



## STAFF REPORT ACTION REQUIRED

### Assessing Health Impacts of Pollution Emissions

<b>Date:</b>	November 14, 2007
<b>To:</b>	Parks and Environment Committee
<b>From:</b>	Medical Officer of Health
<b>Wards:</b>	All
<b>Reference Number:</b>	

#### **SUMMARY**

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This report responds to the request of the Medical Officer of Health to advise on reporting and assessment of pollution emissions by the Toronto Environment Office (TEO) to enable Toronto Public Health (TPH) to assess the health effects of emissions.

TPH uses modelling studies to assess the health impacts of pollutants from specific sources. Most recently, TPH used modelling data on vehicle emissions from TEO to quantify the health impacts of traffic pollution. In response to a request from the Board of Health in July 2005, TEO is planning to model the cumulative impacts of air releases in South Riverdale and the Beach. TPH could use the results of this modelling activity to assess health implications if TEO provides resources to conduct the study.

To get the most value from modelling activities and emissions inventories, it is necessary to include a health assessment component. It is recommended that any new resources for modelling studies, include funding for TPH to undertake the health assessment component.

TEO reports on the amount of specific pollutants released to air, water, and soil as reported by the federal National Pollutant Release Inventory (NPRI). Currently about 11,000 businesses in Toronto may be using toxic chemicals but only about 300 report to the federal NPRI, resulting in large gaps in the city's emissions inventory. The Board of Health requested the Medical Officer of Health to report in the spring of 2008 on a mandatory environmental reporting program, including development of a draft bylaw. If a reporting bylaw comes into effect, TPH should take a leading role in the compilation of pollution release data from point sources in Toronto, as well as assess the implications for human health.

## **RECOMMENDATIONS**

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The Medical Officer of Health recommends that:

1. The Parks and Environment Committee request that any new resources for modelling studies and emissions reporting include funding for Toronto Public Health to undertake the health assessment component of these initiatives.

### **Financial Impact**

There are no direct financial implications arising from the adoption of this report.

### **DECISION HISTORY**

On September 26, 2007, the Parks and Environment Committee requested that the Medical Officer of Health advise if TPH requires continued assessment and reporting by TEO on pollutants released in Toronto in order to assess the effects of emissions on human health (see <http://www.toronto.ca/legdocs/mmis/2007/pe/decisions/2007-10-10-pe09-dd.pdf>).

### **ISSUE BACKGROUND**

TEO recently released its annual report on pollution emitted in Toronto, based on data collected from pollutant release inventories. The report focussed on the amount of specific pollutants released to air, water, and soil as reported by the federal NPRI, and described the geographical distribution of industrial, community and the City's corporate sources of pollution in Toronto.

Using these data, TEO provides descriptions of where releases occur throughout the city, and has the capability to use computer models to estimate the levels of a variety of pollutants in the environment. In addition to data from NPRI, TEO has also included data on releases of pollutants from traffic and heating of businesses and residences.

### **COMMENTS**

#### **The Use of Modelling Data**

Modelling is a tool that is used to estimate levels of pollutants in a community from specific sources when monitoring data are not available. Modelling is especially useful to predict the impact of new sources or other proposed changes before they actually occur. Modelling can help people understand the contribution of various pollution sources to total exposures in the community. The results of modelling studies can be used to assess the health impacts of current emission sources and the health risks or benefits of new sources or policies.

Prior to the creation of TEO, the development of its capacity for air modelling studies, TPH relied on external experts to conduct modelling studies. For example, in 1999, TPH commissioned a modelling study of the emissions from the St. John's Norway Crematorium. This study allowed TPH, in response to a request from the Board of

Health, to assess if the emissions from this new facility would adversely impact the health of people in the surrounding community.

Similarly, in 2004, with funding from Toronto Water, TPH commissioned an Air Emissions Study of the Ashbridges Bay Treatment Plant (ABTP). The study provided a comprehensive picture of air emissions from the ABTP. The modelling of emissions, using operating conditions in the past, present and future (with planned improvements), provided estimated levels of pollutants in the surrounding community. TPH was able to use the results of this modelling work to project the health impact of the ABTP over time.

In July 2005, as a result of the ABTP study, the Board of Health requested that the City examine the air quality impact of emissions of all sources in South Riverdale and the Beach, including the ABTP so as to develop an understanding of the cumulative emissions from multiple sources in this community (see <http://www.toronto.ca/legdocs/2005/minutes/committees/hl/hl050711.pdf>). TEO is currently working on this cumulative emission study which focuses on common air pollutants and a selected number of toxic substances of priority concern. The estimates of air concentrations obtained from this modelling study could provide the data inputs required by TPH to assess the health impacts of multiple pollution sources in this community. However, TPH would also require sufficient resources to undertake the health assessment component.

