

Health Risks of Residents Living Near Major Roads or Freeways

1. *Report to governor by Hecht, Executive Director, UCLA Environmental Law Center, Cara Horowitz, Executive Director of the Emmett Center and M. Rhead Enion, UCLA environmental law fellow (Jan. 16,2011) :*

Need to "monitor ultra-fine particles-or-soot near major roadways. The particles are a cause of asthma and a factor in heart disease".

2. *Pollution's Grit is Harmful to Women's Heart (reported in the Marin I.J.)*

The University of Washington-based researchers worked from data collected for the Women's Health Initiative, a well-respected research project. "The fine grit in polluted air boosts the risk of heart disease in older women much more powerfully than scientists realized, a big federally funded study has found, raising questions of whether U.S. environmental standards are strict enough".

In this study of 65,893 women, the average exposure was 13 units with 2/3 of the subjects falling under the national standard. But every increase of 10 units, starting at 0, lifted the risk of fatal cardiovascular disease by about 75%. That is several times higher than in a study by the American Cancer Society. There is a lot of evidence previously suggesting that the long-term standard should be lower, and this is adding one more study to that evidence, said Douglas Dockery, a pollution specialist at the Harvard School of Public Health (editorial in the New England Journal of Medicine).

It has long been known that particulates can contribute to lung and heart disease, with women perhaps more susceptible than men to heart problems...(This study) looked not just at deaths, but also at heart attacks, coronary disease, strokes and clogged arteries. These problems were 24% more likely with every 10-unit rise in particles. The effect seems large and important and should be taken seriously said Dr. Joel Kaufman of the University of Washington, lead researcher".

3. *Living Near Traffic Raises Heart Risks : study (Dallas Reuters 2007)*

Long-term exposure to air pollution from a nearly freeway or busy road can raise the risk of hardening of the arteries, which can lead to heart disease and stroke, German researchers reported. "The most important finding of our study is that living close to high traffic, a major source of urban air pollution, is associated with atherosclerosis in coronary arteries - the blood vessels that supply the heart," Dr. Barbara Hoffman, who led the study said in a statement. " This is the first study to actually show a relationship between long-term traffic exposure and coronary atherosclerosis," said Hoffman, of the University of Duisburg-Essen in Germany. The study is published in Circulation, an American Heart Association journal.

Previous studies have linked elevated levels of air pollution to an increased risk of heart problems, but this is the first to demonstrate that living near high traffic is associated with coronary atherosclerosis. Researchers found that compared with people who lived more than 200 meters (yards) from major traffic, the chance of high coronary artery calcification was 63% greater for those living within 50 meters (160 feet). For people within 51 meters to 100 meters (164 feet-328 feet) the chance was 34% higher. It was 8% higher for those within 100 meters to 200 meters (328 feet to 642 feet) of heavy traffic. These percentages take into account age, gender, smoking, and high blood pressure. (The study was done on adults age 45 to 74.)

"Politicians, regulators and physicians need to be aware that living close to heavy traffic may pose

an increased risk of harm to the heart. Potential harm due to proximity to heavy traffic should be considered when planning new buildings and roads," Hoffman said.

4. *Noise May Raise Heart Attack Risk (ABC News Online 3/25/06)*

Living or working in noisy surroundings may raise a person's risk of suffering a heart attack, a new study suggests. Researchers in Germany have found that urban middle-aged adults who live near high traffic roads are 46% more likely to suffer a heart attack than those who live in more peaceful neighborhoods.

The reason for for these associations is not completely clear but the stress of dealing with chronic noise may be involved, according to researchers, led by Stefan N. Willich of Charite University Medical Centre in Berlin. Researchers suspect over time, chronic noise exposure may damage the cardiovascular system. (The current study was published in the European Heart Journal.)

