

I. SUMMARY OF THE SUBMISSION

1. The Submitting Parties present this submission pursuant to Article 14 of the North American Agreement on Environmental Cooperation (“NAAEC”) requesting the Commission on Environmental Cooperation (“CEC”) to develop a factual record pursuant to Article 15 of NAAEC demonstrating that the federal government of Canada has failed to enforce its environmental laws against Ontario Power Generation (“OPG”). OPG owns and operates coal-powered electricity generating facilities in Ontario, including one of the largest coal-fired power plants in North America. Most of these plants have few, if any, controls to reduce emissions of pollutants. OPG has caused the release into the atmosphere of mercury, a substance that is toxic to humans and fish, and nitrogen oxides and sulfur dioxide, substances that contribute to harmful air and water pollution, smog and are destructive of fish, fish habitat and terrestrial systems, such as forests and some forms of agriculture. These deleterious substances contribute significantly to air and water pollution in areas downwind of the OPG facilities including Ontario, Quebec and the Maritime Provinces of Canada, Connecticut, Rhode Island and other New England States, and New York State in the United States. OPG is one of the most significant contributors of these deleterious substances that is subject to Canadian Law.

2. Canada has failed to enforce its laws to prevent this pollution as mandated by the Canadian Environmental Protection Act §§ 166, 176. In addition, Canada has failed to enforce the prohibition contained in the Canadian Fisheries Act against the deposition of substances deleterious to fish or fish habitat into water frequented by fish.

II. STATUTORY BACKGROUND

A. North American Agreement on Environmental Cooperation (“NAAEC”)

3. In 1993, in an effort to allay public concern that the promotion of international trade could undermine environmental protection and public health and safety, Canada, the United States and Mexico (the “signatory countries”) entered into the NAAEC as an ancillary agreement to the North American Free Trade Agreement (“NAFTA”). NAAEC, in part, establishes a citizen submission process by which residents of any signatory country, who believe that a signatory country is not effectively enforcing its environmental laws, can seek to have that failure formally documented in a public record with the expectation that public scrutiny and the attendant public comment will have a salutary effect.

4. The NAAEC Preamble reaffirms the “importance” of “enhanced levels of environmental protection” called for under NAFTA, and the signatories’ “responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.” *See also* NAAEC, Article 1 (objectives of the Agreement include “protection and improvement of the environment in the territories of the Parties” and “enhanc[ing] compliance with, and enforcement of, environmental laws, regulations and policies”).

5. To achieve these ends, NAAEC established the CEC. NAAEC, Part Three, Articles 8-13. The CEC is comprised of the: (a) Council, which is the governing body of the CEC and is composed of the environmental ministers of each signatory country; (b) Secretariat, composed of professional staff under the direction of an executive director, which provides technical, administrative and operational support to the Council; and (c) Joint Public Advisory Committee, composed of fifteen members, five appointed by the government of each country, to provide independent advice to the Council on all matters within the scope of the NAAEC.

6. Pursuant to NAAEC Article 14, any person or non-governmental organization may submit to the Secretariat information demonstrating that one of the signatory countries is failing to effectively enforce its environmental laws. After considering the factors identified in Article 14(2), and after considering any response from the country should the Secretariat request such a response, the Secretariat may recommend to the Council that a factual record be prepared. The Secretariat prepares a factual record if the Council by a two-thirds vote directs it to do so. The Council by a two-thirds vote may make the factual record available to the public.

B. Canadian Environmental Protection Act

7. Although Canada lacks a national clean air statute, the federal government, in consultation with the provinces, does set certain ambient standards for air pollution which are then adopted by provinces as “goals” or “guidelines.” Binding regulation of air pollution is largely left to provincial governments. *See generally* Canada-Wide Accord on Environmental Harmonization; Canada-Wide Environmental Standards Sub-Agreement.

8. However, pursuant to section 166 of the Canadian Environmental Protection Act (“CEPA”), the federal government is obligated to take specified action where the Minister of the Environment has “reason to believe that a substance released from a source in Canada into the air creates, or may reasonably be anticipated to contribute to (a) air pollution in a country other than Canada . . . ,” provided further that the country that is affected by the air pollution grants Canada the same rights with respect to the prevention, control or correction of cross-boundary air pollution as is granted by section 166 of the CEPA.

9. Section 115 of the United States Clean Air Act, 42 U.S.C. § 7415, grants Canada the same rights with respect to the prevention, control or correction of cross-boundary air pollution as are granted by CEPA § 166. In particular, Clean Air Act Section 115 states,

Whenever the Administrator, upon receipt of reports, surveys or studies from any duly constituted international agency has reason to believe that any air pollutant or pollutants emitted in the United States cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare in a foreign country . . . the Administrator shall give formal notification thereof to the Governor of the State in which such emissions originate.

