

# MATES III

## Ambient Air Measurements of Naphthalene and Other Polycyclic Aromatic Hydrocarbons (PAHs)

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## Naphthalene



- Ubiquitous in the South Coast Air Basin
- Most abundant of PAHs found in ambient air
- Assigned a risk factor ( $3.4 \times 10^{-5} \text{ m}^3/\text{ug}$ ) by the Office of Environmental Health Hazard Assessment (OEHHA)
- Various Industrial and Mobile Sources

## Previous Naphthalene Measurements

Period of Measurement	Investigator (Publication)	Location	[Naphthalene] ng m <sup>-3</sup> (day)	[Naphthalene] ng m <sup>-3</sup> (night)
1986 (late winter)	Arey ( <i>Atmos. Environ.</i> , 1987)	Torrance	3315	2875
1986 (summer)	Arey ( <i>Environ. Sci. Technol.</i> , 1989)	Glendale	3100	4300
1987 (spring)	Atkinson ( <i>Environ. Health Perspect.</i> , 1994)	Reseda	750	1300
1993 (fall, smog episode)	Fraser ( <i>Environ. Sci. Technol.</i> , 1998)	Los Angeles	6000	
1995	Gupta (1995)	Redlands	348 to 715	

## Recent Naphthalene Measurements

Period of Measurement	Investigator (Publication)	Location	[Naphthalene] ng m <sup>-3</sup> (day)	[Naphthalene] ng m <sup>-3</sup> (night)
2000 (fall)	Eiguren-Fernandez (2003)	Downey	~ 80	
2001 (fall)	Eiguren-Fernandez (2003)	Rubidoux	~ 40	
2001 to 2002	Calvert (2002)	Southern CA	200 to 575	
2002 (summer)	Reisen (2003)	Los Angeles	~ 350	~ 140
2002 (summer)	Reisen (2003)	Riverside	~ 225	~ 40
2003 (winter)	Reisen (2003)	Los Angeles	~ 1400	~ 1000
2003 (winter)	Reisen (2003)	Riverside	~ 500	~ 150

## Other PAHs

- U.S. EPA Priority 16
  - Includes Naphthalene
  - Listed as potential human carcinogens
  - Present in ambient air at very low concentrations
  - Some are tracers for combustion sources

### U.S. EPA Priority 16 PAHs

Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene
Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene
Chrysene	Benzo(b)fluoranthene	Benzo(a)pyrene	Benzo(k)fluoranthene
Dibenzo(ah)anthracene	Benzo(ghi)perylene	Indeno(123-cd)pyrene	Napthalene

## Proposed PAH Measurements

- Sample PAHs at 3 Different Locations
  - Central Los Angeles
  - Wilmington
  - Rubidoux
- 24-hour Integrated Sample
- One Sample per Three Days
- Contract Cartridge Preparation and Analysis

## Proposed PAH Measurement Methodology

- Tisch Environmental TE-33 PUF sampler
- Glass Cartridges
  - PUF/XAD-2/PUF versus XAD only
- Sample Cleaning and Concentration
  - ASE
  - KD concentrator (Rotovap)
- GC/MS analysis



## Points of Discussion

- PAHs Selected
- Sites
- Sampling Medium
- Analysis
- Suggestions for Contract Labs