More recently, TPH requested TEO to provide levels of pollutants in the air emitted from vehicles in Toronto. TEO modelled vehicle emissions for major air pollutants, which provided TPH with the input data needed to assess the health impacts associated with air pollution from traffic. This collaborative study demonstrated the usefulness of combining modelled emissions data from TEO with health assessment expertise at TPH to provide a comprehensive assessment of the health and economic burden of illness associated with traffic in Toronto.

### **Reporting of Environmental Releases**

Currently about 11,000 businesses in Toronto may be using toxic chemicals but only about 300 report to the federal NPRI, resulting in large gaps in the city's emissions inventory. The NPRI provides an important publicly-accessible source of data on the facilities that release one or more pollutants to the air, water or soil. TEO uses this data to prepare its annual report that describes the sources and releases of pollutants in the city for its largest emitters.

The collection and compilation of pollution data is useful in identifying the sources of pollutants and emission trends in Toronto. However, reporting only the quantities of substances released into the environment, as is currently the case with TEO's annual report, is not sufficient. Pollutant release data alone do not provide an accurate picture of the risks to health that these pollutants pose because they do not take into account the relative toxicity of a substance. A small amount of a very toxic chemical may be of greater concern than a larger amount of a less toxic substance. Furthermore, the amount of pollutant released does not tell us about the level of exposure in the community and hence the risk to health.

TPH is presently working on the access to environmental information (“community right-to-know”) initiative that proposes to extend reporting of environmental releases to smaller businesses and sources in Toronto. The Board of Health requested the Medical Officer of Health to report in the spring of 2008 on a mandatory environmental reporting program, including development of a draft bylaw. If a reporting bylaw comes into effect, TPH will be able to take a leading role in the compilation of pollution release data from point sources in Toronto, as well as the assessment of the implications for human health. The reporting of releases by point sources may diminish the need for modelling. However, the availability of more emissions data will provide more opportunities to use modelling in specific and strategic ways to more accurately predict health impact. TPH foresees an ongoing and evolving need to partner with TEO in these initiatives.

### **Resource Issues**

Since City Council first adopted the Environmental Plan in 2000, there has been a heavy demand on TPH staff to participate on a large number of environmental issues by providing health assessment, policy and educational outreach on environmental matters that affect health. Most recently, Toronto’s *Climate Change, Clean Air and Sustainable Energy Action Plan* (see [http://www.toronto.ca/changeisintheair/pdf/clean\\_air\\_action\\_plan.pdf](http://www.toronto.ca/changeisintheair/pdf/clean_air_action_plan.pdf)) recommended that the City “*evaluate health and economic benefits associated with policy options that result in lower levels of air pollution in Toronto*”. TPH could do this work by using Health Canada’s computer-based Air Quality Benefits Assessment Tool, among other approaches. For situations where TPH requires information on how specific sources contribute to ambient pollutant levels, it would be beneficial for TEO to have the modelling capacity to provide the necessary input data to TPH.

Despite previous attempts, TPH has not been successful in getting budget approval for a new health assessment specialist. As noted in its 2007 Business Case requesting 100% city funding for one health assessment expert, TPH does not have a health expert dedicated to air quality and climate change issues. TPH had requested one new staff position to provide the health assessment component for the air monitoring and modelling work by TEO, among other activities such as determining the health benefit of municipal policy options and evaluating the success of improvement measures. While several innovative research and policy initiatives have been undertaken by TPH with external grants, TPH does not have sufficient resources on an ongoing basis to support the needs of the city as they pertain to environmental threats to health.

The development of an integrated modelling and emissions program as initiated by TEO is a resource intensive activity. It has most value if it also includes a health assessment component, which further increases resource needs. Although TPH currently has the technical expertise to use a variety of health assessment methods, it lacks sufficient resources to meet the health assessment needs of an expanded modelling and emissions reporting program by TEO. Hence, it is recommended that any new resources for modelling and emissions reporting studies, include funding for TPH to undertake the health assessment component.

## **CONTACT**

Monica Campbell  
Manager, Environmental Protection Office  
Toronto Public Health  
Tel: 416-338-8091  
Fax: 416-392-7418  
Email: [mcampbe2@toronto.ca](mailto:mcampbe2@toronto.ca)

Dr. Rosana Pellizzari  
Director, Planning & Policy and  
Associate Medical Officer of Health  
Toronto Public Health  
Tel: 416-392-7463  
Fax: 416-392-0713  
Email: [rpelliz@toronto.ca](mailto:rpelliz@toronto.ca)

## **SIGNATURE**

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Dr. David McKeown  
Medical Officer of Health