



POLLUTION PROBE

CLEAN AIR. CLEAN WATER.

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Cynthia Wright  
Director General  
Strategic Policy Directorate  
Environmental Protection Service  
Environment Canada  
351 Saint-Joseph Boulevard, 21st Floor  
Gatineau, Quebec K1A 0H3  
Tel: 819-953-6830  
Fax: 819-997-0449  
Cynthia.Wright@ec.gc.ca

**Submission Re:**

**Canada Gazette, Vol. 139, No. 36 – September 3, 2005. Order Adding Toxic Substances to Schedule 1 to the Canadian Environmental Protection Act, 1999.**

Dear Ms. Wright:

Pollution Probe is writing this submission in support of the Government's proposal to add greenhouse gases to Schedule 1 of the Canadian Environmental Protection Act, 1999 (CEPA 1999). The following gases are involved.

- carbon dioxide (CO<sub>2</sub>)
- methane (CH<sub>4</sub>)
- nitrous oxide (N<sub>2</sub>O)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulphur hexafluoride (SF<sub>6</sub>)

Inclusion of the greenhouse gases in Schedule 1 is dependent on their meeting the criteria for toxic substances as presented in Section 64 of CEPA 1999.

CEPA 1999, Section 64 states:

*For the purposes of this Part and Part 6, except where the expression "inherently toxic" appears, a substance is toxic if it is entering or may enter the environment in a quantity or concentration or under conditions that*

- (a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity;*
- (b) constitute or may constitute a danger to the environment on which life depends; or*
- (c) constitute or may constitute a danger in Canada to human life or health.*

Pollution Probe supports the inclusion of the six greenhouse gases in Schedule 1 of CEPA 1999 for two main reasons:

1. The inclusion of the six greenhouse gases is supported by science.
2. The regulation of the six greenhouse gases under CEPA is supported by legal interpretation of the Act.

## SCIENCE SUPPORT FOR INCLUSION OF SIX GREENHOUSE GASES IN SCHEDULE 1 OF CEPA 1999

The scientific assessments indicate that greenhouse gases meet all three conditions used for defining toxic substances under CEPA 1999. Climate change due to greenhouse gas emissions is projected to have serious impacts on biological diversity, the environment on which life depends, and on human life and health. Some climate change impacts are occurring now. However, more severe and adverse impacts are expected as the global average temperature continues to rise due to the rising concentration of greenhouse gases in the atmosphere. The following papers provide the scientific basis for this conclusion.

### ***Intergovernmental Panel on Climate Change (IPCC)***

The IPCC remains the most authoritative source for information on greenhouse gases and their potential social, economic and environmental impacts. Information provided by the IPCC supports the identification of greenhouse gases as “toxic” according to the criteria included in CEPA 1999, Section 64. Hence it supports inclusion of the six greenhouse gases in Schedule 1.

Established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) in 1988, the IPCC undertakes periodic assessments of the most widely accepted science, technical and socio-economic information available to provide policy-makers with the basic information they need to make decisions. About 1,000 experts from countries around the world have been directly involved in writing the Assessment Reports (released in 1990, 1996, 2001) and about 2,500 expert reviewers have participated in the process.<sup>1</sup>

One of the main advantages of this process is that hundreds of experts appraise a wide range of peer-reviewed studies and offer the best synthesis possible of the information available so that there is one main authoritative source on the science of climate change for international and national policy-making. This allows countries to align their distinct policies in order to address an issue that requires international cooperation in order to minimize dangerous climate impacts. Canadian experts have been well represented in development of the Assessment Reports – for example, twenty-nine government and non-government experts participated in the development of the Third Assessment Report (TAR).<sup>2</sup> The Government of Canada has been wise in using the IPCC Reports as the science basis for its decision-making related to climate change and should draw on the IPCC TAR as a basis for making its decision on inclusion of greenhouse gases in CEPA 1999, Schedule 1.

The IPCC Third Assessment Report (TAR) offers a comprehensive overview of the current science research on climate change. The following offers a few brief references from the IPCC TAR illustrating assessments that should be taken into account when evaluating the identification of the six greenhouse gases as “toxic” according to the criteria provided in Section 64 of CEPA 1999.

