MATES IV Update

AQMD Governing Board Retreat
April 12 - 13, 2012

Cleaning the Air That We Breathe…

Update

- Board approved $1.36 million budget over 2012-14
  - Monitoring equipment & supplies
  - Temporary staff, support services
- Technical Advisory Group formed
- Monitoring scheduled to begin June, 2012
Technical Advisory Group

Alberto Ayala, PhD CARB
Judith Chow, ScD Desert Research Institute
Maria Costantini, PhD Health Effects Institute
Rob Farber, PhD Southern California Edison
Dennis Fitz, MS UC Riverside CE-CERT
John Froines, PhD UCLA School of Public Health
Scott Fruin, D.Env. USC School of Medicine
Kim Hoang, PhD U.S. EPA Region 9
Michael Kleinman, PhD University of California, Irvine
Fred Lurmann, MS Sonoma Technology Inc.
Andy Salmon, PhD OEHHA
Constantinos Sioutas, ScD USC Environmental Engineering
Samuel Soret, PhD Loma Linda University
Yifang Zhu, PhD UCLA School of Public Health

MATES IV Monitoring

• Continuation of MATES III sites for trends
  – 10 sites, 1-in-6 day, 24-hr sampling
• Add Ultra Fine Particles (UFP) and Black Carbon (BC)
• Local exposures to mobile source emissions
  – UFP and BC using mobile platform
Monitoring Sites

<table>
<thead>
<tr>
<th>Site</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaheim</td>
<td>1010 S. Harbor Blvd.</td>
</tr>
<tr>
<td>Burbank</td>
<td>228 W. Palm Ave.</td>
</tr>
<tr>
<td>Compton</td>
<td>720 N. Bullis Rd.</td>
</tr>
<tr>
<td>Inland Valley San Bernardino</td>
<td>14360 Arrow Highway</td>
</tr>
<tr>
<td>Huntington Park</td>
<td>TBD</td>
</tr>
<tr>
<td>North Long Beach</td>
<td>3648 N. Long Beach Blvd.</td>
</tr>
<tr>
<td>Central Los Angeles</td>
<td>1630 N. Main St., Los Angeles</td>
</tr>
<tr>
<td>Pico Rivera</td>
<td>3713B San Gabriel River Parkway</td>
</tr>
<tr>
<td>Rubidoux</td>
<td>5888 Mission Blvd.</td>
</tr>
<tr>
<td>West Long Beach</td>
<td>Hudson School</td>
</tr>
</tbody>
</table>

MATES IV Monitoring Substances

- VOCs
- Carbonyls
- TSP metals
- Cr $^{+6}$
- Lead
- Ultrafine PM
- Black Carbon
- PM2.5 speciation
  - Metals
  - Elemental Carbon
  - Organic Carbon
Proposed Local-Scale Sites

• Mobile source impacts: Ultrafine & Diesel PM
• Mobile monitoring platforms and saturation monitoring – short-term deployment
• Potential Locations (6-8 total)
  • Freeways
    • I-710, CA-110, CA-103
  • Intersections/Warehouses
    • Mira Loma, …
  • Rail yards
    • ICTF, San Bernardino
  • Airports
    • LAX, Long Beach
  • Communities
    • Boyle Heights, …

Toxics Emissions Inventory Update

• Inventory based on 2012 AQMP
  – 2008 baseline year
• Projected to 2012/13 using growth and control factors from the 2012 AQMP
  – Growth factors provided by SCAG
• 2 km by 2 km gridded inventory
  – Domain expanded to include Coachella Valley
Proposed Modeling

- Consistent with MATES III
  - CAMx dispersion platform with reactive tracer modeling capability (RTRAC)
  - MATES III 2 km x 2 km grid
  - 2012/13 Weather Research & Forecasting Model
- Output:
  - Concentration by substance for each grid
  - Estimated risk by grid
  - Comparison with MATES III

Risk Characterization

- Methodology: URF (or 1/REL) x concentration
  - Ambient monitoring at 10 sites
  - Modeling by 2 km grid cells
- Use most current URFs & RELs
  - OEHHA/CARB
- Output
  - Average from monitoring sites
  - Grid visualization for modeled concentrations
  - Population-weighted risk for modeled concentrations over region
### Toxics for Risk Characterization

<table>
<thead>
<tr>
<th>Compound</th>
<th>Toxic</th>
<th>Risk Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,3-Butadiene</td>
<td>Chloroform</td>
<td>Lead</td>
</tr>
<tr>
<td>Acetaldehyde</td>
<td>Chromium VI</td>
<td>Manganese</td>
</tr>
<tr>
<td>Arsenic</td>
<td>Diesel PM</td>
<td>Methylene Chloride</td>
</tr>
<tr>
<td>Benzene</td>
<td>Dichlorobenzene</td>
<td>Nickel</td>
</tr>
<tr>
<td>Beryllium</td>
<td>Dichloroethane</td>
<td>Tetrachloroethylene</td>
</tr>
<tr>
<td>Cadmium</td>
<td>Ethyl benzene</td>
<td>Trichloroethylene</td>
</tr>
<tr>
<td>Carbon Tetrachloride</td>
<td>Formaldehyde</td>
<td>Vinyl Chloride</td>
</tr>
</tbody>
</table>

Risk estimated for 70-year exposure and applying OEHHA risk factors.

### PAH Measurements

- **MATES III** monitored for Naphthalene and other PAHs at 3 sites
  - LA, Rubidoux, N. Long Beach
  - Naphthalene: 6.1 per million risk
  - All other PAHs: 0.3 per million
- Analyses require outside laboratory
- Propose very limited PAHs in MATES IV
  - Available from EPA monitoring at 2 sites
  - LA, Rubidoux
Diesel PM Estimation Methodology

- MATES III:
  - PM2.5 organics speciation and Chemical Mass Balance (CMB)
  - Elemental Carbon (EC) as surrogate
  - EC based estimate similar to CMB

<table>
<thead>
<tr>
<th>Method</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMB method</td>
<td>3.2 – 3.5 µg/m³</td>
</tr>
<tr>
<td>EC emissions method</td>
<td>3.5 µg/m³</td>
</tr>
</tbody>
</table>

- Lack speciation profiles for current fleet
- Will seek Advisory Group input

Project Review

- Technical Advisory Group
- Stakeholders & interested parties public meetings
- Meeting materials posted on AQMD website

Potential Issues

- Compounds sampled
- Diesel estimation method
- Local-scale site selection
- Presentation of UFP
- Expand modeling to Coachella Valley
Proposed Schedule

- Technical Advisory Group meets – 4/12 & 5/12
- Finalize monitoring & analytical protocol – 5/12
- Monitoring – 6/12 through 6/13
- Finalize Inventory protocol - 5/12
- Finalize Modeling protocol - 12/12
- Complete Modeling and risk estimates – 8/13
- Draft report – 11/13 – TAG and public review
- Final draft to Board – 3/14