

May 2011

Re: EBR Registry Number 011-2709

As health care providers serving our communities throughout Durham, York, and Ontario, we wish to register our concerns regarding the Certificate of Approval application for the proposed Durham-York waste incinerator. It is ironic that the Ontario government is touting the health benefits to be achieved by the shutdown of coal-fired generating stations, while at the same time considering approval of this project. Garbage incineration, the waste management option with the greatest documented impact on air quality, will have both immediate and long-term effects on human health and the environment.

Whereas results from the baseline monitoring completed for the Environmental Assessment at the proposed incinerator site in Courtice show that the air shed is already overburdened with respiratory irritants as described below:

- Current ambient ozone levels exceed applicable air criteriaⁱ;
- Ambient 24-hour fine particulate matter (PM2.5) concentrations are marginally below the Canada Wide Standard (CWS)ⁱⁱ;
- The ambient annual average concentration of PM2.5 at the Courtice site is already above the World Health Organization (WHO) benchmark for PM2.5ⁱⁱⁱ;
- When compared against other southern Ontario urban centres, which included Hamilton, Toronto, Windsor, Oakville and Sarnia, the annual mean concentration of nitrogen dioxide (NO₂) at Courtice was the highest of all the centres^{iv} ;
- St. Marys Cement Bowmanville is located within 5 km and is east of the site and is the 3rd highest industrial polluter of NO_x in the province of Ontario ranking behind only the coal-fired Nanticoke and Lambton generating stations^v; St. Marys also emits large quantities of other respiratory irritants;

Whereas exposure to ozone was excluded from assessment in the health risk assessment;^{vi}

Whereas expert reviewers and citizens identified concerns with the characterization of risk for PM2.5 and NO₂, specifically with the use of ambient air criteria as toxicity reference values to characterize risk and these concerns remains unaddressed^{vii};

Whereas the proposed incinerator will emit hundreds of tonnes of respiratory irritants to the air shed every year^{viii};

Whereas Health Canada, in their review of the Durham/York EA, identified concerns regarding fine particulate matter (PM2.5), nitrogen oxides (NOx), cadmium and other respiratory irritants with respect to current levels and project impact and advised the Ministry of the Environment that the study documents discuss mitigation measures for these (and other) respiratory irritants^{ix} and that, subsequent to receiving this advice, the proponents did not act on it^x;

Whereas Durham Region has the second highest asthma rate in the province of Ontario as reported by ICES^{xi} and Statistics Canada reports the asthma rate for Durham Region is 12.2%, which is higher than the Ontario rate of 8.2%^{xii};

Whereas PM2.5 is a non-threshold contaminant (i.e. adverse human health effects may be observed at any level of exposure)^{xiii} and the risk assessment did not assess PM2.5 as a non-threshold pollutant^{xiv};

Whereas the Durham/York risk assessment used the Canada Wide Standard (CWS) to characterize risk for PM2.5 and the Canada Wide Standard is NOT a health-based standard^{xv};

Whereas potential risk to human health risk is identified for the following scenarios defined in the environmental assessment when more stringent World Health Organization benchmarks are used as toxicity reference values for PM2.5 and NO2:

- Baseline Case for annual average PM2.5;^{xvi}
- Baseline Traffic Case for annual average NO2 and PM2.5;^{xvii}
- Operational Project Case for annual average PM2.5;^{xviii}
- Operational Project Upset Project Case for 24-hour PM2.5;^{xix}

Whereas potential risk to human health was identified in the EA risk assessment for the 140,000 tonnes per year facility for Respiratory Irritants for the acute 1-hour process upset cases, and for the 24-hour baseline, normal operation project case and process upset project case;^{xx}

Whereas the PM_{2.5} emissions in the Certificate of Approval (CofA) application Durham and York Regions submitted in March 2011 are almost 2.5 times what was considered in the EA;^{xxi}

Whereas the ammonia emissions in the CofA application are almost double what was assessed in the EA and ammonia is a respiratory irritant;^{xxii}

Whereas there has been no health risk assessment or medical review of the increased emissions in the CofA application;

Whereas the CofA application refers to an operation scenario at 110% Maximum Continuous Rating (MCR) as normal operation^{xxiii} while normal operation in the EA was defined as 100% MCR;

Ultrafine Particulate Emissions

Whereas ultrafine particulates are a significant portion of the fine particulate emissions (PM_{2.5}) from incinerators and, while they may represent a small percentage of the *mass* of the fine particulates, they may account for the majority of the *number* of particles found in aerosols produced as a result of the combustion process;^{xxiv}

Whereas there is considerable evidence to show that inhaled ultrafine particulates can gain access to the bloodstream and are then distributed to other organs in the body, and are able to cross the placental barrier;^{xxv}