The references are organized according to the three criteria provided under the following statement in CEPA 1999 Section 64 – *a substance is toxic if it is entering and may enter the environment in a quantity or concentration or under conditions that*

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<sup>1</sup> Introduction to the Intergovernmental Panel on Climate Change. IPCC brochure.  
<http://www.ipcc.ch/about/beng.pdf>

<sup>2</sup> Climate Change 2001: Synthesis Report. Annex A. IPCC Third Assessment Report. <http://www.ipcc.ch/>

(a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity;

- According to the TAR Climate Change 2001 Synthesis Report Section 2.4 – *Concentrations of atmospheric greenhouse gases and their radiative forcings have generally increased over the 20<sup>th</sup> century as a result of human activities.* Table 2-1 includes such related affects as an increase in the global mean surface temperature by about 0.6 degrees Celsius, increased surface temperature in the Northern Hemisphere with the 1990s being the warmest decade of the millennium, increased hot days/ heat index, increased precipitation events in mid- and high northern latitudes and an increase in the frequency and intensity of drought in some areas.
- According to the TAR WGII Summary for Policymakers 2.1 – *Recent regional climate changes, particularly temperature increases, have already affected many physical and biological systems.* Examples of recently observed changes listed in the report include shrinking glaciers, thawing of permafrost, later freezing and earlier break-up of ice on rivers and lakes, lengthening of mid- to high-latitude growing seasons, poleward and altitudinal shifts of plant and animal ranges and the declines of some plant and animal populations.
- According to the TAR WGII Summary for Policymakers 2.3 – *Natural systems are vulnerable to climate change and some will be irreversibly damaged.* According to the report, it is well established that the geographical extent of the damage or loss, and the number of systems affected, will increase with the magnitude and rate of climate change.

The IPCC TAR offers comprehensive information on the current and expected impacts on different types of ecosystems, as well as assessments for each world region with assessments of the probability of each impact occurring. Overall, the evidence shows that some ecosystems are already experiencing the effects from climate change related to greenhouse gas emissions. It is expected that as greenhouse gases are added to the atmosphere, there will be increased harm to the environment and its biological diversity.

(b) constitute or may constitute a danger to the environment on which life depends;

- According to the TAR WGII Summary for Policymakers 2.4 – *Many human systems are sensitive to climate change, and some are vulnerable.* Danger to the environment on which life depends related to anthropogenic greenhouse gas emissions includes climate change impacts on water resources (including water quality and quantity), agriculture (especially food security), forestry and marine systems (fisheries); impacts related to extreme weather events (damage, hardships, deaths) and rising sea levels; and impacts arising from abrupt ecological change.
- According to the TAR Climate Change 2001 Synthesis Report Section 3.15 – *Projected climate change will have beneficial and adverse environmental and socio-economic effects, but the larger the changes and rate of change in climate, the more the adverse effects predominate.* The impacts of climate change will be more severe the greater the cumulative emissions of greenhouse gases. Climate change can have beneficial as well as adverse effects, but adverse effects are projected to predominate for much of the world.

- According to the TAR WGII Summary for Policymakers 2.5 – *Projected changes in climate extremes could have major consequences.*  
It is expected that some extreme events will increase in frequency and or severity over the 21<sup>st</sup> century due to increasing greenhouse gases in the atmosphere. In Table SPM-1, examples of impacts resulting from projected changes in extreme weather events are given. They include higher maximum temperatures (increased heat stress in livestock, increased risk of damage to some crops, reduced electricity supply reliability); increased summer drying over most mid-latitude continental interiors and associated risk of drought (decreased crop yields, decreased water quantity and quality, increased risk of fire).

