

## Briefing Note: The Environment and Human Health

Evidence of the connection between environment and health is well established. The World Health Organization (WHO) estimates that environmental factors account for 24 per cent of the world's burden of disease and 23 per cent of all deaths.<sup>1</sup> Environment is estimated to play a larger part in some diseases, such as asthma (44 per cent).<sup>2</sup> While the costs are higher in developing countries, environmental factors have a significant impact on many diseases across the globe. Seventeen per cent of deaths in developed regions were accountable by environmental factors.<sup>3</sup> In developed regions, environment plays a more significant role in chronic diseases such as lung cancer (30 per cent).<sup>4</sup>

These adverse health impacts have been acknowledged by Canadian authorities. Environment Canada states that “[a]sthma, lung cancer, cardiovascular disease, allergies and many other human health problems have been linked to poor air quality.”<sup>5</sup> Both international and Canadian evidence show that these impacts are disproportionately borne by lower income people.<sup>6 7 8 9 10</sup>  
<sup>11</sup> Environmental protection is thus not only a matter of health, but also of social justice.

Like all Canadians, registered nurses have become increasingly concerned about climate change and the impact of environmental toxics on the health of their families. Recent polling has shown that environment has jumped to a leading position in voters' minds.<sup>12</sup>

### Issue: Pollution and Cancer Prevention

**RNAO calls for** (guided by the precautionary principle<sup>13</sup>):

- The creation of a comprehensive Pollution and Cancer Prevention Act, which will:
  - Immediately require companies using or releasing large quantities of toxic substances to develop pollution prevention plans that would lead to the use of safer substitutes for toxics and a significant reduction in the generation and use of toxic substances.
  - Increase public awareness of sources of toxics by creating a publicly accessible database of toxic releases.
  - Require the labeling of products containing carcinogens, mutagens, and reproductive toxics.
  - Establish funding and a technical support office to assist companies and workers in their efforts to reduce or eliminate the production and use of toxics, help citizens' groups monitor pollution prevention plans, and collect and report annually on use of toxics.
- Collaboration with partners such as the Canadian Cancer Society to develop and implement a comprehensive strategy to reduce environmental, household, and occupational carcinogens.

- Support for these actions with a comprehensive community right-to-know legislation on environmental, occupational and household toxics.

### Background

- Chronic conditions such as asthma, cancer, developmental disabilities, and birth defects have become the primary causes of illness and death in children in industrialized countries, and there is growing expert recognition that chemicals in the environment are partly responsible for these trends.<sup>14</sup>
- In 2005, 2006, and 2007, Environmental Defence reported tests showing that Canadians, including children, had many chemicals that are known or suspected health hazards present in their bodies. These included: chemicals that cause reproductive disorders; hormone disruptors; neurotoxins; and, those associated with respiratory illnesses. The tests found that test subjects were heavily polluted; they had in their blood on average about half of all the many tested chemicals.<sup>15 16 17 18</sup>
- Children are exposed to more toxics per body weight, absorb ingested substances differently, have developed fewer protections against toxics, face additional risks while undergoing development, face higher exposures due to activity and behaviour; and have much more time to develop disease from toxics.<sup>19 20 21 22 23</sup> The precautionary principle dictates that we insist on proof of safety prior to use, rather than waiting for proof of harm.<sup>24</sup>

## Issue: Pesticides

### RNAO calls for:

- A commitment to protecting Ontarians from pesticides by enacting legislation that will:
  - Ban non-essential uses of pesticides.
  - Ban the display and sale of pesticides for non-essential uses.
  - Ban the sale of pesticide-fertilizer mixes.
  - Only allow exemptions for public health.
  - Include effective mechanisms for enforcement.
  - Be passed in 2008 and be fully implemented during the government's current mandate.

### Background

- Seventy-one per cent of Ontarians support a province-wide ban on most lawn and garden pesticides, similar to that enjoyed by Quebec citizens.<sup>25</sup> Polling shows strong support for the ban that extends across all political parties, age groups, and genders.
- There are many epidemiological and laboratory studies linking a range of health problems to pesticide exposure. The problems include: cancer, birth defects, reproductive damage, neurological and developmental toxicity, immunotoxicity, and endocrine disruption.<sup>26 27</sup> The risk to health comes not only from active ingredients, but also from so-called inert substances.<sup>28 29 30</sup> Finally, synergistic and cumulative effects can heighten the health damage due to pesticides.<sup>31 32</sup>
- RNAO has been joined by 14 other health and environmental groups calling for this legislation to be strong and implementation to be swift.<sup>33</sup>

## Issue: Kyoto and Clean Green Power

### RNAO calls for:

- A shift energy policy toward energy conservation.
- A commitment to regulations terminating all coal burning at Ontario's power plants by 2009.
- Canceling plans for the construction of new nuclear plants in Ontario.
- Increasing reliance on small and large scale renewable energy sources.
- A commitment to phasing in a carbon tax and other environmental taxes and regulations.
- Production of a clean air and climate change plan that credibly guarantees that Ontario can meet its obligations on greenhouse gases under Kyoto, and its commitments on reductions of emissions of mercury, nitrogen oxides, and volatile organic compounds, as quickly as possible.

