

Toxic air raises risk of death

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The Gardiner Expressway is a three-minute drive from Jem Cain's house. On cold winter nights, she can hear the trains burning diesel at the nearby rail yard. Hundreds of trucks go in and out each day from a factory a few blocks away from her Etobicoke home.

It is hard not to be concerned, she admits. But she is more worried about what she doesn't know: the long-term impact of the toxic air on her health.

"You cannot continue to put bad things in an environment and have it just absorb it," she said. "After a while it's going to start affecting us."

The findings of a Toronto study published this month in the journal *Environmental Health Perspectives* confirm her fears. Researchers found that exposure to traffic-related air pollution can cause an increased risk of death overall, and an even higher risk of death due to stroke and heart disease.

"Living in an area of high pollution, you have an increased chance of dying overall," said primary investigator Michael Jerrett, a public health professor at the University of California, Berkeley.

"You probably are going to die younger than you would have if you weren't living in a high-pollution zone," he said.

Researchers tracked 2,400 patients over 40 at an asthma clinic at Toronto Western Hospital, in a 10-year study that was controlled for factors such as obesity, smoking and lung function – and that mapped patients according to their addresses. When they tracked the addresses of the 298 individuals who died over the course of the study, they saw a pattern emerge.

"When you compared those living in the less polluted areas to those living in the higher pollution areas, the death rate is higher for those in the latter group," said Jerrett. Using nitrogen dioxide, a chemical generated by internal combustion engines, as a marker for air pollution, the researchers measured levels at 143 locations around the city for two-week periods in the early fall of 2002, and in May 2004.

They found pollution levels were highest in the west end of the city – where Cain lives – and decreased toward the northeast. Levels were also higher near major highways, in downtown Toronto and along major roads like Yonge St.



PAWEL DWULIT/TORONTO STAR

Jem Cain, on Gardiner's Kipling Ave. overpass near where she lives, is afraid her proximity to industrial areas as well as traffic is exposing her to health risks. A new study confirms her fears. (Jan. 28, 2009)

In 2006, the average concentration of nitrogen dioxide in Toronto's air was around 20 parts per billion.

In the most polluted areas in the study, levels exceeded 60 ppb.

They found the relative risk of death from all causes increased by 17 per cent for those who lived in areas where nitrogen dioxide was highest, and by 40 per cent for death from heart disease and stroke.

"You would think that with exposure to air pollution, your risk of lung disease would be increased; that turns out to be partially true – you may have asthma and trouble breathing, but you aren't likely to die from it," said Dr. Murray Finkelstein, in the department of family and community medicine at Mount Sinai Hospital.

"Surprisingly, over the last five years, researchers have discovered that air pollution causes heart attacks," he said.

Air pollution particles deposited in the lungs lead to inflammation and the creation of inflammatory particles that travel by blood to other parts of the body, said Finkelstein.

The particles can cause stickiness in the blood, blood clots, and narrowing of the arteries around the heart, and even change heart rhythm.

This study, partly funded by Health Canada, adds to a growing body of evidence pointing to the detrimental effect of traffic-related pollution on health.

In 2007, Toronto Public Health released a report called the "Air Pollution Burden of Illness from Traffic in Toronto," which estimated that air pollution contributed to 1,700 premature deaths and 6,000 hospitalizations each year. Some long-term initiatives were introduced, but little has been done to address the immediate issue of traffic-related pollution.

Cain can't understand the delay. "I am frustrated with the government's complicity in this ... there is a lot more they could be doing."