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his writer always wondered why two of his brothers-in-law died of heart attacks in the Philippines. And they were only both in their early 50s. Perhaps now I know why they suffered the fatal heart attack, which was their first-and-last heart seizure. While they were heavy smokers, smoking just contributed to their death. There is a bigger culprit, diesel fumes.

As a background, readers may like to browse our webmaster Allan Albert's depiction of a three-dimensional model showing the human heart's structure and other information. Mr. Albert's illustration of the human heart is very timely when read with what the University of California, Los Angeles, (UCLA) researchers reported on the link between "air pollution and cardiovascular disease." The UCLA findings were reported yesterday in the Los Angeles Times in an article written by Ms. Marla Cone. We have taken the initiative of reproducing below excerpts from Ms. Cone's article.

We wrote before in this online magazine about the number-one cause of death in the Philippines. We called it the "Mona Lisa" Syndrome, after the term used by Princess Emraida Kiram of the University of Wisconsin and the Sultanate of Sulu. To read the article, please go to <http://www.mabuhayradio.com/content/view/237/51/>

According to Frank Quismorio, Jr., a Filipino-American physician who teaches at the University of Southern California (USC) Medical School, the cause of death is not an exact science in the Philippines. Filipino medical practitioners just write in the death certificates "heart attack" as the cause of death when the victim complained of chest pain. And they write in the death certificate "cerebral thrombosis" (euphemism for stroke) when the decedent complained of headaches before dying. In short, the actual cause of death due to medical reasons is not known in the Philippines, as both the government and the people cannot afford autopsy. And perhaps Princess Emraida is right: Filipinos just say that their kin died of the "Mona Lisa" Syndrome.

It is public knowledge that Metro Manila is one of the dirtiest cities in the world. Pollution in Metro Manila and other urban centers in the Philippines is caused primarily by the exhaust of tens of thousands of diesel-powered passenger jeepneys, buses and cargo trucks. All of these vehicles in the Philippines that are powered by the diesel engine do not have catalytic converters in them. It will not take a rocket scientist, to use an oft-quoted cliché, to determine that

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diesel fumes are the number-one cause of the smog that causes white uniforms to turn into a shade of gray after just several rides in the clogged streets of Metro Manila.

## Clogged Street and Arteries

Now, thanks to the UCLA researchers, as reported in the *Los Angeles Times*, we now know that the Filipino diesel-powered vehicles cause not only traffic congestion in the streets of Metro Manila and other cities but also the "diesel exhaust combines with cholesterol to activate genes that trigger the hardening of arteries," which lead of course to clogged arteries and heart seizures. Yes, fatal heart attacks like those suffered by my two brothers-in-law.

\* QUOTE.

Pollution-cholesterol link to heart disease seen

The combination activates genes that can cause clogged arteries, UCLA researchers say.

By Marla Cone, Times Staff Writer  
July 26, 2007

To read the article in its entirety, please click on this hyperlink or copy and paste to your browser <http://www.latimes.com/features/health/la-me-heart26jul26,1,4423265.story?ctrack=1&cset=true>

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Strengthening the link between air pollution and cardiovascular disease, new research suggests that people with high cholesterol are especially vulnerable to heart disease when they are exposed to diesel exhaust and other ultra-fine particles that are common pollutants in urban air.

Microscopic particles in diesel exhaust combine with cholesterol to activate genes that trigger hardening of the arteries, according to a study by UCLA scientists to be published today.

"Their combination creates a dangerous synergy that wreaks cardiovascular havoc far beyond what's caused by the diesel or cholesterol alone," said Dr. André Nel, chief of nanomedicine at the David Geffen School of Medicine at UCLA and a researcher at UCLA's California NanoSystems Institute. He led a team of 10 scientists who conducted the study, published in an online version of the journal *Genome Biology*.

Although diet, smoking and other factors contribute to the risk of cardiovascular disease — the leading cause of death in the Western world — scientists have long believed that air pollution, particularly tiny pieces of soot from trucks and factories, plays a major role, too.

For years, scientists around the world have reported that on days when fine-particle pollution increases, deaths from lung diseases, heart attacks and strokes rise substantially. Riverside County and the San Gabriel Valley have among the worst fine-particle pollution in the nation.

The researchers exposed human blood cells to a combination of diesel particles and oxidized fats, then extracted their DNA. Working together, the particles and fats switched on genes that cause inflammation of blood vessels, which leads to clogged arteries, or atherosclerosis.

The team then duplicated the findings in living animals by exposing mice to a high-fat diet and freeway exhaust in downtown Los Angeles. The same artery-clogging gene groups were activated in the mice.

The scientists reported that diesel particles may enter the body's circulatory system from the lungs, and then react with fats in the arteries to alter how genes are activated, triggering inflammation that causes heart disease.

Other research has shown similar inflammatory damage in lungs exposed to fine particles. Diesel exhaust has also been linked to lung cancer, asthma attacks and DNA damage.

"Our results emphasize the importance of controlling air pollution as another tool for preventing cardiovascular disease," said Ke Wei Gong, a UCLA cardiology researcher who was one of the study's authors.

In many urban areas, including the Los Angeles region, ultra-fine particles are the most concentrated near freeways, mostly from diesel exhaust, which is spewed by trucks, buses,

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off-road vehicles and other vehicle engines.

For decades, California and local air-quality regulators have been ratcheting down particulate emissions from trucks and other sources, but the airborne levels in most of the Los Angeles region still frequently exceed federal health standards.

Diesel particles contain free radicals, which damage tissues, and so do the fatty acids in cholesterol.

The study aimed to find out what happened when these two sources of oxidation came in contact.

In the cells exposed to just the cholesterol or just the diesel, the effects on the genes were much less pronounced. More than 1,500 genes were turned on, and 759 were turned off, when diesel particles were combined with the fats.

"Now that we see this genetic footprint, we have a better understanding of how the injury occurs due to air pollution particles," Nel said.

The UCLA scientists hope to transform the gene changes to a biomarker, which experts can then use to predict which people are most susceptible to heart disease from air pollution.  
UNQUOTE.

To contact the author, readers may send her an e-mail at [marla.cone@latimes.com](mailto:marla.cone@latimes.com)

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