### Background

- There is very strong agreement among most scientists that global warming is a reality, and that this warming is principally due to human activity.<sup>34 35</sup> A principal cause of this warming is the dramatic increase in the concentration of greenhouse gases (GHGs) in the atmosphere. Research from the prestigious Intergovernmental Panel on Climate Change (IPCC) has shown that carbon dioxide levels in the atmosphere are much higher today than at any point in the last 650,000 years.<sup>36</sup>
- The IPCC predicts an acceleration of warming, with temperatures rising 1.1 to 6.4 degrees Centigrade over the next century.<sup>37</sup> Lower estimates correspond to greater slowing of GHG emissions. Even a 1.1 degree change will imply very significant environmental impact.
- While much of the focus is on environmental catastrophe, implicit is a huge associated health catastrophe. Health impacts arise in a variety of ways, with the marginalized and vulnerable most likely to be affected. In particular, those in Central America, Southeast and South Asia, and Africa will be most vulnerable to flooding, droughts, hurricanes, disease and other disasters. Other risks associated with global warming include a rise in the number of extreme weather events and heat waves, poorer air quality, and increased rates of vector-, rodent-, food- and water-borne diseases.
- Effectively addressing these health and environmental impacts requires a renewed commitment to implementing policies that will address climate change. For Ontario, an important first step would be to promptly complete the phase-out of coal-fired power generation. Ontario could make up any power gap by a combination of increased conservation strategies, more renewable energy such as wind power, and by converting the coal plants to natural gas.
- RNAO is opposed to one alternative -- an expansion of nuclear power. Nuclear power plants present radiation risks and produce large amounts of radioactive waste that must be stored in perpetuity (and no solution for such storage has been found).
- One tool for cleaning up the environment is little-used in North America: green taxes. Ontario and Canada lag behind other OECD countries in the use of environmental taxes (only the US makes less use of environmentally related taxes than Canada).<sup>38</sup> The experience of these jurisdictions can help Ontario shape an effective policy involving phased introduction of taxes and subsidies.
- The introduction of a carbon tax would work to reduce greenhouse gas emissions. It has been implemented in a number of countries, including Finland and Sweden, and Quebec

has now done so as well.<sup>39 40</sup> The National Roundtable on the Environment and the Economy, whose members are appointed by the federal cabinet, has called for a carbon tax or similar market incentive for Canada.<sup>41</sup>

---

<sup>1</sup> Prüss-Üstün, A. & Corvalán, C. (2006), *Preventing Disease Through Healthy Environments: towards an estimate of the environmental burden of disease*, World Health Organization, p. 9.

<sup>2</sup> Ibid, p. 78.

<sup>3</sup> Ibid, p. 9.

<sup>4</sup> Ibid, p. 76.

<sup>5</sup> Environment Canada (2006), *Health, Environment and the Economy*, July 13, retrieved January 21, 2008 from <http://www.ec.gc.ca/cleanair-airpur/default.asp?lang=En&n=D8331ABC-1>.

<sup>6</sup> Finkelstein, Murray M., Michael Jerrett, and Malcolm R. Sears (2005), "Environmental inequality and circulatory disease mortality," *Journal of Epidemiology and Community Health*, 59: 481-487. Concludes that some of the social gradient in circulatory mortality is due to environmental exposure to background and traffic pollution.

<sup>7</sup> Finkelstein, MM, Jerrett, M., DeLuca, P., Finkelstein, N. Verma, D.K., Chapman, K., & Sears, M.R. (2003), "Relation between income, air pollution and mortality: a cohort study," *Canadian Medical Association Journal*, Sep 2;169(5):397-402.

<sup>8</sup> A. Smargiassi, K Berrada, I. Fortier, and T. Kosatsky (2006), "Traffic intensity, dwelling value, and hospital admissions for respiratory disease among the elderly in Montreal (Canada): a case-control analysis," *Journal of Epidemiology and Community Health*, June, 60(6):507-12.