The notice of the Administrator shall . . . require a plan revision with respect to so much of the applicable implementation plan as is inadequate to prevent or eliminate the endangerment . . .

10. In addition, pursuant to section 176 of CEPA, the federal government is obligated to take specified action where the Minister of the Environment has “reason to believe that a substance released from a source in Canada into water creates, or may reasonably be anticipated to create, (a) water pollution in a country other than Canada . . .,” provided further that the country that is subject to the water pollution grants Canada the same rights with respect to the prevention, control or correction of cross-boundary water pollution as is granted by section 176 of the CEPA.

11. CEPA § 175 defines “water pollution” as a condition of water, arising wholly or partly from the presence in water of any substance, that directly or indirectly (a) endangers the health, safety or welfare of humans; (b) interferes with the normal enjoyment of life or property; (c) endangers the health of animal life; (d) causes damage to plant life or to property; or (e) degrades or alters, or forms part of a process of degrading or altering, an ecosystem to an extent that is detrimental to use by humans, animals or plants.

12. Section 310 of the United States Water Pollution Control Act (“Clean Water Act”), 33 U.S.C. § 1320, grants Canada the same rights with respect to the prevention, control or correction of cross-boundary water pollution as are granted by CEPA § 176.

13. Under sections 166 and 176, CEPA mandates that the Minister of the Environment first consult with the government that has authority to prevent, control or correct the air and water pollution (here, the provincial government of Ontario) and if such government cannot or will not take the requisite action, then the Minister of the Environment must either require OPG to prepare and implement a pollution prevention plan or propose appropriate regulations to prevent, control or correct the pollution. CEPA §§ 166(2)(3); 176(2)(3). CEPA § 272 provides further that “[e]very person commits an offence who contravenes (a) a provision of this Act . . .”

C. Canadian Fisheries Act

14. The federal government of Canada has exclusive legislative authority over “Sea Coast and Inland Fisheries” pursuant to section 91.12 of the Constitution Act, 1867. The Fisheries Act was enacted pursuant to this authority to regulate and protect Canada’s fisheries.

15. Under the pollution provisions of the Fisheries Act, it is an offense to “deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water” (Sec. 36(3)), unless the deposit is authorized by regulation. *See Regina v. MacMillan Bloedel (Alberni) Limited*, 47 C.C.C.2d 118, *affirming*, 42 C.C.C.2d 70 (British Columbia Court of Appeals 1979).

16. “Deleterious substance” is defined, in part, as “any substance that, if added to any water, would degrade or alter or form part of a process of degradation or alteration of the quality of the water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or the use by man of fish that frequent that water.” Sec. 34(1)(a).

17. “Water frequented by fish” is defined as Canadian fisheries water. Sec. 34(1).

18. “Fish habitat” is defined as “spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.” Sec. 34(1).

19. “Deposit” is defined as “any discharging, spraying, releasing, spilling, leaking, seeping, pouring, emitting, emptying, throwing, dumping or placing.” Sec.34(1).

20. The federal Minister of Fisheries and Oceans has the responsibility for the administration and enforcement of the Fisheries Act. However, in 1978 the Minister of the Environment was assigned responsibility for administration and enforcement of the pollution prevention provisions of the Fisheries Act. In 1985, the Department of Fisheries and Oceans and the Department of the Environment entered into a memorandum of understanding and subsequently developed a Fisheries Act Habitat Protection and Pollution Prevention Provisions, Compliance and Enforcement Policy (the “Compliance and Enforcement Policy”), for general guidance and not as a substitute for the Fisheries Act.

21. The Compliance and Enforcement Policy guides government officials in the proper application of the Act. A stated principle is that “fair, predictable, and consistent enforcement govern application of the law, and responses by enforcement personnel to alleged violations.” The Compliance and Enforcement Policy is intended to ensure that violators will comply with the Fisheries Act within the shortest possible time, that violations are not repeated and that all available enforcement tools are used. The possible responses to alleged violations include warnings, directions by Fishery Inspectors, orders by the Minister, injunctions and prosecutions.

III. POLLUTION FROM OPG’S PLANTS HARMS HUMAN HEALTH AND THE ENVIRONMENT IN THE NORTHEASTERN STATES AND IN EASTERN CANADA¹

A. OPG’s Coal-Fired Power Plants Emit Sulfur Dioxide (“SO₂”), Nitrogen Oxides (“NO_x”) And Mercury (“Hg”).

22. OPG, formerly known as Ontario Hydro, is an electricity generating utility owned by the Province of Ontario.

¹Copies of relevant sections of the cited material are attached as Appendix C, which is submitted separately.

