No. 95-1

February 1995

RESEARCH NOTES

Brief Reports to the Scientific and Technical Community

California Environmental Protection Agency
Air Resources Board

Research Division, John R. Holmes, Ph.D., Chief P.O. Box 2815, Sacramento CA 95812

Respiratory Disease and Cancer in Non-Smokers Increase With Higher Long-Term Air Pollution Exposures

A team of researchers, studying a large sample of non-smokers, investigated associations between exposures to long-term ambient concentrations of seven air pollutants and the occurrence and severity of respiratory diseases and the occurrence of cancer. Numerous factors modifying the effects of air pollution exposures were accounted for. Estimated exposures to particulate pollutants were significantly associated with occurrence and increasing severity of several respiratory conditions in the whole sample and with occurrence of cancer in women. Estimated exposures to ozone were significantly associated with occurrence and increasing severity of asthma in men. The results of the study provide some of the most comprehensive information yet about the adverse health effects of long-term ambient concentrations of these pollutants. The results of this study will be useful in future revisions of air quality standards. This study was conducted by the Loma Linda Center for Health Promotion, Loma Linda University.

Background: Most of California's air quality standards are based on occurrences of adverse health effects in clinical studies with pollutant exposures lasting one or two hours. Few epidemiological studies of the effects of long-term exposures have been performed. Consequently, information about how well present air quality standards protect public health against the adverse effects of long-term exposures is quite limited, and extensive further research is needed. This study significantly increased the ARB's knowledge of numerous associations between long-term exposures to air pollution and health effects. This study's conclusions were strengthened both by absence of the confounding effects of smoking and by inclusion of more pollutants, health conditions, and modifying factors than have been included in similar long-term studies.