<sup>9</sup> Cruikshank, Ken and Nancy B. Bouchier (2004), "Blighted Areas And Obnoxious Industries: Constructing Environmental Inequality On An Industrial Waterfront, Hamilton, Ontario, 1890–1960," *Environmental History*, July, Vol. 9, Issue 3,

<sup>10</sup> MC Martins, FL Fatigati, TC Vespoli, LC Martins, LA Pereira, MA Martins, PH Saldiva, and AL Braga (2004), "Influence of socioeconomic conditions on air pollution adverse health effects in elderly people: an analysis of six regions in Sao Paulo, Brazil," *Journal of Epidemiology and Community Health*, January, 58(1):41-6.

<sup>11</sup> Some research on environmental inequality is referenced at [http://www.scorecard.org/env-releases/def/ej\\_evidence.html](http://www.scorecard.org/env-releases/def/ej_evidence.html) (accessed January 5, 2007).

<sup>12</sup> Environment was mentioned the most often in an Environics poll conducted in July 2007 (<http://www.g1communications.ca/polling/summary.pdf>, retrieved January 15, 2008). Environment was number one for 26% of Decima Research respondents in a poll of Canadians conducted Nov. 9-13, 2006. (retrieved January 15, 2008 from <http://www.angus-reid.com/polls/index.cfm/fuseaction/viewItem/itemID/13868>). Environment was second after health, with 20% of Canadian respondents of an October 26-27 poll for Innovative Research Group for the Canadian Defence & Foreign Affairs Institute (retrieved January 15, 2008 from <http://www.angus-reid.com/polls/index.cfm/fuseaction/viewItem/itemID/13653>). Over 80% of those polled thought Ontario was not spending enough on environmental protection (retrieved January 15, 2008 from <http://www.eco.on.ca/english/newsrel/07jan10.pdf>).

<sup>13</sup> "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically." From the Wingspread Conference on the Precautionary Principle, convened by the Science and Environmental Health Network.

<sup>14</sup> Canadian Association of Physicians for the Environment. (2006). *A New and Improved CEPA*. Toronto: Author, 3.

<sup>15</sup> Environmental Defence. (November 2005). *Toxic Nation: A Report on Pollution in Canadians*. Toronto: Author.

<sup>16</sup> Environmental Defence. (June 2006). *Polluted Children, Toxic Nation: A Report on Pollution in Canadian Families*. Toronto: Author.

<sup>17</sup> Environmental Defence. (January 2007). *Toxic Nation: On Parliament Hill: A Report on Pollution in Four Canadian Politicians*. Toronto: Author.

<sup>18</sup> Pollution Watch. (2006). *Reforming the Canadian Environmental Protection Act: Submission to the Parliamentary Review of CEPA, 1999*. Toronto: Author.

<sup>19</sup> Environmental Defence, *Polluted Children, Toxic Nation: A Report on Pollution in Canadian Families*, 7-9.

<sup>20</sup> Cooper, K. et al. (2000). *Environmental Standard Setting and Children's Health*. Toronto: Canadian Environmental Law Association and Ontario College of Family Physicians, 30-36.

<sup>21</sup> Government of Canada. (2006). *Children's Health and the Environment in North America: A First Report on Available Indicators and Measures-Country Report: Canada*. Ottawa: Author, 20. Retrieved January 21, 2008, from [http://www.cec.org/files/PDF/POLLUTANTS/CountryReport-Canada-CHE\\_en.pdf](http://www.cec.org/files/PDF/POLLUTANTS/CountryReport-Canada-CHE_en.pdf).

<sup>22</sup> Wagle, D. T. (2003). *Child Health and the Environment*. Oxford: Oxford University Press, 75.

<sup>23</sup> Canadian Partnership for Children's Health and the Environment (CPCHE). (August 2005). *Child Health and the Environment: A Primer*. Toronto: Author, 21.

<sup>24</sup> This recommendation supports the Priorities for Ontario recommendations on toxics. See <http://www.prioritiesforontario.ca/toxics>, retrieved January 21, 2008.

