



## **Residual Waste Study**

# **Energy from Waste In Perspective: Facts**

**May 12, 2009**

## 1.) What about the effects on health and the environment?

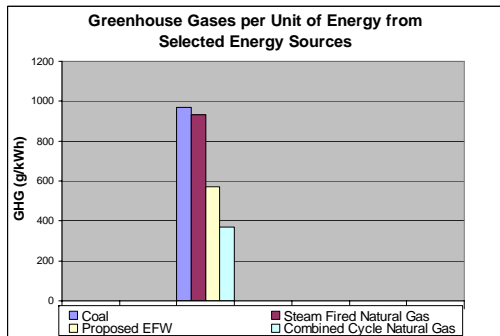
In 1999 the Ministry of Environment released a report on the environmental risks of non-hazardous municipal waste landfilling and incineration. The findings of this report were consistent with the Regions Consultants Environmental Surveillance Report (Feb 2007). The results found:

- No significant human health effects (cancer, lung disease, nerve damage or reproductive effects) are likely in communities near incinerators.
- No correlation between chemicals emitted from municipal waste incinerator facilities and those measured in human biomonitoring programs.
- Direct or indirect impacts to vegetation and wildlife resulting from incinerator emissions are not anticipated to be significant.
- No correlation between chemical concentrations in ambient air and stack emissions from incinerators using modern air pollution control technology.

In addition, Energy from Waste is acknowledged as a means to lessen the impacts of climate change by:

- The Global Roundtable on Climate Change (GROCC)
- The Intergovernmental Panel on Climate Change (IPCC)
- U.S. Environmental Protection Agency (U.S EPA)

Incineration with energy recovery results in a net reduction of greenhouse gases. The energy created from energy from waste offsets greenhouse gases which would otherwise be produced from fossil fuel electrical generation.



(Environment Canada 1990 - 2005)

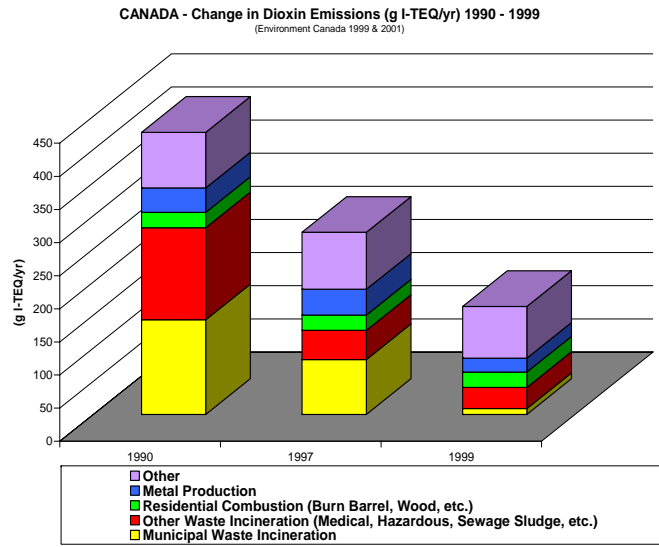
## 2.) What about toxic dioxins and furans?

Dioxins and furans are released into the atmosphere primarily as by-products of industrial and combustion processes, but are also contained in certain pesticides and chlorinated solvents. Some of the more significant sources are:

- Metal Production / Manufacturing.
- Residential Combustion (e.g. backyard trash burning, wood stove, etc.).
- Municipal Waste Incineration.
- Other Incineration (e.g. medical, hazardous, sewage sludge, crematoriums).

Emissions from the municipal waste incineration sector have decreased by approximately 98 % over the past 10 to 15 years.

- Modern municipal waste incineration accounts for approximately 1% of all dioxin emission sources in Canada.
- A large Canada Day fireworks display likely produces more dioxins than an EFW facility will over 100 years of operation.



### 3.) Emissions Monitoring

Emissions from the operation of the facility will meet or exceed the regulatory limits set by:

- Ministry of Environment current Guideline A-7.
- Ministry of Environment Proposed Guideline A-7.
- European Union Emissions Guidelines.

In addition to the continuous stack monitoring, regular stack testing will be required as part of the Certificate of Approval.

