

## **Halton Region Report on Health Impacts from an Energy-from-Waste Facility**

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| <b>Date:</b>             | February 7, 2008          |
| <b>To:</b>               | Board of Health           |
| <b>From:</b>             | Medical Officer of Health |
| <b>Wards:</b>            | All                       |
| <b>Reference Number:</b> |                           |

### **SUMMARY**

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Ontario is facing a challenge in managing the amount of solid waste created, primarily due to limited existing landfill capacity. Some Ontario municipalities have chosen to explore energy-from-waste (EFW) as a disposal option. In June of 2007, Halton Region Council discussed a Business Case that considered EFW as a potential option for Halton. This report summarizes the information on the health and environmental impacts that was presented in the Business Case, along with comments from a peer review requested by the Halton Regional Health Department.

The Business Case is a preliminary step in exploring the potential for an EFW facility in Halton. It identifies the pollutants and health effects that might be of concern with an EFW facility that would need to be studied in more detail before such a facility is built. These include criteria air pollutants (such as nitrogen dioxide and particulate matter), dioxins and furans, polycyclic aromatic hydrocarbons, mercury and other metals as well as cancer, respiratory effects and adverse reproductive outcomes.

Toronto Public Health agrees with both the authors of the Business Case and the peer reviewer that there are a number of potential health issues associated with both EFW facilities and landfill operations, and that a more detailed study of health and environmental impacts is necessary before considering the construction and operation of a specific facility. The Medical Officer of Health supports the use of health impact assessment, which Toronto's Solid Waste Management Services is planning to do as part of its Solid Waste Residuals Management Study.

#### **Financial Impact**

This report has no financial impact.

## **DECISION HISTORY**

At its meeting of June 12, 2007, the Toronto Board of Health asked the Medical Officer of Health to report back on the results of the Region of Halton “Garbage Incinerator Study”.

## **ISSUE BACKGROUND**

### **Solid Waste Disposal issues**

Ontario municipalities, including Toronto, have been facing significant solid waste management challenges. Diversion of recyclable and compostable wastes reduces the total amount of waste that needs to be disposed, however, there will always be some residual waste material that requires disposal. Landfill capacity is limited and developing new waste disposal facilities is time-consuming and expensive.

The lack of available landfill space has led some Ontario municipalities to explore the use of incineration technologies for residual waste, in order to reduce the amount of space required for landfill. Such facilities can also be used to co-generate energy, a process referred to as energy-from-waste, or EFW. Durham, York and Halton Regions have recently considered building EFW facilities.

Concerns about health effects and odours from waste disposal facilities have existed for many years. Waste incineration raises specific concerns about air emissions and chemicals can leach from landfill into groundwater. Waste disposal facilities can also have an impact on the physical, mental and emotional well-being of local residents. While the releases from newer landfill and incineration technologies are less than those of the older facilities, concerns remain about the health impacts of specific installations.

Halton Region’s 2006-2010 Solid Waste Management Strategy contains suggestions to extend the life of Halton’s landfill through diversion of a greater proportion of household waste and an EFW facility. To provide Halton Region Council and the public with background information, the Region retained a consulting team to develop a business case for an EFW. In June 2007, Halton Region Council discussed the Business Case and decided to postpone any further action on this issue for at least 5 years.

### **The Halton Region Business Case and Peer Review**

The Business Case is a preliminary step in exploring the potential for constructing an EFW facility in Halton Region. If the Region decides at a later date to go ahead with an EFW option, some form of environmental assessment will almost certainly be required. Such assessment would include studies of potential health effects of the proposed facility.

One of the documents included in the Business Case is *Step 4A: Identification and Description of Potential Health and Environmental Effects*. This document scopes out

environmental and health effects of potential concern with an EFW facility and which would need to be studied as part of a future environmental assessment or screening process. The Halton Region Health Department retained an independent external expert to review this document. Dr. David Pengelly is Professor Emeritus of Engineering Physics at McMaster University, Associate Medical Professor at both McMaster and the University of Toronto, and has worked extensively in the field of air pollution research. Dr. Pengelly prepared a peer review report that was included in the Business Case as Appendix B in the health and environmental effects document. The Halton Region Health Department supported the comments made in the peer review. For this report, Toronto Public Health reviewed the *Business Case Analysis for an EFW Facility*, including an in-depth review of *Step 4A: Identification and Description of Potential Health and Environmental Effects* and its Appendix B, Dr. Pengelly's peer review.

The health and environmental effects document includes a literature review of health effects of incineration, EFW facilities and landfill operations. Results of only a small number of studies were described, as the review was restricted mainly to studies published after 2000. These studies were considered more likely to include information relevant to the current state of technology, in particular, about the impact of facilities using newer pollution control technologies. The authors generally conclude that overall there is inconclusive evidence about most health impacts of solid waste disposal options. They recommend that any further consideration of an EFW facility in Halton should include more detailed studies of the risks of cancer, respiratory effects and adverse reproductive outcomes associated with the proposed facility.

In describing environmental impacts, the Business Case concludes EFW facilities emit more pollutants directly into the air than do landfills, whereas landfills release more pollutants into water. The authors state that criteria air pollutants (such as nitrogen dioxide and particulate matter), dioxins and furans, polycyclic aromatic hydrocarbons (PAHs), mercury and other metals, would have to be considered in future health and environmental studies, and might also have to be measured, monitored, and/or modelled. They also note that future site-specific studies should include the existing levels of these contaminants in the air when the potential health impacts of the facility are assessed.

The peer review report indicates a number of areas where the health impacts review could have been improved: the scope of information included could have been broader; in some places, the presentation and interpretation of the literature could have been more accurate; and the authors could have been more conclusive in their statements about some health impacts of the different types of facilities. Had these limitations been addressed, the health assessment would have identified a slightly longer or more precise list of health outcomes to be addressed. However, there would still be a need to fully assess the health and environmental impacts of an EFW at the next stage.

The peer reviewer agreed with the authors that the more detailed site-specific studies should incorporate background concentrations of pollutants and alternate exposure pathways such as through the food chain (via air pollutants settling on crops, or falling into water and contaminating fish).

## COMMENTS

A number of important health issues, such as cancer, cardiac and respiratory effects, and adverse reproductive outcomes are potentially associated with EFW facilities or landfill operations. The exploration of a new waste disposal facility should include a comparative study of the impacts of various options. This study should include a comprehensive and detailed analysis of the expected health impacts of the preferred option(s) that takes consideration of the existing local conditions, such as concentrations of pollutants in the air and water. While the current environmental assessment process includes public health considerations, a more formal and detailed health impact assessment is preferred so that the full scope of potential health impacts is captured and assessed. In Toronto, Solid Waste Management Services has proposed such an approach and is collaborating with the Medical Officer of Health on a health impact assessment as part of the Solid Waste Residuals Management Study.

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## SIGNATURE

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