



## Southern California Environmental Health Sciences Center

Special Issue

### Welcome to our Center Newsletter:

The goal of our Center is to improve health by investigating environmental exposures, addressing risks from these exposures, studying who might be most susceptible, and linking our research efforts with the communities we serve.

Our Center has scientists from USC and UCLA who study cancer, respiratory disease and adverse reproductive outcomes. Some of our scientists also develop new methods for designing studies and evaluating exposures.

We hope that our newsletters will help you learn more about our research efforts and community outreach and education activities.

**Dr. Frank Gilliland**  
Center Director

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If you missed any issues of the newsletter, please go to our website.

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**Save-the-Date:**  
**Moving Forward:**  
A conference on  
healthy solutions for

## Breaking News!

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### Living near a highway affects lung development in children, according to a USC study

#### *Major traffic exposure could result in lifetime deficits in lung function*

Los Angeles, Jan. 25, 2007 - Children who live near a major highway are not only more likely to develop asthma or other respiratory diseases, but their lung development may also be stunted.

According to a study that will appear in the February 17 issue of *The Lancet* and now available online, researchers at the Keck School of Medicine of the University of Southern California (USC) found that children who lived within 500 meters of a freeway, or approximately a third of a mile, since age 10 had substantial deficits in lung function by the age of 18 years, compared to children living at least 1500 meters, or approximately one mile, away.

“Someone suffering a pollution-related deficit in lung function as a child will probably have less than healthy lungs all of his or her life,” says lead author W. James Gauderman, associate professor of preventive medicine at the Keck School of Medicine of USC. “And poor lung function in later adult life is known to be a major risk factor for respiratory and cardiovascular diseases.”

communities impacted  
by trade, ports and  
goods movement.

November 30 -  
December 1, 2007!

Carson Community Center  
in Carson, CA  
More info. soon

Organized by



A collaboration of  
community and university  
partners

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## Save-the-Date:

"Asthma Is a Small  
World ... International  
Conference on Asthma  
Impacts of Air  
Pollution"

April 26-27, 2007

Disneyland Hotel in  
Anaheim, CA

Hosted by Air Quality  
Management District (AQMD)

[Click for more information](#)

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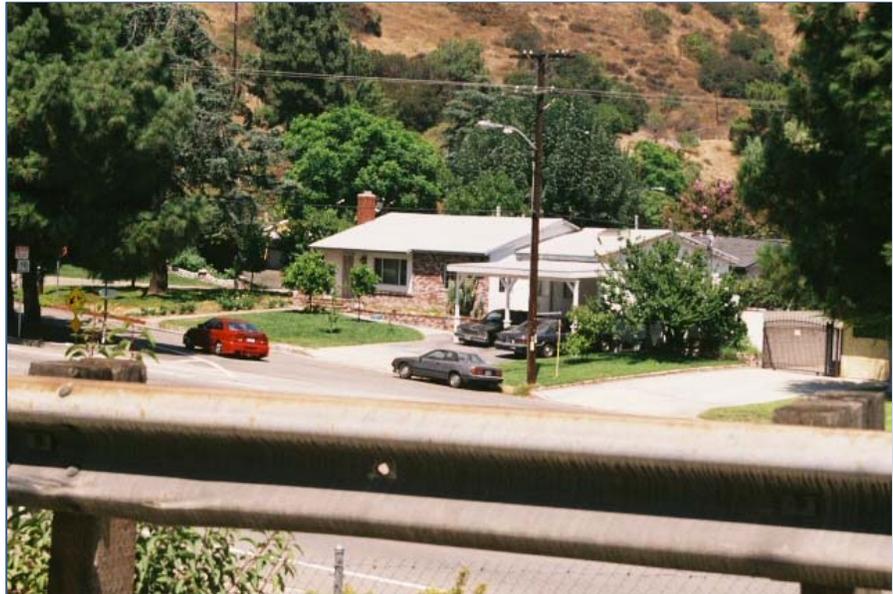
The study draws upon data from the [Children's Health Study \(CHS\)](#), a longitudinal study of respiratory health among children in 12 southern California communities. More than 3,600 children around the age of 10 years were evaluated over a period of eight years, through high-school graduation. Lung function tests were taken during annual school visits, and the study team determined how far each child lived from freeways and other major roads.

"Otherwise-healthy children who were non-asthmatic and non-smokers also experienced a significant decrease in lung function from traffic pollution," continues Gauderman. "This suggests that all children, not just susceptible subgroups, are potentially affected by traffic exposure".

Lung function was assessed by measuring how much air a person can exhale after taking a deep breath, and how quickly that air can be exhaled. Children's lung function develops rapidly during adolescence until they reach their late teens or early 20s. A deficit in lung development during childhood is likely to translate into reduced function for the remainder of life.