The Durham/York EFW will be equipped with the following emissions and environmental control equipment:

- A process called selective non-catalytic reduction (SNCR) is used to control NOx emissions.
- Powdered activated carbon (PAC) is used to control mercury and dioxins and furans.
- A fabric filter is used to remove particulate and heavy metals.
- A spray dryer absorber (SDA) will be used for acid gas control.
- Continuous emissions monitoring systems and dioxin samplers.
- Zero process water discharge to sewer systems.

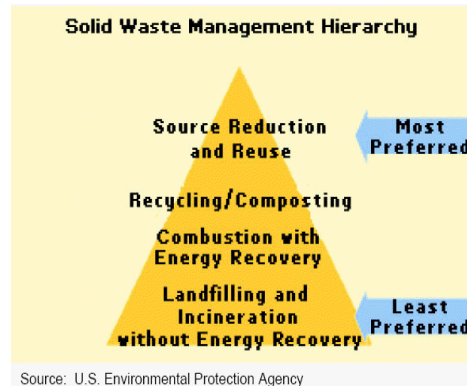
#### 4.) What about Europe? The Paris Appeal?

i) The *Paris Appeal* is an international declaration put together by a group of 68 experts who proposed 164 recommendations and measures to be implemented in the broad field of environmental health. This appeal underlines the relationship of cause and effect between chemical pollution and diseases. The *Paris Appeal* has been signed by many international scientific key figures and the Standing Committee of European Doctors, which represents all medical governing bodies and medical organizations in the 25 EU Member States.

One of the 164 recommendations was a call for a Ban on the Building of Any New Incinerator (recommendation M145). In its recommendation it goes on to state, "These bans must last as long as a waste management scheme applicable to all EU Member States, clearly defining the collection, selective sorting and recycling means, has not been put in place". What the expert panel recognizes in its discussion paper is that landfill dumping and incineration are undesirable, albeit necessary end-life disposal options that should only be used within a complete waste management plan that first focuses on reduction, reuse and recycling. In M145, the panel discusses that "Blind" incineration of waste is dangerous, polluting, unsanitary, and is not profitable. Its recommendation is made to ensure "Blind" incineration without the 3Rs should be banned until such time as highly structured, legislated and enforced recycling systems are used.

Both York and Durham Regions have a clearly defined waste management strategy that follows the waste hierarchy. As a result, they rank at the top of their class in Ontario as the number one in 3R's, and have aggressive 70% diversion plans moving forward; hence they fit the ideal that the *Paris Appeal* Declaration is aiming for.

ii) An open letter from 33,000 doctors opposing the changes to the Waste Framework Directive defining EFW as recovery was sent to the European Parliament. Environment Ministers from 27 European countries, however did approve the changes to the Waste Framework Directive in October 2008.



#### 5.) Expensive? Here's how our current situation compares:

The actual RFP bid for the capital and operating costs from Covanta are:

- Capital Costs               \$235.7 million.
- Operating Costs           \$14.6 million.

In addition, there will be an estimated \$8.6 million generated from electricity revenue. This revenue will offset the \$14.6 million in operating costs, resulting in an overall net operating cost of \$6.1 million. This is lower than Durham's annual landfill haulage and disposal costs to Michigan, which cost \$8.7 million in 2008.

A full financial report will be provided to Regional Council June 24, 2009.

## 6.) EFW does NOT need to import waste from other regions.

Durham and York Regions have proposed a 140,000-tonnes-per-year facility. In 2008, Durham Region alone disposed of approximately 116,000 tonnes of residual waste. With 20,000 tonnes being contributed from York, the facility is sized to accommodate the current waste tonnages for Durham and York for the next 15 years. The facility is designed to handle current waste disposal tonnes with 50% diversion and a future 70% diversion rate in combination with projected population growth. The size of the facility actually requires better diversion efforts as small incremental facility expansions are not possible, unlike landfills which are relatively easy to expand. The EFW facility will run efficiently at 70 - 75% capacity – it does not need to be ‘fed’ exactly 140,000 tonnes per year or 426 tonnes per day. Therefore increased diversion efforts go hand-in-hand with EFW and is one of the key reasons why communities worldwide using incineration have consistently higher diversion rates.

## 7.) EFW is NOT wasting energy and resources.

One of the reasons Durham and York have proposed an EFW facility is because waste diversion in the two Regions is extremely successful. Durham and York Regions have the highest waste diversion rates in their respective classes according to Waste Diversion Ontario.

