

## **Biking on busy streets linked to heart risks**

Brett Israel, Environmental Health News

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When Ed Campaniello chooses his biking route between his Mission District home and job in downtown San Francisco, traffic is a top consideration.

And new research shows that's a smart move – not only because fewer cars mean less of a chance of being hit, but because polluting vehicles may give cyclists heart problems.

The 42-year-old solar energy consultant said it makes sense. Occasionally, he gets a funky taste in his mouth after riding behind trucks and buses.

"I consider bicycling part of what keeps me healthy," he said. "But the benefits might be mitigated by the greater level of pollutants I'm being exposed to."

A new study published in the journal *Environmental Health Perspectives* showed a link between biking in heavy traffic and heart health risks, with cyclists having heart irregularities in the hours after their exposure to a variety of air pollutants on busy roads.

### **Canadian study**

The study by scientists from Health Canada, Environment Canada and the University of Ottawa does not suggest that bikers would be better off driving. Rather, the findings intensify the scrutiny on cyclists' pollution exposure and point to simple solutions for a cleaner ride, such as avoiding busy roads whenever possible.

For the study, 42 healthy, nonsmoking cyclists in Ontario wore heart monitors before, during and after cycling for one hour on congested and uncongested roads. Instruments on the bikes measured exposure to air pollution.

Short-term exposure to heavy traffic significantly decreased heart rate variability in the cyclists for up to three hours after they finished cycling. Heart rate variability is associated with a higher risk of heart attacks.

"A very healthy person is like a Ferrari," said Arden Pope, an expert in the health effects of air pollution and professor at Brigham Young University in Provo, Utah. "Step on the gas, and it really goes fast. Step on the brakes, and it really slows down. The human heart, you want it to be like that, too."

With lower heart rate variability, the heart is behaving more like a minivan than a Ferrari, Pope said, meaning that it is less able to respond to stress.

Around the world, researchers have found that whenever fine particles increase in the air, deaths and hospitalizations from asthma, heart attacks and other cardiopulmonary problems increase, too.

### **Tailpipes**

Proximity to tailpipes is one reason why cyclists have a high exposure to the tiny particles, which are emitted by vehicles along with thousands of other chemicals.

Diesel buses and trucks are among the worst offenders.

"The closer you are to the source of the fresh exhaust, the worse it is," said Patrick Ryan, an environmental epidemiologist at the University of Cincinnati, who studies the health effects of traffic-related pollution.

Near the tailpipe, these particles are small enough to lodge deep in the lungs. Tiny particles can also cross the blood-brain barrier, potentially harming the nervous system. Farther away from the tailpipe, these particles clump together, growing too large to lodge deeply, Ryan said.

Pete Trachy has been biking from the Mission to volunteer at the St. Anthony Free Medical Clinic for two years. He said he is well aware of air pollution when he is cycling.

"I do notice it, especially when I'm sick and biking behind a truck that's belching diesel fuel," said Trachy, who said he would like to see some busy streets, such as Market and Valencia, completely closed to traffic.

"There are some spots on Market where I end up holding my breath," he said.

The new study of Canadian cyclists does not mean that people should lock up their bikes and hop into the driver's seat. Other studies have shown that drivers have higher respiratory problems than cyclists because of their higher exposure to volatile organic chemicals in vehicle exhaust.

"In general, you're better off cycling than not," said Michael Brauer, a cyclist and atmospheric scientist at the University of British Columbia who was not involved in the study. "The physical activity benefits outweigh negative impacts. But you'd like there to be no impacts."

The Canadian study authors have a simple solution: Avoid busy streets.

"When possible it may be prudent to select cycling routes that reduce exposure to traffic and/or to avoid cycling outdoors or exercise indoors on days with elevated air pollution levels," the research team wrote.

Others agree.

"Our recommendations to cyclists would be to avoid busy streets as much as possible," said Dimitri Stanich, a spokesman for California's Air Resources Board.

