



LIVING NEXT TO A REFINERY: HOW DO WE KNOW IT IS SAFE?

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Current Air Quality Tools

- Rules, Regulations, & Permit Conditions
- Inspections
- Monitoring & Reporting
- Sampling & Lab Analysis

Upcoming Technologies: Optical Remote Sensing

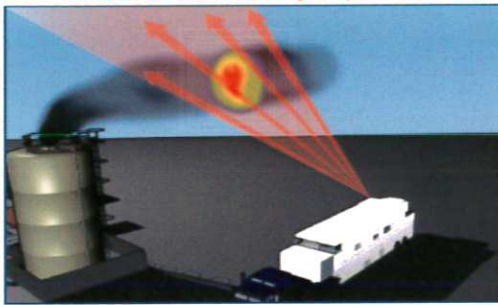


- Upcoming SCAQMD projects using optical remote sensing (ORS) methods to characterize/quantify fugitive and stack emissions from large refineries, small point sources, and marine vessels

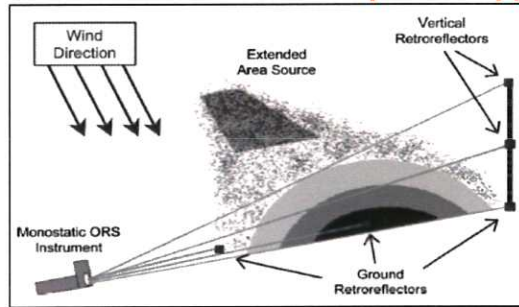
Solar Occultation Flux



Differential Absorption Lidar



Fourier transform infrared spectroscopy



Upcoming Technologies: Optical Remote Sensing



- Multiple incident response applications, including: flare characterization, leak detection, community alert, wildfire measurements, and more



Low Cost Air Pollution Sensors

- Potential to augment current ambient air monitoring capabilities that mostly rely on more sophisticated and expensive methods
- Advantages
 - Low Cost
 - Portability
 - Real-time
 - Increased spatial resolution
- Challenges
 - Accuracy, precision, uncertainty
 - Calibration
 - Resolution
 - Comparability
 - Data interpretation/analysis
 - Overall data quality



VS



Air Quality Sensor Performance Evaluation Center (AQ-SPEC)

- Main Goals & Objectives
 - Characterize sensor performance (i.e. field and lab testing)
 - Provide guidance and clarity for ever-evolving sensor technology and data interpretation
 - Catalyze successful evolution and use of sensor technology
 - Minimize confusion
- Sensor Selection Criteria
 - Potential near-term use
 - Real or near real time
 - Criteria pollutants and air toxics
 - Turnkey products first
 - Price range:
 - < ~\$2,000 (purchase)
 - > ~\$2,000 (lease/borrow)

*Landtec
(multi-gas)*



*Aeroqual
(Ozone)*



*Shinyei
(PM_{2.5})*



*RTI
(prototype)*



*Dylos
(PM_{2.5})*



*SmartCitizens
(multi-gas)*



Upcoming Electric Response Vehicle

- Quick response, non polluting (e.g. electric) mobile platform
- Mobile (on- and off-road) measurements of particle and gaseous pollutants
- Near real time instrumentation:
 - ♦ Federal Equivalent Methods
 - ♦ Air quality sensors (AQ-SPEC approved)
 - ♦ GPS and Meteo



Example of on-road PM measurements