Whereas fine and ultrafine particulate emissions from incinerators are of special concern because ultrafine particulates are chemically highly reactive and can carry a wide range of toxic by-products of incineration (for example dioxins, PCBs) and adsorbed heavy metals;^{xxvi}

Whereas these ultrafine particulates are not regulated nor monitored and current risk assessment methods do not adequately or accurately evaluate the risk associated with these toxic ultrafine particulates;

Whereas there is significant uncertainty about the level of health impacts associated with ultrafine particulates and other emissions from incinerators;

Whereas the significant uncertainty regarding the risk due to these ultrafine particulate emissions is now much greater due to the substantially increased PM_{2.5} emissions reported in the Certificate of Approval application;

Heavy Metals

Whereas the proposed incinerator will emit tonnes of heavy metals during its operating life;^{xxvii}

Whereas both Regions have not maximized their diversion programs;

Whereas Durham Region does not have a clear bag waste collection program to increase diversion of recyclables and hazardous items;

Whereas Durham Region does not have a curb side hazardous waste collection program to increase capture of items containing hazardous chemicals such as batteries, paint, CFLs, etc. which contain mercury, cadmium, lead, and other toxic chemicals;

Whereas the Minister of the Environment has stated in his Conditions of Approval that only non-hazardous municipal solid waste from municipal collection may be accepted at the site and that the Regions must *ensure* that only non-hazardous municipal solid waste is being accepted;^{xxviii}

Whereas the Certificate of Approval application identifies dry cells, mercury batteries and vehicle batteries as unacceptable waste;^{xxix}

Whereas the Regions do not have an effective pre-sort of the waste planned to remove unacceptable and/or hazardous items from the waste collected;^{xxx}

Whereas the predicted loading of mercury to baseline sediments by the project under normal operations is 54%;^{xxxi}

Whereas the Durham Lake Ontario waterfront is already home to the top two on-site emitters of mercury in the Province: Durham Region's Duffin Creek water pollution control plant and Gerdau Ameristeel of Whitby;^{xxxii}

Whereas a recent study done in Toronto found a significant percentage of women residing in Canada with hair mercury levels above the limit where adverse effects may be observed to the fetus and concluded that general recommendations for a safe number of fish servings might not be enough to protect the fetus;^{xxxiii}

Whereas Europe has restriction on brominated compounds whereas Ontario does not^{xxxiv};

Whereas the wastestream is variable in both the short and long term and the facility emissions will vary with the wastestream;

Whereas there is no continuous monitoring of mercury or other heavy metals planned for the facility^{xxxv};

Whereas annual stack tests would not be adequate to accurately determine the total annual emissions of heavy metals and unacceptably high emissions could occur for long periods without detection;

Dioxins and Furans

Whereas dioxins and furans are highly toxic by-products of incineration and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and also cause cancer;^{xxxvi}

Whereas, “due to their extraordinary environmental persistence and capacity to accumulate in biological tissues, dioxins and furans are slated for virtual elimination under the Canadian Environmental Protection Act, the federal Toxic Substances Management Policy and the CCME Policy for the Management of Toxic Substances”;^{xxxvii}

Whereas the proposed incinerator contributes significantly to the regional industrial total with the Facility contribution being 26% of the regional industrial total under normal operation and 50% under process upset conditions;^{xxxviii}

Whereas the predicted sediment loading of dioxins/furans as a result of normal operation is 33% of current baseline and 92% under process upset conditions;^{xxxix}

Whereas exceedances of regulatory benchmarks were identified for dioxins/furans exposure for infants and toddlers in the baseline multi-pathway risk assessment;^{xl}

Monitoring

Whereas the Certificate of Approval application states there will be continuous emissions monitoring for combustion gases NO_x, SO₂, HCl, HF, CO and NH₃^{xli}, but other pollutants of high concern are NOT slated to be monitored continuously such as PM, PM_{2.5}, and heavy metals;

Other Considerations

Whereas the proposed 140,000 tonnes per year incinerator will add an additional 139,000 tonnes of carbon dioxide (CO_{2e}) equivalents every year of operation contributing to greenhouse gas emissions and global warming;^{xlii}

Whereas incineration does not eliminate the need for landfill;

Whereas the Certificate of Approval application states that the facility's maximum residuals (bottom ash, fly ash, cement and other processing waste) requiring final disposal is 56,000 tonnes and this tonnage is very significant and is 40% of the original 140,000 tonnes incinerated^{xliii};

Whereas fly ash is highly toxic, and requires disposal at a hazardous waste facility and bottom ash contains toxic residues;

Whereas a previous Minister of the Environment approved Terms of Reference for the Durham/York Residual Waste Study EA which did not require a full consideration and evaluation of the full range of environmental impacts associated with ash residues i.e. on site management, transport and ultimate disposal.