5. *UCLA environmental health sciences professor John Froines, is a nationally known expert on the toxic properties of soot and other fine particle pollution. In an interview, Froines said diesel soot can carry as many as 1,000 chemicals. His research group has developed laboratory procedures that can show the toxicity of various combinations of such chemicals.*

6. *Impaired Cognition in Elderly Women Linked to Traffic Pollution (Dec. 22, '09)*

*Ranft, U, T Schikowski, D Sugiri, J Krutmann and U Kramer, 2009
Synopsis by Negin P. Martin, Ph.D.*

Cognitive performance is decreased in elderly women who live near and are exposed to particulate pollution from nearby traffic. Living for decades near busy urban or rural roads may affect brain health and could contribute to cognitive decline as women age, conclude German scientists in a study published in Environmental Research. The closer women lived to the highways, the higher was their exposure to particulate pollution and the more likely they were to show signs of mild memory and cognitive decline.

This is the first study to find an association between cognitive impairment and long-term exposure to air pollution due to traffic. It is one of a handful of recent studies to report a link between air pollution and brain function in people. Exposure to high levels of particulate matter are associated with adverse cardiovascular and respiratory health effects. Based on animal studies, PM (particulate matter) can also move directly from the lungs to the nervous system where it can cause inflammation and brain damage. Brain and nerve inflammation are factors known to spur development of some types of degenerative diseases, such as Alzheimer's disease and Parkinsons.

The study looked at whether chronic exposure to PM may be associated with the development of neurophysiological and cognitive tests were given. Elderly women who lived closer to higher traffic areas had significantly lowered performance, called mild cognitive impairment (MCI) - a condition that is known to lead to Alzheimer's disease. The MCI worsened as the residential distance to the busy streets got shorter. The link was seen in people living at most 50 meters from roads carrying up to 10,000 cars per day.

7. *"Children who live close to freeways are twice as likely to be autistic". (Sierra Magazine of Sierra Club March/April 2011)*

8. *Lifelong Lung Impairment in Children Living Near Major Roads or Freeways (L.A. Times 1/26/07)*
Children living near busy highways have significant impairments in the development of their lungs

that can lead to respiratory problems for the rest of their lives, University of Southern California researchers have found in the largest and longest study of its kind. The 13-year study of more than 3,600 children in 12 Southern California communities found that the damage from living near a freeway is about the same as that from living in communities with the highest pollution levels (reported in the medical journal *Lancet*).

"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," said lead author, W. James Gauderman, an epidemiologist at USC's Keck School of Medicine. The greatest damage appears to be in the small airways of the lung, damage that is normally associated with the fine particulate matter emitted by automobiles. There is a growing body of research about the effects of air pollution on the lungs and cardiovascular system, but most have focused on the short-term effects, linking pollution episodes to heart attacks, asthma attacks, hospitalization and so forth. What is unique about this study is the large number of children involved and the length of time they were studied.

"Even if you are in a relatively low regional pollution area, living near a road produces lung problems," Gauderman said. About a third of the children moved during the course of the study but stayed in the same community. Lung impairment was smaller among those who moved farther from the freeways. The finding is important "because it shows that within communities some children are at higher risk than others," wrote Dr. Thomas Sandstrom and Dr. Bert Brunekreef in an editorial accompanying the paper. "Thus, environmental equity is an issue of local rather than regional dimensions".

9. Does Traffic Pollution Cause Early Pregnancy Loss? (Dec. 18, 2009)

Green S, B Malig, GC Windham, L Fenster, B Ostro and SH Swan. 2009

Residential exposure to traffic and spontaneous abortion. *Environmental Health Perspectives*
Synopsis by Kim Harley, Ph.D.

Rates of miscarriage are three times higher for African-American women who live within 50 meters of a busy road than those who live farther away. Increased risk of spontaneous abortion was seen among African-American women living close to roads where traffic exceeded 15,000 vehicles per day. Many large city streets have a daily traffic volume of 15,000 cars. Overall, about 10% of women lived within 50 meters of a road carrying this traffic volume.

In addition to African-American women, non-smokers were also at a 50% increased odds of spontaneous abortion if they lived near high traffic density roads. Tobacco smoke contains many of the same chemicals as automobile exhaust and has been shown to increase the risk of spontaneous abortion. (Social factors such as income, education, age, and employment status were taken into account in this study.)