"This study shows there are health effects from childhood exposure to traffic exhaust that can last a lifetime," said David A. Schwartz, M.D., the Director of the [National Institute of Environmental Health Sciences \(NIEHS\)](#). "The NIEHS is committed to supporting research to understand the relationship between environmental exposures and diseases, and to identify ways to reduce harmful exposures to all populations, especially children so they can realize their full potential for healthy and productive lives."

Previous studies have demonstrated links between lung function growth and regional air quality. These findings in this study add to that result, demonstrating that both regional air pollution and local exposure to traffic pollution affect lung development.



"This study provides further proof that regional air quality regulations may need to be adjusted based on local factors, including traffic volume," says Gauderman. "This is important because in areas where the population continues to grow, more and more children are living or attending school near busy roadways. This may be harmful in the long run." Gauderman adds that community leaders, school districts, and developers should consider these results when developing new schools or homes.

Study sites included the cities of Alpine, Anaheim, Glendora, Lake Arrowhead, Lake Elsinore, Long Beach, Mira Loma, Riverside, San Bernardino, San Dimas, Santa Barbara, Santa Maria and Upland.

Funding for this study came from the California Air Resources Board, the National Institute of Environmental Health Sciences, the U.S. Environmental Protection Agency, the National Heart, Lung and Blood Institute, and the Hastings Foundation.

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W. James Gauderman, Hita Vora, Rob McConnell, Kiros Berhane, Frank Gilliland, Duncan Thomas, Fred Lurmann, Edward Avol, Nino Kunzli, Michael Jerrett and John Peters, "Effect of exposure to traffic on lung development from 10 to 18 years of age: a cohort study," *The Lancet*, Volume 368, February 2007.

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Health Sciences News  
Press Contact: Jennifer Chan  
Tel: 323-442-2830

USC Health Sciences Public Relations

1975 Zonal Ave, KAM 400  
Los Angeles, CA 90033  
Tel: 323-442-2830, Fax: 323-442-2832  
<http://www.usc.edu/hsc/info/pr/>

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For more information, please contact the Community Outreach and Education Program of SCEHSC.

Outreach Contacts:

Andrea Hricko, Tel: 323-442-3077, e-mail: [ahicko@usc.edu](mailto:ahicko@usc.edu)  
Carla Truax, Tel: 323-442-2745, e-mail: [ctruax@usc.edu](mailto:ctruax@usc.edu)  
Alena Groopman, Tel: 323-442-1359, [groopman@usc.edu](mailto:groopman@usc.edu)

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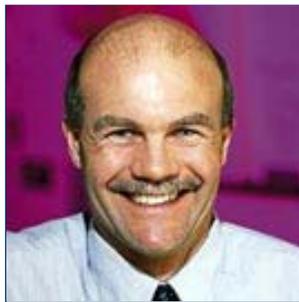
To view other press stories from today, January 26, please go to:

[LA Times](#) article: [Freeways' tainted air harms children's lungs, experts say](#)

[Sacramento Bee](#) article: [Living near busy roads tied to kids' lung risk](#)

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### Faculty Profile: Dr. W. James Gauderman



Professor of Preventive Medicine  
Division of Biostatistics  
Keck School of Medicine of USC

**Expertise:**

- Air pollution and increased incidence of asthma, bronchitis and other respiratory illnesses in children
- Smog and its long-term effects on lung development
- Long-term effects on children's lungs of air pollutants such as nitrogen dioxide, particulate matter and acid vapors resulting from the burning of fossil fuels and emissions from industrial plants
- Lung function and respiratory health in school-aged children in Southern California
- Gene/environment interactions
- Gene/smoking interaction in lung cancer
- Genetic epidemiology
- Environmental health
- Biostatistics

**Photo Credits:**

Photo of freeway and

apartments: Allison Cook  
Photo of guard rail and house:  
Allison Cook  
Photo of Dr. James  
Gauderman: USC Expert  
Directory



**Additional Information:**

- Researcher, Children's Health Study (CHS)
- Director of Biostatistics Core, Southern California Environmental Health Sciences Center (SCEHSC)

**More:**

Biographical information can be found at:

[http://www.usc.edu/schools/medicine/util/directories/faculty/profile.php?Personls\\_ID=351](http://www.usc.edu/schools/medicine/util/directories/faculty/profile.php?Personls_ID=351)

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This e-mail has been sent to you by the Community Outreach and Education Program of the Southern California Environmental Health Sciences Center (SCEHSC) based at the Keck School of Medicine of the University of Southern California (USC). Our Center, funded by the National Institute of Environmental Health Sciences, has scientific investigators from USC and the UCLA Schools of Public Health and Medicine. For more information, please visit [www.usc.edu/medicine/scehsc](http://www.usc.edu/medicine/scehsc) or e-mail us at [scehsc@usc.edu](mailto:scehsc@usc.edu). Thanks for reading!

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Los Angeles, CA 90033

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