

# The Relationship between Air Pollution and Lung Function in Asthmatic Children

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*California Environmental Protection Agency*

**Air Resources Board**

# Asthma is a Major Children's Health Problem

- Asthma is the leading cause of chronic illness in U.S. children
- 16% of California children suffer from asthma
- 28% of California children with daily or weekly asthma symptoms miss at least one week of school per year
- \$500 million per year in California



# Previous Findings on Air Pollution and Asthma in Children

- Children living near traffic are more likely to have asthma and suffer worse symptoms
- Children exposed to ozone and PM are more likely to visit the ER for asthma
- 9-16 year olds active outdoors in high-ozone areas more likely to develop asthma

# Fresno Asthmatic Children's Environment Study (FACES)

- Examine the effect of long-term exposure to air pollution on Fresno children
- Today's study: to what extent does prenatal and early-life exposure to air pollution impair lung function in young asthmatic children?

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Mortimer, et al., *Air Pollution and Pulmonary Function in Asthmatic Children Effects of Prenatal and Lifetime Exposures*, *Epidemiology* 19(4), July 2008 (Funded by ARB and the American Lung Association, National and East Bay of California Chapters)

# Study Population

- 232 asthmatic children in Fresno, age 6-11
- 14% African American, 38% Hispanic, 45% White
- 43% from low or moderate income families
- 9% of mothers smoked during pregnancy



# Pollution Exposure and Lung Function

- Prenatal and early childhood exposure to NO<sub>2</sub>, CO, ozone, PM10
- Measures of lung function
- Sophisticated statistical methodology



# Results

- Children most exposed to CO, PM10 and NO<sub>2</sub> experienced up to 8% reduction in lung function compared to those least exposed
- Timing of exposure is important
  - PM10, NO<sub>2</sub> - prenatal
  - CO - prenatal and first 6 years

# Implications

- Reducing exposure to air pollution is important for improving the health of asthmatic children
- Association between prenatal exposure and reduced lung function shown in this study
- Additional research is underway

