



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT



BAAQMD Monitoring Activities at Refineries and in Nearby Communities

Benicia City Council Study Session

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Source Test Section

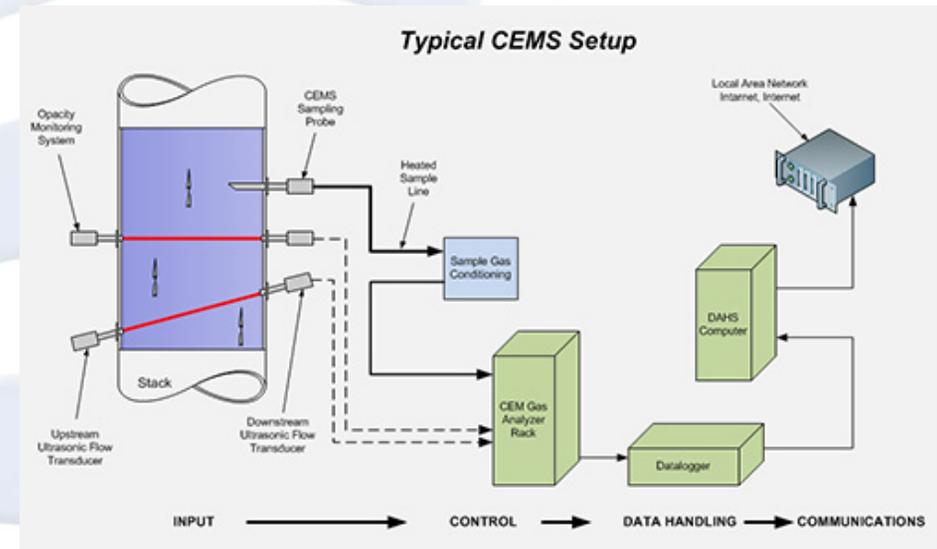
Meteorology and Measurements Division

Introduction

- Introduction to types of monitoring
- Applicable rules and regulations overview (Reg. 12-15, AB-1647, AB-617, RSR MACT 1, etc.)
- General monitoring system and program requirements
- Status and next steps on monitoring in Benicia
- Questions and answers

Previously Established Refinery Monitoring Efforts

- In Facility Monitoring
 - Continuous Emission Monitoring Systems (CEMS)
 - Source Testing
 - Leak Detection and Repair (LDAR)
- Fence Line Monitoring
 - Ground Level Monitors (GLMs)
 - Hydrogen sulfide (H₂S) and/or sulfur dioxide (SO₂)
 - EPA's Refinery Sector Rules (RSR) Maximum Achievable Control Technology (MACT) 1 Benzene
- Air Monitoring Network Sites
- Incident Response



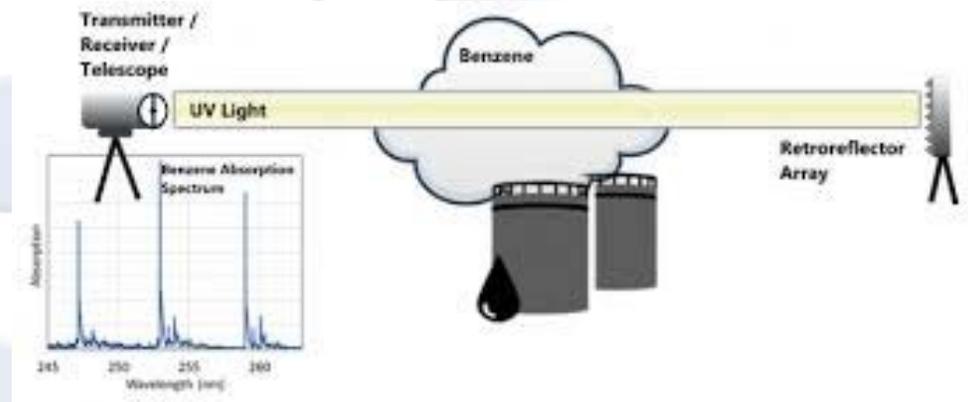
Current Facility Monitoring

Source monitoring

- Measures emissions and composition from individual sources
- Can identify both normal and upset conditions, but *only for specifically measured compounds at a particular source*

Ground-Level and Current Fence-Line Monitoring

- Defined chemicals and emissions produced near ground level from a facility
- Best for fugitive emissions
- Affected by other nearby (non-refinery) emissions sources
- Passive benzene (EPA MACT requirements) monitors provide longer term integrated information rather than real time but will provide additional support to fence-line systems



BAAQMD Regulation 12, Rule 15 (Rule 12-15) – Established first-of-its-kind monitoring requirements at refinery fence-lines

- Air District Board responded to community requests to have the Air District install and operate air monitoring stations in each refinery community as opposed to having refineries operate them
- Advanced open path measurement technologies to expand areas of fence-line coverage
- South Coast Air Quality Management District (Los Angeles area) and State regulatory monitoring requirements were developed based on Rule 12-15



