Medical Xpress

Study finds big air pollution impacts on local communities

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Heavy traffic corridors in the cities of Long Beach and Riverside are responsible for a significant proportion of preventable childhood asthma, and the true impact of air pollution and ship emissions on the disease has likely been underestimated, according to researchers at the University of Southern California (USC).

The study, which appears in an online edition of the *American Journal of Public Health*, estimated that nine percent of all childhood asthma cases in Long Beach and six percent in Riverside were attributable to traffic proximity.

The study also found that ship emissions from the Los Angeles-Long Beach port complex contributed to the exacerbation of asthma. For example, approximately 1,400 yearly episodes of asthma-related bronchitis episodes in Long Beach (21 percent of the total) were caused by the contribution of ship emissions to nitrogen dioxide levels in the city.

Although there has been extensive research on the effects of traffic proximity on asthma risk, this study is one of the few that has estimated the number of cases—or "burden of disease"—associated with traffic in specific high risk communities, says principal investigator Rob McConnell, M.D., professor of preventive medicine at the Keck School of Medicine of USC and deputy director of the Children's Environmental Health Center at USC.

"The traditional approach to estimating the burden of air pollution-related disease has markedly underestimated the true effect," McConnell says. "Our results indicate that there is a substantial proportion of childhood asthma that may be caused by living within 75 meters (81 yards) of a major road in Long Beach and Riverside. This results in a much larger impact of air pollution on asthma symptoms and health care use than previously appreciated. This is also one of the first studies to quantify the contribution of ship emissions to the childhood asthma burden."

Such specific data about the local health burden of air pollution is useful for evaluating proposals to expand port facilities or transportation infrastructure in the L.A. area, McConnell noted. Both Long Beach and Riverside already have heavy automobile traffic corridors as well as truck traffic and regional pollution originating in the port complex, which is the largest in the United States.

The study drew upon data from the Children's Health Study (CHS), a longitudinal study of respiratory health among children in 12 Southern California communities, including Riverside and Long Beach. Researchers estimated the number of asthma cases and related complications that occurred because of air pollution, using information from epidemiological studies that they then applied to current exposure to air pollution and traffic in Southern California. The results showed that approximately 1,600 cases of childhood asthma in Long Beach and 690 in Riverside could be linked to living within 81 yards of a major road.

"The impact of roadway proximity on the overall burden of asthma-related illness is remarkable," McConnell says. "Air pollution is a more important contributor to the burden of childhood asthma than is generally recognized, especially to more severe episodes requiring visits to a clinic or emergency room."

Unlike regional air pollutants, the local traffic-related pollutants around homes and their effects are not currently regulated, he notes.

"This is a challenge to communities, to regulatory agencies and to public health," McConnell says. "Traffic-related health effects should have a central role on the transportation planning agenda."

More information: Laura Perez, Nino Kuenzli, Ed Avol, Andrea M. Hricko, Fred Lurmann, Elise Nicholas, Frank Gilliland, John Peters, Rob McConnell. "Global Goods Movement and the Local Burden of Childhood Asthma in Southern California." American Journal of Public Health. Doi: 10.2105/AJPH.2008.154955

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