23. On or about April 1, 1999, the newly formed OPG took over the ownership and operation of six electricity generating plants. The three largest of these plants,² which cause the most significant adverse environmental impacts, are:

(a) Nanticoke Generating Station

Nanticoke Generating Station (“Nanticoke”) is the largest coal-fired power plant in North America with a capacity of 3,920 MW. (Generation capacity data for this and other listed plants are from OPG, *Towards Sustainable Development* (2001) at 28.) Located on the north shore of Lake Erie near Port Dover, Nanticoke entered service in 1973. It has eight units fitted with low-NO_x burners. OPG is planning to install Selective Catalytic Reduction (“SCR”) devices on two units to reduce nitrogen oxide emissions, but these devices will not deal with sulfur dioxide or mercury emissions. OPG does not plan to install such controls on the remaining six units. Consequently, emissions from those units will continue largely uncontrolled.

(b) Lambton Generating Station

Lambton Generating Station (“Lambton”), located on the St. Clair River, south of Sarnia, entered into service in 1969. Its production capacity of 1,974 MW comes from four coal-fired units. Two of the units are equipped with sulfur dioxide scrubbers. OPG is installing SCR devices on two of the units at this plant.

(c) Lakeview Generating Station

Lakeview Generating Station (“Lakeview”) located in Mississauga, just west of Toronto, has a capacity of 1,138 MW. The plant's eight units (four are currently not in use) entered into service between 1962 and 1969. OPG has stated that it intends to continue burning coal at this plant without installing any further controls until 2005, when it intends to either convert the plant to natural gas or shut down.

24. OPG is one of Ontario’s most significant emitters of sulfur dioxide, nitrogen oxides and mercury. According to Ontario’s Ministry of the Environment, OPG’s six fossil fuel fired facilities generate 14.7 % of the nitrogen oxides, 23.7 % of the sulfur dioxide and 22.6 % of the mercury of total domestic provincial emissions. Ontario Ministry of the Environment, *Coal-Fired Electricity Generation in Ontario* (March 2001), at 17.

²OPG also owns and operates three smaller electric generating facilities located in western Ontario. The Atikokan Generating Station, located in northwestern Ontario between Lake Superior and the Manitoba border, entered into service in 1985. It has one coal-fired 215 MW unit equipped with low-NO_x burners. The Thunder Bay Generating Station, located in Thunder Bay on the shore of Lake Superior, entered service in 1981. It has two coal-fired units with a total capacity of 310 MW. The Lennox plant is an oil/natural gas fired facility.

25. Ontario's report provides the following total emissions for 1999 for the three largest OPG plants,³ reporting NO_x and SO₂ in metric tons (or tonnes) and Hg in kilograms (kg):

	nitrogen oxides (tonnes)	sulfur dioxide (tonnes)	mercury (kg)
Nanticoke	24,190	81,300	264.6
Lambton	12,780	27,300	135
Lakeview	8,320	17,600	83.2

26. In 2000, Nanticoke was ranked second in Ontario for releases of mercury to the environment. Ontario Clean Air Alliance, *Up The Stack: Coal-Fired Electricity's Toxic Impact* (2002) at 9. According to the Ministry of Environment, Lakeview "stands out as a heavily-polluting station (SO₂, Mercury, NO_x) located in the midst of a heavily-populated area" and is the "oldest and least efficient plant in OPG's fleet." *Coal-Fired Electricity Generation in Ontario, supra*, at 45. The same Ministry of Environment report also describes Lakeview as a major source of local mercury emissions. *Id.*

B. Transport Of Sulfur Dioxide And Nitrogen Oxides And Their Conversion and Deposition As Acidic Precipitation.

27. Pollutants emitted into the atmosphere by OPG facilities are transported by the winds and deposited to the surface by either dry (particulate) deposition or wet (precipitation) deposition. Some of the emitted pollutants are chemically converted in the atmosphere into other pollutants. Gaseous pollutants such as sulfur dioxide and nitrogen oxides undergo gas-to-particle conversion to form sulfates and nitrates. The subsequent physical process of coagulation produces sulfate and nitrate particles ranging in size from 0.1 to 1.0 microns. These dry particles will settle to the surface via gravity where, in the presence of water, they are converted to sulfuric acid and nitric acid. Alternatively, sulfate and nitrate particles can acidify atmospheric moisture

³Emissions from the smaller plants are:

	nitrogen oxides (tonnes)	sulfur dioxide (tonnes)	mercury (kg)
Thunder Bay	2,030	7,520	67.1
Atikokan	1,300	5,480	63
Lennox	2,050	1,610	n.a.

and reach the surface via “acid precipitation.” Acid precipitation is rain, snow, sleet, hail, cloud cover, fog and dew that has experienced a significant decrease in its pH from natural levels by the addition of sulfuric and nitric acids.

