Fresno Asthmatic Children’s Environment Study (FACES) UPDATE

Investigators

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Overall Research Goals of *FACES*

- **Title of Project:**
  - *Responses to Short-term Fluctuations in Particulate Air Pollution in Asthmatic Children: Implications for Asthma Natural History*

- **Overall research goals**
  - Identify characteristics of children who respond to day-to-day increases in ambient air pollutants, especially PM
  - Determine if children who respond have more severe asthma as they get older
  - Identify the important components of PM, gaseous pollutants and bioaerosols responsible for health effects
**FACES is a Unique Study**

- This is the only study that specifically addresses the question of whether exposures to short-term increases in ambient air pollution result in long-term adverse outcomes in children with asthma.

- **Key Areas of Focus for FACES**
  - Acute effects \(\equiv\) long-term effects
  - Focus on specific components of PM
  - Effects of outdoor and indoor exposures
  - Effects of bioaerosols
  - Oxidative and immunologic mechanisms
What *FACES* Has Accomplished
Establishment and Follow-up of Cohort

- Establish Fresno field office
- Hire and train field staff
- Recruit 210 children ages 6-11 yr with asthma
  - recruitment still in progress
- Carry out follow-up as specified by protocol
- Develop and implement all data collection and data management systems to obtain health data
  - establish QA/QC
  - up-to-date data entry
- Meet with Advisory Panel
What *FACES* Has Accomplished
Establishment of Exposure Monitoring

- **Central Site Sampling**
  - Added daily measurements of metals, endotoxin, and bioaerosols
- **Home Intensive Sampling**
  - Implemented collection of detailed indoor and outdoor air quality data at 100 participant’s homes during the health panels
- **Routine Home Sampling**
  - NO2, ozone, ETS, and house dust in ~200 homes
- **School Sampling**
  - Two well-equipped mobile trailers collecting air quality data at schools (in collaboration with ARB staff)
What FACES Has Accomplished
Preliminary Work Data

- Developed descriptive summary reports of cohort
- Developed asthma severity classification
- Submitted manuscript on lung function testing
- Presentation of talks at national meetings
  - Topics: asthma severity, moisture in homes, causal regression, exposure assessment, distance from roadways (ATS, ISEE, SER)
- Developed causal statistical models
  - Initial analyses justify approach taken
- Preliminary analysis of proximity to roadways and lung function
- Obtained USEPA funding for two sub-studies
What *FACES* Has Accomplished

Exposure Data Being Collected

- **Known Asthma Triggers**
  - Ozone, SO2, Nicotine
- **Mobile Source Indicators**
  - NO/NO2, CO, EC/OC, PAHs
- **PM Indicators**
  - Mass, Sulfate, Nitrate, Metals, Particle Number & Size
- **Biological Agents**
  - Pollen Grains, Fungal Spores, Endotoxin, Dust Allergens
What *FACES* Has Accomplished

**Exposure Data**

- **Concurrent measurements of all the key pollutants that are likely to exacerbate asthma**
  - Bioaerosols + conventional air pollutants
- **Characterize Neighborhood-Scale Pollutant Variability**
  - Spatial Variability, Roadway Effects
  - Indoor / Outdoor Differences
  - Daily and Seasonal Variability
- **Characterize Home-Scale Pollutant Variability**
  - indoor/outdoor pollutant concentrations
  - house dust (endotoxin, allergens, molds/spores)
  - Environmental tobacco smoke
What are the Plans for FACES?

- Finish recruitment of cohort
- Continue follow-up (exposure, health outcomes)
- Finalize overall health-exposure data base
- Interim analysis of health outcomes in relation to exposure
- Exposure modeling
- Definitive data analyses
- Submission of papers to peer-reviewed journals
- Submission of final report to ARB