

PARTICULATE AIR POLLUTION AND INFANT MORTALITY

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Air Resources Board

California Environmental Protection Agency



METHODS

- **Seoul, South Korea**
- **Daily mortality records 1995-1999**
- **Few confounders adjusted for**
- **PM₁₀, NO₂, SO₂, CO, O₃**
- **Risk of mortality calculated**

Ha EH. et al. Infant susceptibility of mortality to air pollution in Seoul, South Korea. *Pediatrics*. 2003;111:284-290.



RESULTS: Air Pollution

	PM10 ($\mu\text{g}/\text{m}^3$)	NO₂ (ppb)	SO₂ (ppb)	CO (ppm)	O₃ (ppb)
Mean	69.2	32.5	11.1	1.2	12.9
Median	64.2	31.4	8.9	1.1	19.4
Min	10.5	10.2	2.4	0.4	2.9
Max	245.4	65.1	46.0	3.4	69.1



RESULTS: PM10 & respiratory mortality

- Infants at greatest risk

Age	1 month-1 year	2-64 years	≥65 years
% Increase in Risk*	102%	6.6%	6.3%



* Per 43 $\mu\text{g}/\text{m}^3$ increase in PM10

Relevant U.S. Study

- Infants born 1989-1991 in the U.S.
- PM10 data from EPA's Aerometric Database
 - PM10 range: 11.9-68.8 $\mu\text{g}/\text{m}^3$
- 20% increase in infant mortality per 10 $\mu\text{g}/\text{m}^3$ increase in PM10

Woodruff TJ. et al. The Relationship between Selected Causes of Postneonatal Infant Mortality and Particulate Air Pollution in the United States . Environmental Health Perspectives 1997; 105:608-612.



Conclusions

- **PM exposure associated with infant mortality from respiratory causes**
- **Studies add to our knowledge of the significant PM health effects**
- **ETS and other important factors were not considered**
- **Studies looked only at outdoor concentration**