28. Most of North America is in the zone of the prevailing westerly winds, which blow predominantly from southwest to northeast in summer and from northwest to southeast in winter. The average atmospheric residence time of sulfate and nitrate particles is on the order of 80 hours, or a little more than three days. In that period of time the acidic progeny of the sulfur dioxide and nitrogen oxides emitted by OPG can readily reach Quebec, the Maritime Provinces, New York State, and Connecticut, Rhode Island and other New England States. A 1985 New York State study indicates that Ontario is the source of 23% of the sulfur deposition on Whiteface Mountain (Adirondacks); and 22% of the sulfur deposition in the western Adirondacks. New York State Department of Environmental Conservation, *A Policy for New York State to Reduce Sulfur Dioxide Emissions, Final Environmental Impact Statement* (June 1985) at Fig. 3.3-9. See also V. Dutkiewicz, et al., *The Relationship Between Regional SO₂ Emissions and Downwind Aerosol Sulfate Concentrations in the Northeastern US*, 34 *Atmospheric Environment* 1821, 1831 (2000) (same finding based on 1994-1997 data).

C. Adverse Environmental Impacts of Acidic Deposition

29. Acidic deposition, whether dry or wet, can have a devastating impact on fish and fish habitat, either directly, or indirectly by its effect on other substances in the environment. Experimental evidence indicates that increased acidity, measured as decreased pH,⁴ inhibits reproduction and kills young fish. In addition, lowered pH leaches metals such as aluminum and mercury from the soil into the water. Decreases in pH and increases in aluminum concentrations have diminished the species diversity and abundance of plankton, invertebrates and fish in acid-impacted surface waters in the Northeast. Acid episodes, such as during spring snow melt which releases months of acidic deposition into waters over a very short time frame, are particularly harmful to aquatic life because abrupt changes in water chemistry allow fish few areas of refuge. High concentrations of aluminum are directly toxic to fish and are a primary cause of fish mortality during acid episodes. High acidity and aluminum levels disrupt the salt and water balance in fish, causing red blood cells to rupture and blood viscosity to increase. Studies show that the viscous blood strains the fish’s heart, resulting in a lethal heart attack. Driscoll, C.T., et al., *Acid Rain Revisited: Advances in Scientific Understanding Since the Passage of the 1970 and 1990 Clean Air Act Amendments* (2001) at 15. Studies also show that aluminum accumulates on the gills of rainbow trout and disrupts gill ion transport and respiratory function. U.S. Environmental Protection Agency, National Acid Precipitation Assessment Program (NAPAP), *NAPAP Biennial Report to Congress: An Integrated Assessment* (1998) at 52. Increasing concentrations of mercury in fish flesh poses a threat to those who eat the fish, ranging from loons to humans.

⁴ pH is a logarithmic measure ranging from 0 (most acidic) to 14 (most alkaline) with neutral, i.e., distilled water at 7.

30. Decreasing pH to the range of 6.0 - 5.0 will cause the elimination of many aquatic plant and animal species and thus the disruption of existing biological communities. At pH 5, major extinctions of fish population will commence, and below pH 4.5 no fish species will survive. Since 1999, National Acid Deposition Program (NADP) data show weekly pH values of wet deposition have fallen below 4 in many states, including New York, Connecticut, Vermont, Maine, New Hampshire, Massachusetts, and New Jersey. Clean Air Task Force, *Unfinished Business: Why the Acid Rain Problem Is Not Solved* (2001) at 2.

31. The severity of the impact from acid deposition is in part a function of the predominant geologic formations in the area in question. Environments with high alkalinity, *i.e.*, significant deposits of calcium and magnesium, are less at risk because the acidic deposition can be largely neutralized. However, areas with little or no capacity to buffer incoming acidic deposition, such as is found in the granite regions of the Canadian Shield, the Adirondack region of New York State, in many areas in the Maritime Provinces and in the New England states, will suffer significant adverse effects.

32. Acid deposition has had a devastating impact on fish and fish habitat in the Adirondack region of New York State. Based on a 1976 study, 51% of 217 Adirondack region lakes at an elevation above 2000 feet had a pH below 5.0. There were no fish in 90% of these acidified lakes, although during the period of 1927-37 only 4% of these lakes were similarly acidified and devoid of fish.

