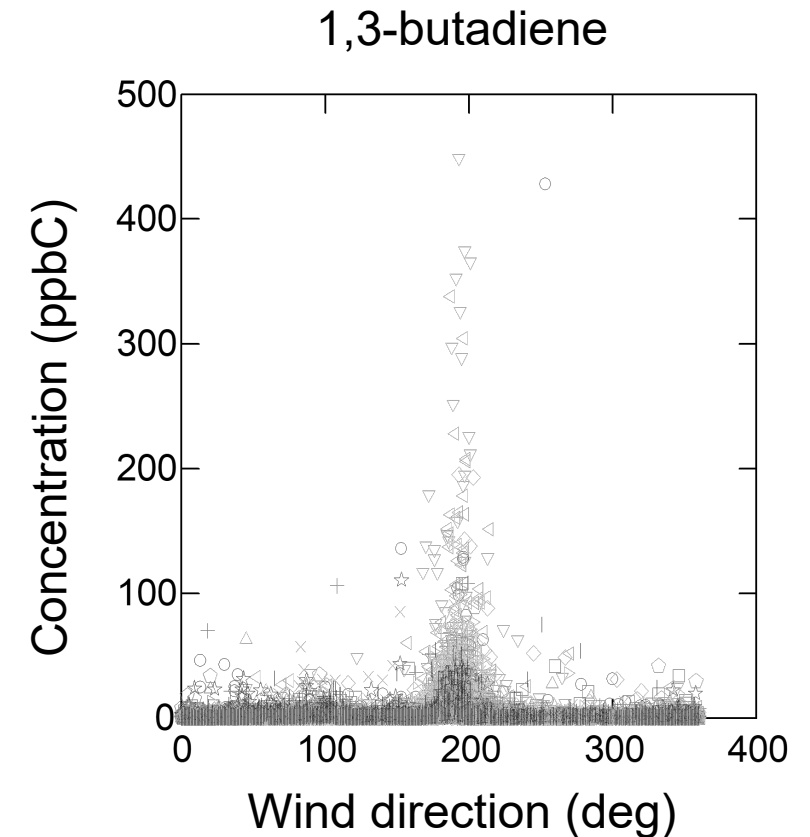
Meteorological Measurements

Typically consist of:

- Wind speed and direction
- Relative humidity
- Temperature
- Precipitation

Can be used to:

- Understand diurnal profiles
- Investigate emission sources
- Assess pollutant transport
- Evaluate models



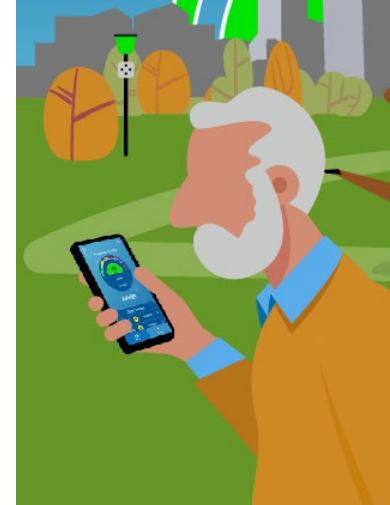
AQ360: Source-Receptor Analysis Tool

- Model-driven decision support system that enhances situational awareness and enables rapid assessment of emission-related scenarios
- Simple point-and-click interface
- Combines local meteorology with trajectory modeling and Gaussian plume principles
- Rapid, on-demand results

Data Dissemination

Key Considerations:

- High level of data quality
- Real-time alerts
- Public-friendly context
- Concentrations relative to health thresholds
- Meeting regulatory requirements





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Session Q&A Discussion

Please submit your questions for the session speakers through Whova – on your mobile or desktop device.

Make sure to note WHOM your question should be addressed to.

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