



*Traffic-Related Pollution Causes Asthma:  
"More Research is Needed" But It's Time for  
Action*

Environmental Health Sciences M411\*



**Rob McConnell, MD**  
**Professor of Preventive Medicine**  
**Keck School of Medicine, University of Southern California**  
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There is scientific consensus that air pollution exacerbates childhood asthma, but there is continued controversy about the role of both regional and local traffic-related pollution in causing the disease. *In vitro* and animal studies have shown that diesel and ambient particulate matter has pro-oxidant and inflammatory activity relevant to the pathogenesis of asthma. Epidemiological studies of children have shown associations between residential exposure to near roadway air pollutants and wheeze and asthma. In addition, the pattern of dispersion of near roadway exposures to ultrafine particulate matter and other traffic-related pollutants has been shown to correspond to the near-roadway residential distance gradient in prevalence of asthma in the southern California Children's Health Study. However, epidemiological associations vary based on the traffic metric used, and it has been argued that confounding may explain the associations observed. Additional research is required to resolve these uncertainties by developing better assessment of exposure to toxicologically relevant components of the ambient mixture, including the contribution of time-activity patterns in relevant microenvironments, and by better specifying potential confounders. However, an emerging literature showing susceptibility to oxidant air pollutants based on co-exposures and genetic variation in biological pathways predicted from toxicological studies provides strong evidence of a causal relationship between these pollutants and the development of new onset asthma. The presentation will make the case that intervention is warranted, because the economic and social costs of asthma are large.



Rob McConnell is a Professor of Preventive Medicine at the University of Southern California. His research interests include the determinants of physical activity and obesity in children, and the epidemiology of childhood respiratory disease, especially its relationship to air pollution. Dr. McConnell has several NIH grants to examine these research questions and is the Deputy Director of the Southern California Children's Environmental Health Center at USC and UCLA. He has also worked extensively in Latin America and the Caribbean and is a former director of the World Health Organization's Center for Human Ecology and Health.