33. A recent survey of the Northeast concluded 41 percent of lakes in the Adirondack Mountains and 15 percent of lakes in New England have exhibited chronic or episodic acidification or both. 83 percent of the affected lakes are acidic because of atmospheric deposition. Driscoll, C.T., *et al.*, *Acidic Deposition in the Northeastern United States: Sources, Inputs, Ecosystem Effects, and Management Strategies*, 2001 at 196. In fact, surveys of 1,469 Adirondack lakes conducted in 1984 and 1987 show that 24 percent of lakes in this region do not support fish. These lakes had consistently lower pH and higher concentrations of aluminum than lakes that contained one or more species. Even acid tolerant fish species such as brook trout have been eliminated from some waters in the Northeast. *Acid Rain Revisited, supra*, at 15. The Catskill Mountains in New York State also contain many streams with low acid neutralizing capacity ("ANC"). Ten years of sampling at four streams there indicates a lack of any recovery despite decreases in sulfate deposition and less acid rain. *Unfinished Business: Why the Acid Rain Problem is Not Solved, supra*, at 4.

34. Plankton and invertebrates are among the first to die from acidification. *Id.* Such disruption reduces the total food resources available to fish, forcing them to shift to less beneficial foods, thus subjecting them to competitive and nutritional stress. Many acidified lakes can support only sphagnum moss or highly acid-tolerant flora. Dramatic adverse impacts on the reproduction of several amphibian species endemic to the Adirondack region have also been noted. For example, eggs of some salamanders show a pre-hatching mortality of 80% or more when incubated in acidified water comparable to their normal breeding pools. Mayflies and

some crayfish have also demonstrated significant sensitivity to acidification. The result is that biological communities in acidified lakes have fewer species (less bio-diversity) than water bodies that are not acidic. As diversity is diminished, ecosystems become less stable and productive. *Id.*

35. Impacts of acidic deposition in Canada can be anticipated to be no less severe than in the Adirondack region of New York State. Most of Ontario, nearly all of Quebec, northern New Brunswick, most of Nova Scotia and almost all of Newfoundland, all situated down-wind from OPG, lack sufficient buffering capacity in their soils and thus are highly vulnerable to acid deposition. Research carried out in the Muskoka-Haliburton Highlands and Killarney Lakes region of Ontario demonstrate the destructive impact on fish and fish habitat. It is estimated that nearly 100,000 Canadian lakes will be damaged by acid deposition. Atlantic salmon habitat in Nova Scotia rivers has been devastated by increased acidity. A study of 49 rivers that historically supported salmon found populations to be extinct in 14 rivers and severely reduced in 20. Loss of salmon is correlated with increased acidity. *Id.* Moreover, all indications are that the Atlantic salmon population will continue to decline in Nova Scotia. *Id.* at 1. Acid rain has resulted in large losses of fish and aquatic communities in over 30,000 sensitive lakes in Ontario and Quebec. *Id.* at 4. Moreover, damaged Canadian watersheds, located primarily in southern Ontario and Quebec, have not responded to reductions in sulfate deposition as well or as rapidly as those in less-sensitive regions.

36. Acid deposition also damages terrestrial ecosystems. Studies show that various plant species exhibit foliar damage, altered responses to pathogens, symbionts and saprophytes, affects on germination of conifer and hardwood seeds and the establishment of seedlings. Acid deposition also leaches nutrients from the soil, and causes changes in the bacterial and fungal communities that maintain the critical cycling of nutrients in the soil. Given the importance of forest products to the Canadian economy and Northeastern United States and the fact that the Northeast is heavily forested, the consequences of acid deposition caused by emissions from OPG are potentially severe.

37. Finally, sulfate and nitrate deposition contributes to the deterioration of building materials (limestone, marble, mortar, concrete, paint and metals) and, as suspended particulate matter in ambient air, they can significantly decrease visibility.

D. Adverse Human Health Impacts of Acid Deposition

38. In the eastern United States, sulfate aerosols make up 25 to 50 percent of the inhalable particles on average and cause up to 75 percent of the aerosol pollution during extreme transport episodes. People exposed to sulfur dioxide can suffer a variety of respiratory ailments. Particulate matter (“PM”) is an extremely harmful pollutant that contributes to a number of respiratory difficulties, ranging from bronchitis to asthma and even premature death. At least one study performed for the United States government has attributed 30,000 premature deaths nationwide each year to fine PM attributable to power plant emissions. *See Clean Air Task*

Force, *Death, Disease & Dirty Power, Mortality and Health Damage Due to Air Pollution from Power Plants* (October 2000) (presenting the findings of a study conducted by Abt Associates); Abt Assocs., Inc., *The Particulate-Related Health Benefits of Reducing Power Plant Emissions* (Oct. 2000). Reducing this pollution would yield tremendous economic benefits as well as tangible health benefits. Using a well-accepted valuation methodology, Abt Associates finds that the total monetary benefits of cleaning up power plants (in the United States) to modern pollution standards would be over \$100 billion per year.

