

Health Facts #1 re: Oakville Power Plant

1. In terms of human health, air pollution is the most harmful environmental problem in Canada today "...causing thousands of deaths, millions of cases of illness, billions of dollars in health care expenses, and tens of billions of dollars in lost productivity every year."¹ To put the issue in context, the David Suzuki Foundation notes "...the magnitude of deaths and illnesses caused by air pollution in Canada is equivalent to a Walkerton water disaster happening on a daily basis."¹
2. Air pollution in Halton and Peel is directly linked to numerous premature deaths and excess hospital admissions that cost the health care system and society millions of dollars every year. According to the Ontario Medical Association (OMA), air pollution in 2005 was responsible for:
 - 190 premature deaths and 540 hospital admissions in Halton
 - 370 premature deaths and 1240 hospital admissions in Peel
 - estimated health care costs of \$56.82M for Halton and Peel, and
 - estimated lost productivity costs of \$45.82M for Halton and Peel.²
3. The health impacts of air pollution in Halton and Peel are accelerating. According to the OMA, air pollution in 2008 was responsible for:
 - 336 premature deaths in Halton
 - 700 premature deaths in PeelThese numbers are considerably higher than projections made in 2005.³
4. With respect to human health, the air pollutants of principal concern are particulate matter (PM), ground level ozone, nitrogen dioxide, carbon monoxide and sulphur dioxide.⁴ Particulate matter is usually described as either PM₁₀ or PM_{2.5}. The term PM₁₀ includes coarse particles between 2.5 and 10 micrometres in diameter and also fine particles less than 2.5 micrometres in diameter. Of all these pollutants, the bulk of adverse health effects are caused by inhalation of fine particulate matter or PM_{2.5}.⁵
5. We are all susceptible to the harmful effects of air pollution but certain groups are more vulnerable. Children, the elderly, and those with diabetes or chronic heart or lung disease are the most likely to be affected, especially by PM_{2.5}.^{4 6 7}

6. Children are at particularly increased risk from air contaminants because their lungs are still developing. Children have higher rates of inhalation than adults and possess a larger lung surface area per unit of body weight that leads to proportionately greater exposures. Current levels of air pollution have been shown to have chronic, adverse effects on lung development in children. ^{8 9 10}

7. Numerous scientific studies have linked PM_{2.5} exposure to:
 - a. airway irritation, coughing, breathing difficulties
 - b. decreased lung function, development of chronic bronchitis, aggravated asthma
 - c. cardiovascular events such as heart attacks and stroke ^{5 11 12 13}

8. Size matters. The size of PM pollution particles is directly linked to their potential for causing health problems. PM_{2.5} poses the greatest threat because it consists of microscopic particles that escape capture in the upper airway. These particles can then enter and lodge deep in the lungs, thus enabling the initiation of adverse effects. ^{5 13}

9. There are no known “safe” levels of PM_{2.5} or ground-level ozone in ambient air. Gas-fired power plants emit PM_{2.5} and nitrogen oxides. Nitrogen dioxide is a precursor of both ground-level ozone and PM_{2.5}. Any reduction in these pollutants will therefore have a health benefit, and any increase will have a health cost. ¹

10. The Clarkson Airshed is already toxic. An Ontario Ministry of the Environment study in 2006 found that this airshed experienced PM_{2.5} levels that exceeded the benchmark of 30 µg/m³ for the entire study period (2003-2005).¹⁴ Nothing has happened since that would have reduced this level, and building a 900 MW gas-fired generator in the Oakville-Clarkson vicinity will only add to the toxicity of this airshed.