In its 2008 report No Breathing Room: National Illness Costs of Air Pollution, the Canadian Medical Association makes the following statements: "In 2008, 21,000 Canadians will die from the effects of air pollution. While most of these deaths will be due to chronic exposure over a number of years, 2,682 will be the result of acute short term exposure. By 2031, almost 90,000 people will have died from the acute effects of air pollution. The number of deaths due to long-term exposure to air pollution will be 710,000. 42% of air pollution associated acute premature deaths will be as a result of cardiovascular disease." ^{xliv}

Ultimately, it will be our most vulnerable populations- the developing fetus, young children, the elderly, and those with chronic cardiac and respiratory illnesses- that face the greatest risks to their health, as a result of this proposed incinerator.

We urge the Ministry of the Environment to DENY the Certificate of Approval, and instead recommend that Durham and York Regions adopt alternative, and progressive waste management strategies that do not include incineration.

Bowmanville Area Medical Association

(Representing 47 physicians who practice in Clarington)



NURSE PRACTITIONERS'
ASSOCIATION OF ONTARIO

Michelle Acorn,

President, Nurse Practitioners' Association of Ontario

ⁱ *Final Report on Ambient Air Monitoring at the Courtice Road Monitoring Station (December 2009)*, Executive Summary, page (iii) – Annual ozone concentration is $36.2 \mu\text{g}/\text{m}^3$ which exceeds the National Ambient Air Quality Objective (NAAQO) criteria of $30 \mu\text{g}/\text{m}^3$; *Air Quality Technical Study Report (December 4, 2009)*, Section 3.2.4.4, Maximum 24-hour ozone concentration of $78 \mu\text{g}/\text{m}^3$ at Courtice station exceeds the 24-hour NAAQO maximum acceptable level of $50 \mu\text{g}/\text{m}^3$

ⁱⁱ *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA, Section 5.2.1.3 – “The 98th percentile, annual ambient measurement averaged over the 15 month monitoring period at the Courtice Station is $29 \mu\text{g}/\text{m}^3$, which is indicative that PM2.5 levels in the vicinity of the Facility are slightly below the CWS.” (the CWS is $30 \mu\text{g}/\text{m}^3$)

ⁱⁱⁱ *Final Report on Ambient Air Monitoring at the Courtice Road Monitoring Station (December 2009)* of the Durham/York Residual Waste EA, Executive Summary, page (iii) – Annual average concentration of PM2.5 is $10.2 \mu\text{g}/\text{m}^3$; *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA, Table 7-4 gives the WHO benchmark for annual average PM2.5 of $10 \mu\text{g}/\text{m}^3$

^{iv} *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA, Figure 7-10

^v Environment Canada, National Pollutant Release Inventory (NPRI) Data search across all facilities, all sectors in Ontario, Data published on December 20, 2010,

^{vi} *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA, Section 4.3

^{vii} Clarington Peer Review, *Clarington Report PSD-071-09, Attachment 14*, July 2009, Comments 50,53; MOE Peer Review, June 25, 2009, *Appendix P-4*, Comment 17, *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA; Subsequent Comments by MOE reviewer Mr. Abdel-Ghafar, October 19, 2009, Comment 17; Numerous submissions (September 25, 2009 and April 2, 2010) to the MOE by the public including comments from Anderson, Bertrand, Bracken, Bracken and Gasser

^{viii} *Air Quality Assessment Technical Study Report, December 2009*, Durham York Residual Waste EA, Table 4-5; SO₂ + NO_x + CO + Particulate Emissions = 262 tonnes/year.

^{ix} Health Canada Review of Durham/York Residual Waste Study, M. Lalani, September 25, 2009, included in the Ministry of the Environment Review: *Review of the Durham and York Residual Waste Study Amended Environmental Assessment, February 2010*.

^x Response of the Regions' Project Team to Health Canada is found in the Technical Reviewers Comment Summary Tracking Table, Durham York Residual Waste EA, December 2009

^{xi} To T, Gershon A, Tassoudji M, Guan J, Wang C, Estrabillo E, Cicutto L. The Burden of Asthma in Ontario. ICES Investigative Report. Toronto: Institute for Clinical Evaluative Sciences; 2006.

