

CARPA SUMMIT 2008 ***DATA***

Monitoring, Sampling, and Lab Techniques

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Equipment and Capabilities: What Works

- Air monitoring equipment
- Air sampling equipment
- Laboratory Techniques/Considerations

Air Monitoring Equipment

- RAE Systems instruments
 - MultiRAE
 - AreaRAE
 - ppbRAE
 - UltraRAE
 - MiniRAE
 - EntryRAE
- Sensors
 - Photoionization Detector (PID)
 - Non-specific detection of volatile organic compounds
 - Electrochemical sensors
 - NO/NO₂, Cl₂, H₂S, NH₃, HCl, HF, HCN, SO₂, CO
 - O₂
 - LEL

Photoionization Detector (PID)



CTEH

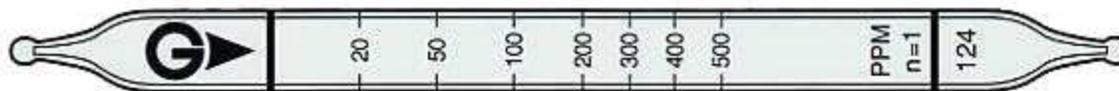
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TVA 1000B (PID/FID)



Air Monitoring Equipment

- Colorimetric Detector Tubes (Gastec)
 - Provide chemical-specific results for a wide range of chemicals.
 - CTEH keeps most tubes in stock



Air Monitoring Equipment

- Single Point Monitors
 - Used for acids and isocyanates



Air Monitoring Equipment

- Optical Aerosol/PM Monitors (TSI)
 - Various cutoffs for particle size
 - New Dusttrak measures both size and mass simultaneously



Considerations for Monitoring Locales

- Breathing zone
- In and around work areas and workers
- Away from exhaust sources
- Indicator approach
- Community coverage
- Upwind and downwind
- Special receptors

Characterization of Unknowns

- Hazmat ID
 - Portable infrared spectrophotometer
 - Enclosed in a Pelican case; can be decontaminated in the field
 - Library of over 25,000 spectra
 - Liquid or solid unknowns

Smiths HazMatID



CTEH[®]

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Characterization of Unknowns

- Hapsite Portable GC/MS
 - Unknown Identification
 - Very low detection limits (ppt)
 - EPA approved methods

Inficon HAPSITE Portable GC/MS



Smart Plus Chemical ID System



Headspace Analysis System



SituProbe Purge and Trap System

Characterization of Unknowns

- Miran SapphIRe™ IR Spectrophotometer



Mercury Vapor Detectors



Ohio Lumex Mercury Vapor Analyzer



Jerome Mercury Vapor Analyzer

Air Sampling Equipment



MiniCans™



SUMMA Canisters

Air Sampling Equipment

- Analytical Sampling Pumps- SKC



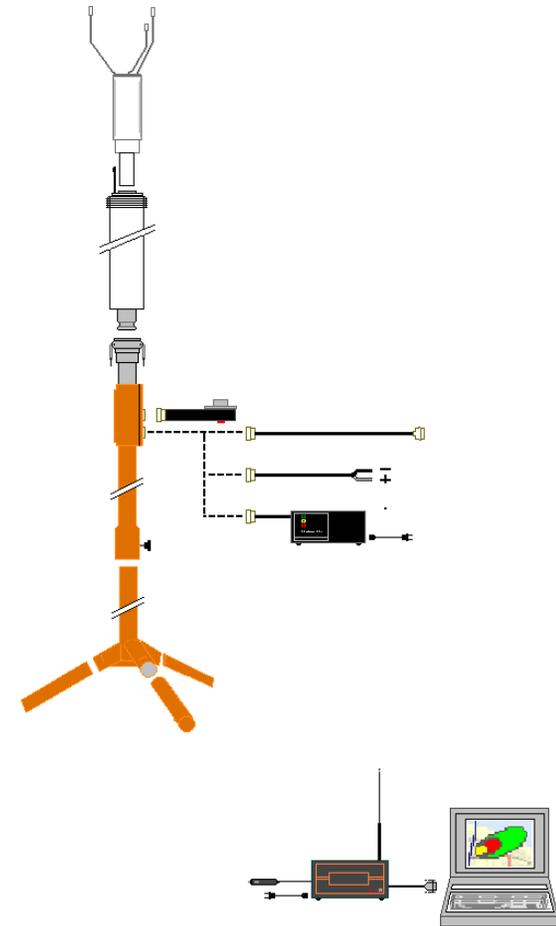
- CTEH stocks most available SKC sampling media

Considerations for Sample Placement

- Breathing zone
- Between source and receptors
- Complete 360-degree perimeter
- Locations where people are (especially surface samples)

Meteorological Data

- WeatherPak 2000



Lab Techniques/Considerations

- Many chemical-specific analyses
- Volatile organics – EPA TO-15 + TICs
- Metals
- PAHs
- Total particulate matter
- Aldehydes
- Dioxins/furans
- Special analyses

Lab Techniques/Considerations

- Field QA/QC
 - COC
 - Proper set up of sample apparatus (filters/media)
 - Collect blanks/background samples
 - Proper sample labeling and documentation
- Lab QA/QC
 - Certified clean canisters
 - Lab certifications (AIHA, NELAP, etc.)
 - SOPs, QAMs
 - Turnaround time/throughput
 - Usable deliverables
 - Method selection fits data requirements