

The Children's Health Study

The Children's Health Study, which began in 1992, was a large, long-term, study of the health effects of children's chronic exposures to southern California air pollution. About 5500 children in twelve communities were enrolled in the study; two-thirds of them were enrolled as fourth-graders. Data on the children's health, their exposures to air pollution, and many factors that affected their responses to air pollution were gathered annually until they graduated from high school.

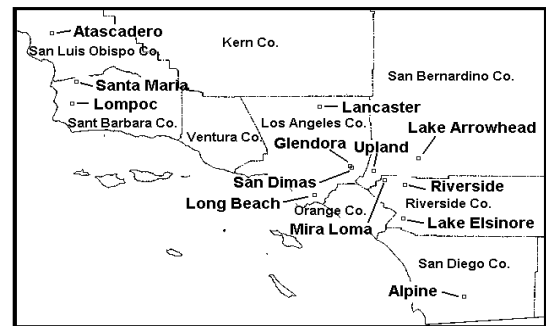
Importance of the Children's Health Study

The information provided by the study will help the Air Resources Board (ARB) protect public health. The ARB sets California's ambient air quality standards to protect people who are the most sensitive to air pollution. Children may be more strongly affected by air pollution because their lungs and their bodies are still developing. Children are also more exposed to air pollution than adults since they breathe faster and spend more time outdoors in strenuous activities.

The Communities and Pollutants Studied

The twelve communities in the study were chosen because they have different patterns of high and low levels of these four pollutants:

- Ozone
- Nitrogen dioxide
- Acid vapor
- Particulate matter that is breathed deep into the lungs



The Information Gathered by the Study

Concentrations of the four pollutants were continuously measured in each community throughout the study and for brief periods in schools and some homes. In addition, each child's lung function was tested every spring. Annual questionnaires asked about the children's respiratory symptoms and diseases, such as chronic cough and asthma; level of physical activity; time spent outdoors; and many other factors known to influence children's responses to air pollution, such as parental smoking and mold and pets in the household.

Major Results of the Study

- One of the most consistent results has been a reduction of lung development with exposure to higher concentrations of particulate matter, nitrogen dioxide, acid vapor, and elemental carbon. Children living in communities with higher concentrations of these pollutants had lungs that developed and grew more slowly and were less able to move air through them.
- Children who moved away from study communities had increased lung development if the new communities had lower particulate pollution, and had decreased lung development if the new communities had higher particulate pollution.
- Decreases in lung development were seen at age 18 in the polluted communities. By age 18 the lungs are nearly mature and the decreases in lung development are unlikely to be reversed. Therefore, the children may have permanent adverse respiratory health effects in later life.
- Children living in high ozone communities, who actively participated in several sports, were more likely to develop asthma than children in these communities not participating in sports.
- Days with higher ozone concentrations resulted in significantly higher school absences due to respiratory illness.
- Children with asthma who were exposed to higher concentrations of particles were much more likely to develop bronchitis.

For More Information

Please contact the ARB's Public Information Office at (916) 322-2990, or visit our web site at <http://www.arb.ca.gov/research/chs/chs.htm>. You may obtain this document in an alternative format by contacting our ADA coordinator at (916) 323-7053 (Voice); 7-1-1 (TTY / TDD / Speech-to-Speech); or California Relay Service (CRS): (800) 735-2922 (Voice).