^{xii} Health Profile data for Ontario and Durham Regional Health Unit, Statistics Canada, February 2011

<http://www12.statcan.gc.ca/health-sante/82-228/details/page.cfm?Lang=E&Tab=1&Geo1=HR&Code1=3530&Geo2=PR&Code2=35&Data=Rate&SearchText=Durham%20region&SearchType=Contains&SearchPR=01&B1=All&Custom=>

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- ^{xiii} CCME, 2000, referred to in Health Canada review , September 25, 2009 included in the Ministry of the Environment Review: *Review of the Durham and York Residual Waste Study Amended Environmental Assessment, February 2010*.
- ^{xiv} *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA, Table 4-2 and 7-2
- ^{xv} *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA, Table 7-2
- ^{xvi} *Final Report on Ambient Air Monitoring at the Courtice Road Monitoring Station (December 2009)* of the Durham/York Residual Waste EA, Executive Summary, page (iii) – Annual average concentration of PM_{2.5} is 10.2 µg/m³; *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA, Table 7-4 gives the WHO benchmark for annual average PM_{2.5} of 10 µg/m³, therefore the Concentration Ratio (CR) = 10.2/10 > 1.
- ^{xvii} *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA, Table 7-11.
- ^{xviii} Same reference as endnote 16 above; CR >1;
- ^{xix} *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA, Table 7-21
- ^{xx} *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA, Table 7-24
- ^{xxi} *Air Quality Assessment Technical Study Report, December 2009*, Durham York Residual Waste EA, Table 4-1; *Application for a Basic Comprehensive Certificate of Approval (Air and Noise)*, Emissions Dispersion Modelling Report, Table 1, March 2011.
- ^{xxii} Reference the same as endnote 21 above.
- ^{xxiii} *Application for a Basic Comprehensive Certificate of Approval (Air and Noise)*, ESDM Report, Executive Summary refers to Scenario A as a normal operating scenario and Scenario A contemplates the facility operating at 110% MCR
- ^{xxiv} Howard, C., *Statement of Evidence, Particulate Emissions and Health, Proposed Ringaskiddy Waste-to-Energy Facility*, June 2009
- ^{xxv} Howard, C.V., *Nano-particles and Toxicity – Annex (P15-20) in No Small Matter II: The Case for a Global Moratorium Size Matters! April 2003, in Occasional Paper Series 7:1 2003, ETC Group*
- ^{xxvi} Numerous studies cited in paper referenced in 23 above
- ^{xxvii} *Air Quality Assessment Technical Study Report, December 2009*, Durham York Residual Waste EA, Table 4-5; Cadmium + Chromium + Lead + Mercury = 89.6 kg/year = 2.69 tonnes over 30 year operational life .
- ^{xxviii} Notice of Approval to Proceed With the Undertaking, Minister of Environment’s Conditions of Approval, Condition 21
- ^{xxix} Application for a Certificate of Approval (Waste Disposal Site), DYEC Design and Operations Report, Appendix D: Standard Operating Procedures, Section 2.2.
- ^{xxx} Application for a Certificate of Approval (Waste Disposal Site), Design and Operations Report, Appendix D: Standard Operating Procedures, Section 2.2
- ^{xxxi} *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA , Table 6-3.
- ^{xxxii} Environment Canada, National Pollutant Release Inventory (NPRI) Data search across all facilities, all sectors in Ontario, Data published on December 20, 2010
- ^{xxxiii} “Fish Consumption in Pregnancy and Fetal Risks of Methyl mercury Toxicity”, Canadian Family Physician Medical Journal, October 10 2010 vol. 56 no. 10 **1001-1002**
- ^{xxxiv} Sabine Kemmlein, Dorte Herzke, Robin J. Law, Brominated flame retardants in the European chemicals policy of REACH--Regulation and determination in materials, *Journal of Chromatography A*, Volume 1216, Issue 3, Tools for the REACH Programme - analytical methods for the evaluation of industrial contaminants, 16 January 2009, Pages 320-333, ISSN 0021-9673, DOI: 10.1016/j.chroma.2008.05.085.
- ^{xxxv} *Application for a Basic Comprehensive Certificate of Approval (Air and Noise)*, ESDM Report, Section 1.3.1.5.1
- ^{xxxvi} World Health Organization, Fact Sheet No.225, May 2010.

^{xxxvii} http://www.ccme.ca/ourwork/air.html?category_id=91

^{xxxviii} *Air Quality Assessment Technical Study Report, December 2009*, Durham York Residual Waste EA, Table 4-5

^{xxxix} *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA, Table 6-3

^{xl} *Human Health and Ecological Risk Assessment Technical Study Report, December 10, 2009* of the Durham/York Residual Waste EA, Table 7-15

^{xli} *Application for a Basic Comprehensive Certificate of Approval (Air and Noise)*, ESDM Report, Section 1.3.1.5.1

^{xlii} *Air Quality Assessment Technical Study Report, December 2009*, Durham York Residual Waste EA, Table 8-2

^{xliiii} Application for a Certificate of Approval (Waste Disposal Site), DYEC Design and Operations Report, Appendix E

^{xliiv} No Breathing Room: National Illness Costs of Air Pollution www.cma.ca/index.php/ci_id/86830/la_id/1.htm