- Durham 48%.
- York Region 46%.

European countries with the most EFW facilities also have very high recycling, composting and reuse rates comparable to ours.

The Region will continue to promote and provide waste diversion programs with a goal of achieving 70% diversion.

## 8.) Burn then bury?

Approximately 30% by weight or 10% by volume of the waste received will still need to be landfilled.

Of this 30%:

- 2 – 4 % by weight is fly-ash. This material is considered toxic and will be stabilized onsite or sent to a hazardous waste processing facility.
- 25 % by weight is the non-toxic bottom ash - the char material left after combustion. Bottom ash is screened for recyclable metals, which are removed and sold for reuse. Reuse of the bottom ash in road base, daily landfill cover, and asphalt and low strength concrete products is possible.

The Energy from Waste facility is a strategy designed to:

- Minimize waste going to landfill and conserve landfill space.
- Minimize the impact of climate change.
- Offset fossil fuel electricity generation.
- Provide a long term solution for residual waste disposal.

## **References:**

### **Environmental Risks of Non-Hazardous Waste Landfilling and Incineration, Ministry of the Environment, July 1999**

<http://www.ene.gov.on.ca/envision/techdocs/3795e.pdf>

### **Review of International Best Practices of Environmental Surveillance for Energy from Waste Facilities, Jacques Whitford, Feb 16, 2009**

<http://www.durhamyorkwaste.ca/health-review.php>

### **Global Roundtable on Climate Change (GROCC) – on climate change and EFW**

[http://www.nextgenerationearth.org/files/GROCC4\\_statement.pdf](http://www.nextgenerationearth.org/files/GROCC4_statement.pdf)

### **Intergovernmental Panel on Climate Change (IPCC) – on climate change and EFW**

<http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter10.pdf>

### **U.S Environmental Protection Agency (EPA) – on climate change and EFW**

<http://www.epa.gov/climatechange/wycd/waste/downloads/fullreport.pdf>

### **Environment Canada**

[http://www.ec.gc.ca/pdb/websol/emissions/trends/DF\\_e.cfm](http://www.ec.gc.ca/pdb/websol/emissions/trends/DF_e.cfm)

Environment Canada. Inventory of Releases of PCDDs/PCDFs, Updated Edition. February 2001

### **Fireworks**

[http://www.policyconnect.org.uk/docs/content/efw\\_pamphlet.pdf](http://www.policyconnect.org.uk/docs/content/efw_pamphlet.pdf)

UK Environmental Agency 2000, briefing from APSWG (Associate Parliamentary Sustainability Waste Group) Neil Carrigan and Prof. Chris Coggins

New Scientist (3<sup>rd</sup> July 1999), fireworks also cause dioxin pollution and blue fireworks release the most dioxins. This is because the copper responsible for their colour catalyses the formation of the poisons when chlorinated chemicals in fireworks burn, according to the latest issue of Chemosphere (vol39, p 925).

Department For Environment, Food and Rural Affairs, Emissions of Dioxins and Dioxin-like Polychlorinated Biphenyls from Domestic Sources, Dr. Mark Broomfield, Enviro Consulting Ltd, UK

### **Covanta – preferred vendor emissions equipment**

<http://www.durhamyorkwaste.ca/efw-proponent.php>

## **Paris Appeal & open letter to European parliament**

<http://www.artac.info/static/telechargement/MemorandumAPen090107.pdf>

<http://register.consilium.europa.eu/pdf/en/08/st03/st03646.en08.pdf>

[http://eur-lex.europa.eu/LexUriServ/site/en/com/2005/com2005\\_0666en01.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/com/2005/com2005_0666en01.pdf)

## **Capital and Operating Costs**

<http://www.durhamyorkwaste.ca/efw-proponent.php>

## **Waste diversion rates**

[http://www.wdo.ca/files/domain4116/2007%20Residential%20GAP%20Diversion%20Rate%20by%20Municipal%20Groupings\(1\).xls](http://www.wdo.ca/files/domain4116/2007%20Residential%20GAP%20Diversion%20Rate%20by%20Municipal%20Groupings(1).xls)

## **disposal of ash**

<http://www.durhamyorkwaste.ca/efw-proponent.php>



[www.durhamyorkwaste.ca](http://www.durhamyorkwaste.ca)

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