(c) *constitute or may constitute a danger in Canada to human life or health.*

- According to the TAR WGII Summary for Policymakers 2.5 – *Projected changes in climate extremes could have major consequences.*  
The projected increase in frequency and/or severity of such extreme events as droughts, floods, heat waves, avalanches and windstorms constitutes a danger to the life and health of Canadians.
- According to the TAR WGII Summary for Policymakers 3.5 – *Human Health*  
Under increasing climate change scenarios, there would be a net increase in the geographic range of potential transmission of malaria and dengue – two vector-borne infections, each of which currently impinge on 40-50% of the world population. (Canada could be at risk for these and other infectious diseases as climate change increases).

Projected climate change will be accompanied by an increase in heat waves, often exacerbated by increased humidity and urban air pollution, which are expected to cause an increase in heat-related illness episodes and death. These extreme events constitute a danger to Canadians, particularly the young, elderly or infirm. For example, the heat wave that occurred for several weeks in Europe, in 2003, resulted in more than 30,000 premature deaths<sup>3</sup>.

- According to the TAR WGII Technical Summary 5.6 – *North America*  
Potential changes in the frequency, severity, and duration of extreme events are among the most important risks associated with climate change in North America. Potential impacts of climate change on cities include fewer periods of extreme winter cold; increased frequency of extreme heat; rising sea levels and risk of storm surge; and changes in timing, frequency, and severity of flooding associated with storms and precipitation extremes. These events – particularly increased heat waves and increases in the frequency and/or severity of extreme events – will be accompanied by effects on health.

In addition, socioeconomic disruptions related to climate change could affect the livelihoods and health of Canadians. For example, the changing climate in the North is already disrupting the living patterns of indigenous people; those living on the coast may be impacted by declines in some commercial fisheries (cod, salmon) and more intense storm surges; those living in the Great Lakes Region may be affected by declining water levels.

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<sup>3</sup> Impacts of Summer 2003 Heat Wave on Europe. UNEP.  
[http://www.grid.unep.ch/product/publication/download/ew\\_heat\\_wave.en.pdf](http://www.grid.unep.ch/product/publication/download/ew_heat_wave.en.pdf)

Based on the IPCC TAR in its entirety, there is strong evidence that climate change is already occurring, in part, due to human activity that is increasing greenhouse gas concentrations in the atmosphere. However, it is essential that projections of future impacts be taken into account when considering the “toxicity” of greenhouse gases. We have not yet experienced all the impacts due to today’s greenhouse gas concentrations. Were atmospheric carbon dioxide concentrations stabilized today, climate change impacts would continue to increase for decades and, in some cases, for many generations due to the inertia of natural systems (e.g., the storage of heat in the oceans). In addition, various scenarios for increasing greenhouse gas emissions indicate that greater atmospheric concentrations will lead to more severe and adverse impacts. The higher the concentrations, the greater the danger to the environment on which life depends.

***Joint Science Academies’ Statement: Global Response to Climate Change***<sup>4</sup>

On June 7, 2005, the science academies of the G8 nations (Canada, France, Germany, Italy, Japan, Russia, United Kingdom, United States) and Brazil, China and India sent out a release urging countries to take action on climate change. It was signed by the Royal Society of Canada. The Statement includes the following comments:

- *Reduce the causes of climate change. The scientific understanding of climate change is now sufficiently clear to justify nations taking prompt action.*
- *We recognize the international scientific consensus of the Intergovernmental Panel on Climate Change (IPCC).*

This recent reiteration of recognition by such a prestigious group of scientists lends additional international authority to the IPCC assessment process and its findings.

***The Kyoto Protocol Greenhouse Gases (GHGs) and the Canadian Environmental Protection Act: A synthesis of relevant science from the IPCC Third Assessment Report in the context of CEPA Section 64.***<sup>5</sup>

This report was prepared by the Science Assessment and Integration Branch of the Canadian Meteorological Service of the Government of Canada for the proposal to include greenhouse gases in Schedule 1 of CEPA 1999. It recognizes the IPCC as the international authority on climate change science and provides a summary of the science that is of specific relevance to the decision regarding inclusion of greenhouse gases in Schedule 1 of CEPA 1999.

The report emphasizes the need to consider any evidence of harm arising from both recent and future climate change. It proposes that the greenhouse gases, including carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>), meet criteria b in CEPA 1999 Section 64.