11. Statements that there will be no additional adverse health impacts associated with the building of a gas-fired power plant in Oakville-Clarkson ignore current global best practices aimed at curbing the cumulative effect of air pollutants. The Whitford study concluded that the health impact would be minimal because exposure would be within existing regulatory limits.¹⁵ However, this conclusion assumes that current regulatory limits exist that are protective of health, which is not the case.¹⁶ Adverse health effects of PM_{2.5} are observed at all levels of exposure, indicating that within any large population, there is a wide range of susceptibility and some people are at risk even at the lowest end of the observed concentration ranges.¹³

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- ¹ David Suzuki Foundation, The Air We Breathe – An International Comparison of Air Quality Standards and Guidelines, 2006. <http://www.davidsuzuki.org/files/SWAG/DSF-HEHC-Air-Web2r.pdf> [Accessed Nov 22, 2009]
- ² Ontario Medical Association, Illness Cost of Air Pollution (ICAP), 2005 <http://www.oma.org/phealth/ICAP2005regional.pdf> [Accessed Nov 10, 2009].
- ³ Ontario Medical Association, Illness cost of Air Pollution (ICAP), 2008. <http://www.oma.org/media/news/pr080606b.asp> [Accessed Nov 10, 2009]
- ⁴ Canadian Medical Association, No Breathing Room - National Illness Costs of Air Pollution (NICAP) Summary Report, August 2008, http://www.cma.ca/multimedia/cma/content/Images/Inside_cma/Office_Public_Health/ICAP/CMA_ICAP_sum_e.pdf [Accessed Nov 10, 2009]
- ⁵ United States Environmental Protection Agency – Particulate Matter <http://www.epa.gov/oar/particlepollution/> [Accessed Nov 10, 2009]
- ⁶ Ontario Medical Association, Smogwise Information Program Backgrounder <http://www.oma.org/phealth/Smogwise.htm> [Accessed Nov 22, 2009]
- ⁷ Environment Canada. Air Quality Health Index: Are you at risk? Webpage. <http://www.ec.gc.ca/cas-aqhi/default.asp?lang=En&n=8727DF6F-1> [Accessed Nov 22, 2009]
- ⁸ United States Environmental Protection Agency. Highlights of the Child-Specific Exposure Factors Handbook (Final Report). U.S. Environmental Protection Agency, Washington, D.C. EPA/600/R-08/135, 2009. <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=200445> [Accessed Nov 10, 2009]
- ⁹ Gauderman W, Avol E, Gilliland F. et al. The Effect of Air Pollution on Lung Development from 10 to 18 Years of Age, NEJM 2004; 351:1057-1067. <http://content.nejm.org/cgi/content/short/351/11/1057> [accessed Jan 7, 2010].
- ¹⁰ American Academy of Pediatrics, Committee on Environment Health, Policy Statement, Ambient Air Pollution: Health Hazards to Children *Pediatrics* 2004;114;1699-1707. <http://pediatrics.aappublications.org/cgi/content/full/114/6/1699> [Accessed Jan 7, 2010].
- ¹¹ Environment Canada – Clean Air Online http://www.ec.gc.ca/cleanair-airpur/PM_2.5,10-WS2C68B45C-1_En.htm [Accessed Nov 22, 2009]
- ¹² Health Canada, Environmental and Workplace Health http://www.hc-sc.gc.ca/ewh-semt/air/out-ext/effe/health_effects-effets_sante-eng.php [Accessed Nov 10, 2009]
- ¹³ World Health Organization, Health risks of particulate matter from long-range transboundary air pollution. European Centre for Environment and Health Bonn Office, Joint WHO / Convention Task Force on the Health Aspects of Air Pollution, 2006.
- ¹⁴ Ontario Ministry of Environment, Clarkson Airshed Study - A Scientific Approach to Improving Air Quality - Part II – The Ambient Air Monitoring Program, November 2006
- ¹⁵ Jacques-Whitford Report, Jan 2009. Air Quality Assessment – Technical Study Report - Ontario Power Authority, Local Effects of the Displacement of Coal with Gas-Fired Generation
- ¹⁶ Dr. Bob Nosal, Medical Officer of Health, Halton Region Health Department, March 11, 2009 response to Mr. Amir Shalaby, VP, Power System Planning, Ontario Power Authority.

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