
Air Pollution Burden of Illness from Traffic

Purpose of the Study

- In 2004, Toronto Public Health reported that exposure to five common smog pollutants contributed to about 1,700 premature deaths and 6,000 hospitalizations of Toronto residents each year. Although the 2004 report identified traffic as an important contributor to air pollution, it could not quantify its effects on health.
- Toronto Public Health's new report, *Air Pollution Burden of Illnesses from Traffic in Toronto*, reviews the scientific evidence on the health effects of vehicle pollution; and determines the burden of illness and economic impact of traffic pollution in Toronto.

Vehicle Pollutants and Trends

- Motor vehicles generate three types of air pollutants: common smog-causing pollutants; air toxics; and greenhouse gases (GHGs).
- Vehicles are the largest source of carbon monoxide (CO: 85%) and nitrogen oxides (NO_x: 69%) emissions within Toronto, and a significant source of tiny particles (PM_{2.5}: 16%). In addition, vehicles are a significant and chronic source of 'air toxics' (toxic substances in the air). Vehicles are also a large source of greenhouse gases (GHGs).
- The transportation sector contributes about 35% of the total GHGs emitted in Toronto.

Traffic Trends

- Trend data for Toronto show that the number of vehicles traveling into and out of the city each morning has increased by about 75% over the last two decades.
- In 2006, 67% of trips into Toronto were made by single occupant vehicles. About 14% of trips were made by multiple occupant vehicles. Only 20% of trips into the city were made by public transit (including GO bus, GO train, regional bus and TTC).

Health Impacts from Traffic Pollution

- The health effects of common smog pollutants range from premature death and hospitalizations for respiratory and cardiovascular illnesses, to less serious but more frequent effects such as chronic bronchitis and asthma symptoms.
- The adverse impact of air pollution on lungs has been known for some time, and a growing body of research is also linking air pollution to cardiovascular problems, including an increased incidence of heart attacks and strokes.
- There is substantial evidence that shows that people living or working close to high-traffic areas experience more adverse effects than people who are further away from traffic sources.
- There is increasing evidence that vehicle emissions are associated with the development of cancer, especially lung cancer. Diesel exhaust, benzene and 1,3-butadiene are known carcinogens that are emitted by vehicles.
- Also of concern is the potential link between vehicle exhaust and reproductive effects, such as reduced fertility and low birth weight babies.

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Burden of Illness from Traffic Pollution in Toronto

- As a result of this new study, Toronto Public Health has determined that traffic pollution gives rise to about 440 premature deaths and 1,700 hospitalizations each year in Toronto.
- While the majority of hospitalizations involve the elderly, traffic-related pollution also has significant adverse effects on children.
- The study estimates that children experience more than 1,200 acute bronchitis episodes per year as a result of traffic pollution. Children are also likely to experience the majority of asthma symptom days (estimated to be about 68,000 per year)
- Overall, this study shows that traffic-related pollution affects a very large number of people, and contributes to 67,000 acute respiratory symptom days, and 200,000 restricted activity days during which people spend days in bed or cut down on their usual activities.

Economic Impact of Traffic Pollution

- This study estimates that mortality-related costs associated with traffic pollution in Toronto are \$2.2 billion each year.
- Based on policies in place in other jurisdictions, implementation of comprehensive, integrated policies and programs could reduce total vehicle travel by 30 to 50%.
- A 30% reduction in motor vehicle emissions in Toronto could save nearly 200 lives and result in 900 million dollars in health benefits annually.

Combating Smog and Climate Change

- In July 2007, City Council adopted the *Climate Change, Clean Air and Sustainable Energy Action Plan*. This comprehensive and ambitious plan targets the following air quality improvements: a reduction in greenhouse (GHG) emissions from 1990 levels of 6% by 2012, 30% by 2020 and 80% by 2080; and a reduction in locally-generated smog-causing pollutants from 2004 levels of 20% by 2012.
- In October 2007, City Council endorsed the staff report *Sustainable Transportation Initiatives: Short-term Proposals*.
- Other major policy directions that support sustainable transportation are the City's Official Plan and recent plans to increase transit ridership through the Ridership Growth Strategy and the Transit City Plan.

The full report *Air Pollution Burden of Illness from Traffic in Toronto, Problems and Solutions* is posted at www.toronto.ca/health.

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