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<sup>4</sup> Released in June 2005 and posted on the website of the Royal Society of Canada  
[http://www.rsc.ca/index.php?page\\_id=188&lang\\_id=1&news\\_id=36](http://www.rsc.ca/index.php?page_id=188&lang_id=1&news_id=36)

<sup>5</sup> The report was prepared in 2003. It is posted on the website of the CEPA Environmental Registry  
[http://www.ec.gc.ca/CEPARegistry/documents/part/kyoto\\_ghg/index.cfm](http://www.ec.gc.ca/CEPARegistry/documents/part/kyoto_ghg/index.cfm)

### ***Primer on Climate Change and Human Health<sup>6</sup>***

The Pollution Probe Primer on Climate Change and Human Health was produced as part of our work on climate change impacts. The Primer describes the potential effects that a warmer and more variable climate can have on the health of Canadians. It presents information on the increased risk for the following: temperature extremes (including heat waves); extreme weather (flooding, storms); air pollution (including the increases in smog events due to the increasing temperatures with climate change, with the increased risk for illness episodes and premature deaths); waterborne and foodborne contamination (including Cryptosporidium, Giardia, E. coli and Hepatitis A Virus); vector-borne and rodent-borne infectious diseases (Lyme Disease, West Nile Virus, Hantavirus Pulmonary Syndrome, Leptospirosis, Rocky Mountain Spotted Fever, Malaria). A copy of the Primer is included as part of this submission. The Primer was drafted by Pollution Probe, then subjected to extensive expert review before being finalized and published. It indicates that the health risks will increase for many Canadians as increasing concentrations of greenhouse gas emissions lead to more extensive and severe climate change impacts.

### ***Towards an Adaptation Action Plan: Climate Change and Health in the Toronto-Niagara Region<sup>7</sup>***

This study was undertaken by Pollution Probe, in partnership with Environment Canada and Health Canada, to develop a document that would provide decision-makers with some of the information needed to improve the adaptive capacity of the health infrastructure in the Toronto-Niagara region in order to deal effectively with the projected human health effects of climate change. The authors did an assessment of the current science regarding climate change and its potential health effects, as well as the adaptive capacity of a health care system to handle the increased demand for services. A copy of the Summary for Policymakers is included with this submission.

The two Pollution Probe publications are illustrations of our concern about the impending impacts of climate change on human health and the need to prepare the medical community to deal with the impacts.

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<sup>6</sup> Released in 2004 and posted on the Pollution Probe website.  
<http://www.pollutionprobe.org/Reports/climatechangeprimer.pdf>

<sup>7</sup> Released in October 2002 and posted on the Pollution Probe website.  
<http://www.pollutionprobe.org/Reports/adaptation.pdf>

## LEGAL SUPPORT FOR INCLUSION OF SIX GREENHOUSE GASES IN SCHEDULE 1 OF CEPA 1999

Pollution Probe's assessment of the legal support for inclusion of the six greenhouse gases in Schedule 1 of CEPA 1999 is based on a legal opinion provided by Joseph Castrilli, Barrister & Solicitor<sup>8</sup>. Pollution Probe commissioned him, in April 2005, to consider two questions related to CEPA 1999: (1) generally the legal effect of removing the word "toxic" from the CEPA 1999, and (2) whether, in particular, removing the word "toxic" from the Act is necessary in order for the federal government to be able to regulate greenhouse gas emissions.

The legal opinion summarized the legal aspects related to the significance of the word the Supreme Court of Canada Decision in *R. v. Hydro-Quebec*<sup>9</sup>.

