AIR POLLUTION AND ADVERSE BIRTH OUTCOMES: THREE RECENT CALIFORNIA STUDIES

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Air Resources Board
California Environmental Protection Agency
ADVERSE BIRTH OUTCOMES STUDIES IN CALIFORNIA

- Birth records used to assess:
  - low birth weight
  - premature birth
  - birth defects
- Ambient pollution levels linked to residential zip code
- South Coast Air Basin
LOW BIRTH WEIGHT

- Increased risk with high ambient carbon monoxide (CO)
  - during last trimester
  - 22% increase for CO greater than 5.5 ppm compared to less than 2.2 ppm

Source: Ritz and Yu (1999) Environmental Health Perspective
PREMATURE BIRTH

- Increased risk with high PM10 and CO during 6 weeks before birth
  - 20% increase per 50 µg/m³ PM10
  - 12% increase per 3 ppm CO

- Increased risk with high PM10 and CO during first month of pregnancy
  - 16% increase per 50 µg/m³ PM10
  - 4% increase per 3 ppm CO

Source: Ritz, Yu, Chapa, Fruin (2000) Epidemiology
HEART BIRTH DEFECTS

- Increased risk with high ambient CO and ozone
  - 200% increase in risk for higher CO
  - 150% increase in risk for higher ozone
  - Second month a critical time for heart defects

SIGNIFICANCE

● Strengths of associations
  – Consistency of timing and dose response
  – Effects comparable to other studies

● Caveats
  – CO may be surrogate for other vehicle-related pollutants
  – Exposure estimations
  – Other risk factors

● Raises concerns for fetal effects
THANK YOU