39. The data and calculations in the Clean Air Task Force and Abt Associates reports are supported by other studies. See, e.g., Peters A., et al., *Increases in Heart Rate during an Air Pollution Episode*, 150 Am.J. of Epidemiology 1094-1098 (1999); Bates, D., *Lines that Connect: Assessing the Causality Inference in the Case of Particulate Pollution*, 108 Environmental Health Perspectives 91-92 (November 2, 2000); Krewski, D. et al. *Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particular Air Pollution and Mortality: Investigators' Report Part I: Replication and Validation* (2000) at <http://www.healtheffects.org/Pubs/Rean-ExecSumm.pdf>; Ontario Medical Association, *The Illness Costs of Air Pollution on Ontario*, (June 2000) at <http://www.oma.org/phealth/icap.htm>.

40. OPG is also a major source of nitrogen oxides which react with other pollutants on hot sunny days to form ground level ozone. Ozone, a prime ingredient in summer smog, causes debilitating health effects when inhaled. On high ozone days, hospital admissions, emergency room visits, and mortality related to ozone all increase. When it is inhaled, people may experience chest pain, congestion, coughing, or a sore throat or feel short of breath. Ozone can cause acute respiratory problems, aggravate asthma, and cause inflammation of lung tissue. About seven per cent of the hospital admissions in the summer can be attributed to the smog. American Lung Association of New York State, *Clean Air Fact Sheet*.

41. Certain populations are especially sensitive to high ozone levels:

(a) Children: Studies show ozone exposure can slow the growth of lungs and increase the risk of asthma. See Frischer, T., et al. *Lung Function Growth and Ambient Ozone: A Three-Year Population Study in School Children*, 160 Am. J. Respir Crit Care Med 390-396 (1999); McConnell, R., et al., *Asthma in Exercising Children Exposed to Ozone: a Cohort Study*, 359 The Lancet 386-391 (2002); Mardock, J.E., et al. *No Escape: Can you Ever Really "Get Away" From the Smog? A Midseason Look at Ozone in 1999*, Clean Air Task Force (1999).

(b) The elderly: High ozone levels accelerate the natural decrease in lung intake and aggravates conditions such as emphysema and chronic bronchitis. See, e.g., Mortimer, K.M., et al., *The Effect of Ozone on Inner-City Children with Asthma*, 162 Am J. Respir Crit Care Med 1838-1845 (2000).

(c) Those with asthma or other lung conditions: High ozone levels compound asthma or other lung conditions because ozone is an irritant, inflaming sensitive lung tissue.

42. There is evidence that healthy people also can suffer the effects of ozone. The effect of ozone on the lungs is cumulative, irritating lungs by burning the sensitive lung tissue. The evidence shows that high ozone does have an effect even on healthy adults. The impact on lungs can be as damaging as smoking a pack of cigarettes a day. Mardock, J.E, *et al.*, Smog Watch 2000: Dirty Air Spots and Clean Air Solutions, Clean Air Task Force (2000). Ozone can harm healthy adults as it does sensitive populations, causing symptoms including coughing, shortness of breath, wheezing, chest pain, congestion, headaches, nausea, and irritation of the throat and eye tissue.

43. During the last few summers many areas of upstate New York have been recording high numbers of ozone exceedances. According to a report from the American Lung Association of New York State, the highest number of ozone exceedances for the 2002 ozone season was recorded at the state monitor in Dunkirk, Chautauqua County. The monitor in Rochester, New York, recorded twice as many exceedances this summer as in any of the previous six summers. Monitors at the summit and base of Whiteface Mountain in Essex County and in the Albany, New York area all recorded more exceedances of the 8-hr ozone standard than in any of the previous six summers. American Lung Ass'n of New York State, *Unhealthful to Breathe: Summertime Ozone Levels in New York State* (October 2002).

44. Both sulfur dioxide and nitrogen oxides pollution from OPG plants (and other sources) can potentially trigger asthmatic episodes. Asthma is a chronic inflammatory disorder of the lungs, characterized by episodic and reversible symptoms of airflow obstruction. See American Thoracic Society, *Health Effects of Outdoor Air Pollution*, reprinted from the *American Journal of Respiratory and Critical Care Medicine*, Volume 153, Numbers 1 and 2 (January and February 1996) at 4.

45. Asthma is the sixth-ranking chronic condition in the United States and the leading serious chronic illness of children in the United States. An estimated 17 million Americans suffer from asthma; 5.3 million are under the age of 18. Between 1982 and 1995, the asthma prevalence rate – the rate per thousand persons -- rose from 34.8 to 56.8, an increase of 63.2 percent. The prevalence of pediatric asthma rose, over the same period, from 40.1 to 74.9 – an 86.8 percent increase. See American Lung Association, *Lung Disease Data 2000* (2000) at 5.