- 
- <sup>25</sup> Oraclepoll Research. (2007). *Survey Report Prepared for Pesticide Free Ontario & The Canadian Association of Physicians for the Environment*. Polling was performed January 20 to 27, 2007.
- <sup>26</sup> Sanborn, M., Cole, D., Kerr, K., Vakil, C., Sanin, L.H., & Bassil, K. (2004). *Pesticides Literature Review*. Toronto: Ontario College of Family Physicians.
- <sup>27</sup> Solomon, G., Ogunseitan, O.A., & Kirsch, J. (2000). *Pesticides and Human Health: A Resource for Health Care Professionals*. Los Angeles: Physicians for Social Responsibility and Californians for Pesticide Reform.
- <sup>28</sup> The EPA encourages manufacturers to refer to "inert ingredients" as "other ingredients" because an inert classification does not mean non-toxic. See US Environmental Protection Agency. (2006). *Inert (other) Ingredients in Pesticide Products*. Retrieved January 21, 2008 from <http://www.epa.gov/opprd001/inerts/>.
- <sup>29</sup> Attorney General of New York. (1996). *The Secret Hazards of Pesticides: Inert Ingredients*. New York: Author.
- <sup>30</sup> Are "Inert" Ingredients in Pesticides Really Benign? (1999). *Journal of Pesticide Reform, Summer, (19)2*, 8.
- <sup>31</sup> Tuormaa, T. (2006). *The Adverse Effects of Agrochemicals on Reproductive Health*. West Sussex: Foresight, the Association for the Promotion of Preconceptual Care. Retrieved January 21, 2008 from [http://www.foresight-preconception.org.uk/booklet\\_agro.htm](http://www.foresight-preconception.org.uk/booklet_agro.htm).
- <sup>32</sup> Steingraber, S. (2005). *The Precautionary Principle vs. Regulation: Are We Living in a Chemical Stew?* Keynote address at 9<sup>th</sup> Annual Conference on Women's Health and the Environment. Retrieved June 19, 2006 from [http://www.hfp.heinz.org/programs/wc\\_2005/keynote\\_sandra\\_steingraber\\_2005.html](http://www.hfp.heinz.org/programs/wc_2005/keynote_sandra_steingraber_2005.html).
- <sup>33</sup> This includes the Canadian Cancer Society, Ontario College of Family Physicians, Children's Hospital of Eastern Ontario, Ontario Public Health Association, Canadian Association of Physicians for the Environment, Ontario Medical Association (Section on Pediatrics), Canadian Environmental Law Association, Ecojustice, Environmental Defence, David Suzuki Foundation, Learning Disabilities Association of Canada, Prevent Cancer Now, Organic Landscape Alliance and Pesticide Free Ontario. See *Health and Environment Organizations Support Ontario-Wide Ban on Cosmetic Pesticides in Ontario*, retrieved January 21, 2008 from [http://www.rnao.org/Storage/35/2972\\_ON\\_Pesticide\\_Ban\\_Position\\_Web\\_Final.pdf](http://www.rnao.org/Storage/35/2972_ON_Pesticide_Ban_Position_Web_Final.pdf).
- <sup>34</sup> Intergovernmental Panel on Climate Change. (November 2007). *Fourth Assessment Report: Climate Change 2007: Synthesis Report: Summary for Policymakers*, p. 1.
- <sup>35</sup> Ibid, p. 5.
- <sup>36</sup> Ibid, p. 4
- <sup>37</sup> IPCC op. cit., p. 7.
- <sup>38</sup> Organization for Economic Cooperation and Development data: see <http://www2.oecd.org/econinst/queries/index.htm>, retrieved January 21, 2008. .
- <sup>39</sup> Song, V. (January 2008). "The Price of Polluting," *Calgary Sun*, January 13.
- <sup>40</sup> Quebec is implementing a carbon tax. See Rhéal Séguin (2006, June 16). Quebec unveils carbon tax. *Globe and Mail*. Retrieved May 2, 2007 from <http://www.theglobeandmail.com/servlet/story/LAC.20060616.QUEBKYOTO16/TPStory/National> , and the concept is promoted by major environmental organizations such as the David Suzuki Foundation. See David Suzuki Foundation. (2006). *Carbon tax makes sense for Canada – US has had one for years*. Retrieved January 21, 2008 from [http://www.davidsuzuki.org/WOL/News\\_Releases/web\\_of\\_life06150601.asp](http://www.davidsuzuki.org/WOL/News_Releases/web_of_life06150601.asp). Some are promoting a cap-and-trade system in which a quota of emissions is set and divided among emitters by some means (such as an auction), and then the right to emit is bought and sold. In the case of both carbon taxes and cap-and-trade systems, the emitter must pay a price for any additional unit of gas released, and this would act as an incentive to reduce emissions.
- <sup>41</sup> NTREE recommends a carbon tax, or a cap-and-trade system, or a combination of both. National Round Table on the Environment and the Economy. (January 2008). *Getting to 2050: Canada's Transition to a Low-Emission Future*, retrieved January 16, 2008 from <http://www.nrtee-trnee.ca/eng/publications/getting-to-2050/Getting-to-2050-low-res-eng.pdf>. See also David Suzuki Foundation. (January 2008). *Suzuki Foundation urges government to adopt NRTEE carbon price recommendations*, retrieved January 16, 2008 from <http://www.davidsuzuki.org/latestnews/dsfnews01070801.asp>.