- In *R. v. Hydro-Quebec* a provincial utility was charged with violation of an interim order made by the federal Minister of the Environment restricting the company's release of polychlorinated biphenyls ("PCBs") into the environment. The interim order was made under Part II of the *Canadian Environmental Protection Act* ("CEPA")<sup>10</sup> the predecessor regime to what is now Part 5 of *CEPA, 1999*. Like Part 5, Part II established a process for regulating the use of toxic substances, by establishing a screening mechanism for identifying them, and authorizing the federal Cabinet to add any substance so identified to the List of Toxic Substances found in Schedule I of *CEPA*. Once a substance was identified as toxic and listed in Schedule I, the federal Cabinet was further authorized by sections 34-35 (now sections 93-94 of *CEPA, 1999*) to regulate how that substance may be used by industry.
- The majority judgment of Mr. Justice La Forest in *Hydro-Quebec*, in commenting upon section 11 of *CEPA* (what is now section 64 of *CEPA, 1999*), observed in part that "the provision underlines that toxic as used in the Act includes substances that are not *per se*, toxic, but that may, when released into the environment in a certain quantity, concentration or condition, become toxic."<sup>11</sup>

The legal opinion came to the following conclusions:

- Given the above potential impacts of greenhouse gases arising from human activity and, having regard to the characterization of "toxic substances" in section 64 of *CEPA, 1999* (as set out on page 1 of this submission), the characterization is broad enough to allow the Government of Canada to regulate these gases under Part 5 of the Act to prevent their causing "dangerous anthropogenic interference with the climate system."
- Indeed, the Government of Canada itself acknowledges that: "The Government does not need to change the word 'toxic' to regulate greenhouse gases under *CEPA* [1999]."<sup>12</sup>

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<sup>8</sup> See letter from Joseph F. Castrilli to Pollution Probe Re: Legal Opinion on Canadian Environmental Protection Act, 1999 – attachment to submission.

<sup>9</sup> [1997] 3 S.C.R. 213; 9 C.R. (5th)157 (S.C.C.) [hereinafter *Hydro-Quebec* cited to C.R.]

<sup>10</sup> R.S.C. 1985, c. 16 (4th Supp.).

<sup>11</sup> *Hydro-Quebec* at 302.

<sup>12</sup> Environment Canada, *Greenhouse Gases and the Budget Implementation Bill* (2005), online: Environment Canada <[http://www.ec.gc.ca/ghg\\_budget05\\_e.htm](http://www.ec.gc.ca/ghg_budget05_e.htm)> (last updated: 8 April 2005). This observation is consistent with the federal government's approach to other substances regulated under *CEPA, 1999* such as CFCs - that cause depletion of the ozone layer - that are not toxic to life but "may constitute a danger to the environment on which life depends" and therefore are deemed toxic for the purposes of the Act. See e.g. *Ozone-depleting Substances Regulations, 1998*, S.O.R./99-7, as am. See also *Ozone-depleting Substances Regulations, 1998 - Regulatory Impact Analysis Statement*, C. Gaz.

- Accordingly, given the potentially dangerous impacts of greenhouse gases to the climate system, the characterization of "toxic substances" in section 64 of *CEPA, 1999*, judicial interpretation of predecessor legislation, and government admissions, it is submitted that the word "toxic" does not need to be removed from *CEPA, 1999* in order to allow regulation of greenhouse gases under the Act.

## CONCLUSION

Pollution Probe supports the inclusion of the six greenhouse gases in Schedule 1 of CEPA 1999 for two main reasons:

- The inclusion of the six greenhouse gases is supported by the scientific consensus of the Intergovernmental Panel on Climate Change
- The regulation of greenhouse gases under CEPA is supported by a commissioned legal opinion regarding the Act.

## ATTACHMENTS

- Primer on Climate Change and Human Health
- Towards an Adaptation Plan: Climate Change and Health in the Toronto-Niagara Region – Summary for Policy Makers
- Legal Opinion on Canadian Environmental Protection Act, 1999

## CONTACTS

**Ken Ogilvie**  
Executive Director  
[kogilvie@pollutionprobe.org](mailto:kogilvie@pollutionprobe.org)  
416-926-1907 ext. 231

**Mary Pattenden**  
Director, Climate Change Programme  
[mpattenden@pollutionprobe.org](mailto:mpattenden@pollutionprobe.org)  
416-926-1907 ext. 243

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1998.II.124-125 (noting that purpose of CFC and related regulations is to meet Montreal Protocol on substances that deplete the ozone layer that if not controlled will have adverse effects on the environment, health, and human life).