46. In the United States, asthma accounts for an estimated 3 million lost work days for adults and 10.1 million lost schools days in children annually. Over the past 20 years, mortality, morbidity and hospital discharge rates attributed to asthma have increased substantially. Between 1979 and 1998, the age-adjusted mortality rate increased 56 percent while the prevalence rate increased by almost 22 percent in males and 97 percent in females between 1982 and 1996. See American Lung Association, *Trends in Asthma Morbidity and Mortality, Epidemiology and Statistics Unit* (January 2001) at 7.

47. Asthma entails an annual economic cost to the United States in direct health care costs of \$8.1 billion; indirect costs add another \$4.6 billion for a total of \$12.7 billion. Inpatient hospital services represented the largest single direct medical expenditure, over \$3.5 billion. Reduced productivity due to loss of school days represents the largest single indirect cost, at \$1.5 billion. *Id.*

E. Adverse Environmental and Human Health Impacts of Mercury Deposition

48. In 1999 alone, OPG released into the atmosphere over 600 kilograms of mercury. Mercury can be present in both ionic and elemental forms and elemental mercury has a long atmospheric residence time. It thus can travel long distances. New York State Energy Research and Development Agency, *Environmental Monitoring, Evaluation, and Protection in New York: Linking Science and Policy* (2000) at 11. Mercury deposited in aquatic ecosystems will bioaccumulate in fish flesh. Fish in the Adirondack region and in regions of Canada and New England exhibit elevated levels of mercury which often results in fishing limitations or bans. Mercury is highly toxic to humans, causing severe damage to the central nervous system, the liver and kidneys.

F. OPG's Emissions Significantly Contribute to these Environmental and Human Health Harms

49. OPG's emissions constitute a large portion of Ontario's emissions, which in turn contribute significantly to the air pollution in Northeastern Canada and the United States causing the harm described.

IV. THE CANADIAN GOVERNMENT HAS BEEN NOTIFIED OF THE HARM TO HUMAN HEALTH AND THE ENVIRONMENT CAUSED BY OPG

50. The subject matter of this submission has been communicated in writing to the Government of Canada. Correspondence to the Canadian Minister of the Environment over several years has described the harm from OPG emissions and requested that Canada take action under Canadian law to reduce the OPG plants' emissions and the impacts of those emissions on New York and the New England states. *See* Letter of January 31, 2001 to David Anderson, Canadian Minister of the Environment from Eliot Spitzer, Attorney General of New York and Richard Blumenthal, Attorney General of Connecticut; Letter of February 19, 2003 to the Honorable David Anderson, Minister of the Environment from Eliot Spitzer, Attorney General of New York.

51. These concerns have also been raised in correspondence to the provincial government of Ontario. *See* Letter of May 7, 1999 to Michael D. Harris, Premier of Ontario, from Eliot Spitzer, Attorney General of New York; Letter of June 17, 1999 to Eliot Spitzer, Attorney General of New York, from Michael D. Harris.

52. In addition, this matter has been communicated in writing to the Administrator of the United States Environmental Protection Agency many times with the request that she raise the issue with the Canadian Minister of the Environment. *See* Letter of April 19, 2001 to Christine T. Whitman, Administrator, U.S. Environmental Protection Agency, from Eliot Spitzer, Richard Blumenthal, John J. Farmer, Jr., Thomas F. Reilly, Sheldon Whitehouse, Philip T. McLaughlin, William H. Sorrell (the Attorneys General of, respectively, New York, Connecticut, New Jersey, Massachusetts, Rhode Island, New Hampshire, and Vermont); Letter of June 4, 2001 to Eliot Spitzer, Attorney General of New York, from Christine T. Whitman, Administrator, U.S. Environmental Protection Agency.

53. This matter has also been communicated to the United States Secretary of State, requesting that pollution from Ontario be a matter of discussion in the negotiation of international agreements. *See* Letter of July 5, 2000 to Madeline Albright, U.S. Secretary of State, from Eliot Spitzer, Attorney General of New York; Letter of July 31, 2000 to Eliot Spitzer, Attorney General of New York, from David B. Sandalow, U.S. Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs; Letter of August 28, 2000 to David B. Sandalow, U.S. Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs, from Eliot Spitzer, Attorney General of New York; Letter of October 20, 2000 to Eliot Spitzer, Attorney General of New York, from Kenneth C. Brill, Acting Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs.

