

# Briefing Note:

## Air Pollution's Impact on Health in Ontario

### **Toronto Public Health, July 2004**

In 2004, Toronto Public Health estimated that the five key air pollutants – fine particulate matter, ground level ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide -- contribute to about 1,700 premature deaths and 6,000 hospital admissions each year in the City of Toronto alone.

These updated estimates represent a significant increase over the estimates produced for Toronto in 2000 (i.e. 1,000 premature deaths and 5,500 hospital admissions) reflecting, to a large extent, the impact of new research related to the chronic health impacts associated with fine particulate matter. Of the 1,700 premature deaths attributed to air pollution, about 700 were associated with acute exposures to all five air pollutants, while about 1,000 were associated with chronic exposure to fine particulate matter alone.

### **Health Canada and Environment Canada, May 2005**

In 2005, Health Canada and Environment Canada jointly released a report that examined the impact of the five common air pollutants on premature deaths in several cities in Canada. They found that air pollution contributes to about 2,900 premature deaths in 4 cities in Ontario each year – Windsor, Hamilton, Toronto and Ottawa. They attributed a little less than one third of these deaths to acute exposures to the mix of air pollutants and over two thirds to chronic exposure to fine particulate matter alone.

It found that the five common air pollutants were responsible for between 7% (in Ottawa) and 10% (in Toronto and Hamilton) of all non-traumatic deaths in the four cities. The estimate for Toronto (i.e. 1,850 premature deaths) was very close to those derived by Toronto Public Health (Judek, 2004).

### **Toronto Public Health, Health Canada, Environment Canada & McMaster, University, June 2005**

In June 2005, Toronto Public Health released a report, prepared in collaboration with scientists from Health Canada, Environment Canada and McMaster University, that examined the combined effects of extreme weather and air pollution on premature mortality.

This study used 46 years of mortality and hourly weather data and 25 years of hourly air pollution data to determine the relative impact of extreme heat, extreme cold and air pollution on premature deaths in four cities in Canada – Toronto, Ottawa, Montreal and Windsor. The researchers found that, over a 46 year period, extreme weather and acute exposure to air pollution combined were responsible for an average of 1,047 premature deaths in Toronto. About 80% of these deaths were attributed to air pollution while the other 20% were attributed to extremely hot or cold weather. It is noteworthy that, while the methodology used for this study was very different than the methodology used to produce the 2004 Toronto Public Health estimates, the results for acute premature deaths were very similar.

This study confirmed two realities:

- ✍ Extreme weather events present a very significant risk to human health on the relatively few days of the year in which they occur; and
- ✍ Air pollution is responsible for a much greater burden of illness because it presents a risk to health all year round (TPH, 2005).

## **Ontario Medical Association, 2005**

On June 14, 2005, the Ontario Medical Association (OMA) released new estimates for the health impacts associated with air pollution in Ontario. It estimates that the five air pollutants contribute to:

- ✍ 5,829 premature deaths,
- ✍ 16,807 hospital admissions,
- ✍ 59,696 emergency room visits, and
- ✍ 29,292,100 minor illness days in Ontario in 2005.

The OMA has also estimated the costs associated with these health impacts:

- ✍ \$374,342, 400 for lost productivity,
- ✍ \$506,612,700 for healthcare costs (not counting visits to doctors' offices),
- ✍ \$536,546,600 for pain and suffering,
- ✍ \$6,391,700,000 for loss of life, and
- ✍ \$7,809,201,700 in total.

Health impact and cost estimates for specific communities can be pulled off a factsheet at <http://www.oma.org/phealth/ICAP2005regional.pdf>.

## **References:**

- ✍ Judek, Stan, Barry Jessiman, David Stieb. (2004). Estimated Number of Excess Deaths in Canada Due to Air Pollution. Air Health Effects Division, Health Canada, and Robert Vet, Meteorological Service of Canada, Environment Canada. August 2004.
- ✍ Ontario Medical Association (OMA) (2005). Illness Costs of Air Pollution. June 2005.
- ✍ Toronto Public Health (TPH) (2004). Air Pollution Burden of Illness in Toronto: 2004 Summary. Prepared by Monica Campbell, David Pengelly and Monica Bienefeld. Toronto: July 2004.
- ✍ Toronto Public Health (TPH) (2005). Combined Impact of Extreme Heat and Air Pollution on Mortality. Report to the Board of Health, May 27, 2005.

**Prepared by Kim Perrotta, Manager, OPHA Environmental Health Program, June 2005**