Rule 12-15 – Fence-line Monitoring requirements

- Benzene, toluene, ethyl benzene, and xylenes (BTEX) and H₂S
- Guidelines for Monitoring Plans and network design, including approved Quality Assurance Project Plan (QAPP)
 - Air District is Currently reviewing submitted QAPPs
- Publicly available data, including context



Community Ambient Air Monitoring Systems

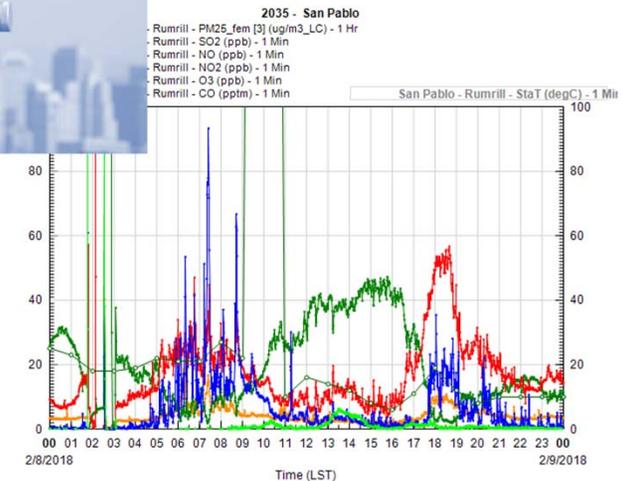
- Established and operated by the Air District based on current Air District guidelines
- Required by Assembly Bill 1647 in addition to fence-line monitoring
- Compounds monitored:
 - Organic compounds (alkanes, aromatics, polycyclic aromatic hydrocarbons (PAH))
 - NO₂
 - CO
 - PM
 - H₂S
- Targeting community locations impacted by refinery emissions to provide additional information



Ambient and Fence-line Air Measurement Considerations

Levels of air pollution in a community are affected by:

- Natural background
- Emissions from a combination of common (cars, home heating, restaurants, etc.) and unique sources (refineries, cement plants, etc.)
- Transport from other areas in our air basin and outside our air basin
- Meteorology
- Chemical reactions
- Topography



Air pollutants in ambient air are components of complex chemical mixtures that vary widely in time and space

Air monitoring station usefulness is maximized when it is designed, and the site is selected, with specific data use objectives in mind and employment of sound scientific principles

Factors that Affect Ambient Monitoring and Fence-line System Siting (Representativeness)

- Location and obstructions
- Source contributions and distance from those sources
- Meteorological conditions over time, including prevailing wind speed and direction
- Topography
- Chemical composition
- Specific pollutants of concern and technological limitations

Other Considerations

- Ability to remain in the monitoring location for long periods of time (years to decades)
- Power
- Security
- Access



Process for Identifying Air Monitoring Station Locations in Refinery Communities

- Held community meetings in February and March of 2018 to get community input and provide information
- Priority is to place stations in refinery communities with limited network monitor coverage (Benicia)
- Leveraging activities associated with Assembly Bill (AB) 617 to engage communities in air monitoring
- Based on existing emissions data and meteorology, identifying areas of likely impact and representative locations

Status Update

- Site selection analysis near completion for all refinery communities except Richmond
- Currently working to finalize site selection in Benicia (Robert Semple Elementary School)



Fence-Line Monitoring Timelines and Issues

- Fence-line systems were targeted to be operational in June 2019 unless there were obstacles beyond the refineries control
- Some extensions were granted due to delays beyond the refineries control (permitting, power)
- Some refineries were operating fence-line systems that were not regulated and needed to be evaluated to see if they could meet Rule 12-15 requirements
- Monitoring Plans have been approved
- Currently reviewing revised QAPP documents
- Continue to monitor Tunable Diode Laser (TDL) H₂S technology development

Ensuring Proper Performance

- Working with manufacturers and facilities to address needs and technical issues related to implementation (H₂S, data validation, calibration frequencies, reporting, etc.)
- Working with refineries to define operational parameters and quality objectives for incorporation into QAPP's



A Quick Word About Assembly Bill (AB) 617

This legislation requiring monitoring on a community scale dovetails with monitoring in refinery communities

- Expands and uses all approaches to identify and characterize localized pollutants and where they originate (screening, special studies, traditional & non-traditional ambient monitoring)
- Results may be used to develop an Action Plan to reduce and ultimately eliminate disparities in air quality from place to place
- Work with communities to identify shared vision and to develop a plan for Community Air Monitoring Campaign and/or Action Plans
- Entered into contract with Aclima to conduct air monitoring study of entire Bay Area driving each road a minimum for 20 times to develop understanding of air pollution distribution





Questions?