54. Other Submitting Parties have communicated in writing concerning Canada's failure to enforce its environmental laws as to OPG's emissions. *See* Letter of March 20, 2003 to David Anderson, Canadian Minister of the Environment, from Robin Greenwald, Executive Director of Waterkeeper Alliance.

55. Other parties in addition to the Submitting Parties have brought to the Canadian government's attention the harms caused by OPG emissions. *See, e.g.,* Letter of May 7, 2001 to David Anderson, Canadian Minister of the Environment from Yvonne Davies, Secretary Board of Health, Toronto, Ontario.

56. Canada has responded to these communications by promising attention to the matter but by doing little about it. The only concrete changes at the OPG plants discussed by Canada have been the installation of pollution control equipment on certain units to reduce NO_x emissions in an effort to meet obligations under the 2000 Ozone Annex to the Canada-United States Air Quality Agreement. The proposed efforts, however, will not even be enough to allow Ontario to meet its NO_x reduction requirements under the Ozone Annex. The Canadian Minister of the Environment has recognized the shortcoming of Ontario's plans, and has said that "more will need to be done." Moreover, this effort will do nothing to reduce the levels of SO₂, mercury or other pollutants emitted by OPG. *See* Letter of July 17, 2000 to Dan Newman, Minister of Environment, Ontario, from David Anderson, Canadian Minister of the Environment; Letter of August 24, 2000 to Eliot Spitzer, Attorney General of New York, from David Anderson,

Canadian Minister of the Environment; Letter of October 19, 2000 to Dan Newman, Minister of the Environment, Province of Ontario from David Anderson, Canadian Minister of the Environment; Letter of February 16, 2001 to Eliot Spitzer, Attorney General of New York, from David Anderson, Canadian Minister of the Environment; Letter of November 26, 2001 to Eliot Spitzer, Attorney General of New York, from David Anderson, Canadian Minister of Environment.

V. CANADA HAS FAILED TO EFFECTIVELY ENFORCE ITS LAWS AGAINST OPG TO CONTROL, OR PREVENT HARM FROM, OPG'S EMISSIONS

57. Although OPG's emissions of sulfur dioxide, nitrogen oxides and mercury and their subsequent deposition and destructive impact on human health, fish and fish habitat, including in Canadian fisheries waters, are scientifically well-established and well-known, the federal Minister of the Environment has not enforced the Fisheries Act against OPG.

58. Although OPG's contribution to air and water pollution in the United States is well established, the federal Minister of the Environment has not effectuated or enforced the provisions of CEPA. Canada has failed to ensure that the provincial government of Ontario prevent and reduce OPG's pollution, and has itself failed to require OPG to prepare a pollution prevention plan, propose regulations to address OPG's pollution, or take other effective action under CEPA to prevent pollution to the United States.

59. Information in this submission is based on government reports and studies and on peer reviewed scientific studies.

VI. CANADA'S FAILURE TO EFFECTIVELY ENFORCE ITS ENVIRONMENTAL LAWS HAS CAUSED INJURY TO THE SUBMITTING PARTIES

60. As residents of states downwind of OPG facilities, the submitting parties (or their members) are directly and personally affected by the harm described above. In addition, natural resources used by submitting parties have been and continue to be degraded in recreational and other value.

VII. THIS SUBMISSION IS CONSISTENT WITH THE GOALS OF THE NAAEC

61. This Submission raises matters whose further study in this process would advance the goals of the NAAEC. In particular, the preparation of a factual record would:

- a. foster the protection and improvement of the environment for present and future generations (Preamble par.1, Article 1(a));
- b. ensure that activities in Canada do not cause damage to the environment shared with the United States (Preamble, par. 2);
- c. promote sustainable development based on cooperation and mutually supportive environmental and economic policies (Article 1(b));

- d. increase cooperation between governments to better conserve, protect, and enhance the environment, particularly the shared fisheries (Articles 1(c), and 10(2)(i));
- e. avoid trade distortions by Canada's failure to enforce the CEPA and Fisheries Act (Article 1(e));
- f. strengthen cooperation on the development and improvement of environmental laws, regulations, procedures, policies and practices (Article 1(f));
- g. enhance compliance with, and enforcement of, environmental laws and regulations (Articles 1(g), and 10(2)(p)); and
- h. promote pollution prevention policies, practices, techniques and strategies (Articles 1(j), and 10(2)(b)).

VIII. THE SUBMITTING PARTIES REQUEST THE DEVELOPMENT OF A PUBLIC RECORD

62. Based on the above information, the Submitting Parties hereby request the CEC to document in a public record the failure of the Canadian government to enforce effectively its environmental laws against OPG, to the detriment of, among others, the Submitting Parties.

May 1, 2003

Respectfully submitted,