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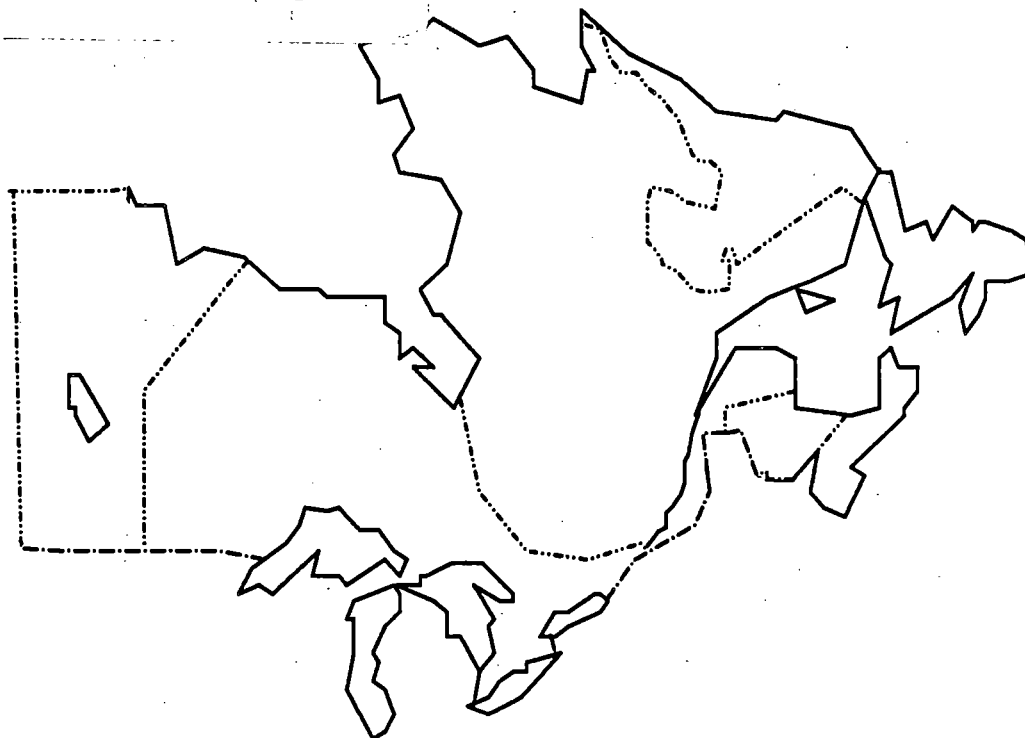
ANNUAL REPORT ON THE FEDERAL-PROVINCIAL AGREEMENTS FOR THE EASTERN CANADA ACID RAIN PROGRAM

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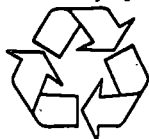
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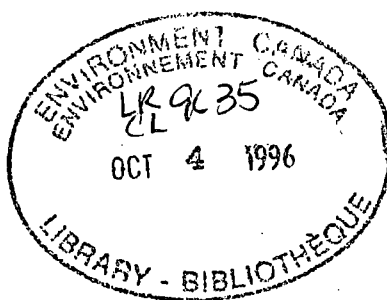


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Annual Report on the Federal-Provincial Agreements for the Eastern Canada Acid Rain Program 1995

Introduction

This annual report on the Eastern Canada Acid Rain Program compares 1995 emissions of sulphur dioxide in the seven easternmost provinces to the emission targets in the program. It does not describe the actions taken by the provinces and industry to achieve those targets -- such as switching fuel, installing scrubbers, building acid plants, and changing industrial processes -- since these actions have already been described in detail in previous reports.

The objective of the Eastern Canada Acid Rain Control Program is to cap sulphur dioxide (SO₂) emissions in eastern Canada at 2,300 kilotonnes for the period 1994 to 2000, which translates into a 40 percent reduction from 1980 actual levels. All the eastern provinces met their emissions targets in 1994, the deadline year.

The Eastern Canada Acid Rain Program, coupled with the U.S. Acid Rain Program which also calls for a 40 percent reduction in SO₂ emissions, is intended to protect moderately sensitive ecosystems from acid deposition.

1995 Emissions

In 1995, the eastern provinces continued to remain well under the 2,300 kilotonne cap, with emissions of 1,794 kilotonnes of SO₂ (or 22% under the cap). Every province met its target, except Newfoundland, which is taking steps to reduce emissions at the Come By Chance refinery. The top three provincial emitters were Ontario, Quebec, and Manitoba; they were under their limits by 24, 19, and 33 percent respectively. New Brunswick, a smaller emitter by comparison, was 36 percent below its limit.

Smelters accounted for 51 percent of SO₂ emissions in eastern Canada in 1995, and fossil fuelled-power plants accounted for another 16 percent. The recent emission rates and provincial targets are shown in Table 1, while Table 2 provides emissions data for the major sources.

Remaining concerns

Despite the success of the Eastern Canada Acid Rain Program, many ecosystems are still being damaged. Lakes and streams in some areas continue to acidify. There are two main reasons for this finding. One is that the U.S. Acid Rain Program will not be fully implemented until 2010; the other is that many areas are so acid-sensitive that a 40 percent reduction in SO_2 emissions is not great enough to protect them from acidification. Climate change may also be having an effect, as well as the deposition of acidifying nitrogen species.

In addition to this ongoing environmental damage, there is a growing concern about the health effects of inhalable particles. This class of pollutants consists of a number of different chemical species, with sulphate particles being one of the main ones. Sulphate particles are formed from SO_2 , the main culprit in acid rain. Although scientists do not understand precisely how these tiny airborne particles affect human health, recent studies have shown that they are associated with increased hospital admissions, respiratory diseases such as bronchitis, asthma, and emphysema, and premature mortality.

The U.S. Environmental Protection Agency has recently tried to quantify the human health benefits of reducing sulphate particles. Its study showed that the U.S. Acid Rain Program alone is expected to yield human health benefits to Ontario and Quebec in the order of US\$955 million (M) a year by 2010, or more than one billion in Canadian dollars. This number is based not only on the real costs of illness -- hospital admissions, doctor visits, medication, lost wages -- but also on the estimated monetary value of nonfinancial concerns, such as pain and discomfort. Hence there are many sources of uncertainty and potential error in the health benefits, e.g., the EPA study gave a range of annual health benefits for Ontario and Quebec, from US\$290M to US\$1,868M, with US\$955M as the mean estimate.

Furthermore, fine particulate matter also absorbs and scatters light, thus reducing visibility. Impaired visibility is a safety issue for airport traffic control, and an esthetic issue for tourists and local citizens.

Next Steps

Some of these environmental, health, and visibility effects will be alleviated when the U.S. Acid Rain Program is fully implemented in 2010; however, a large area of Canada is still expected to receive harmful levels of acid deposition.

As a result, the federal and provincial governments are working with stakeholders to develop a new National Strategy on Acidifying Emissions for post-2000 to protect acid-sensitive areas, human health, and visibility in Canada. The Strategy is expected to be completed in 1997, to take effect when the Eastern Canada Acid Rain Program expires in the year 2000.

TABLE: 1

TOTAL SO₂ EMISSIONS BY PROVINCES (KILOTONNES)¹

	1980	1990	1994	1995	1994
	Actual				Limits ³
<u>MANITOBA</u>					
Primary Metals	463	500	388	358	—
Other	21	16	9	9	—
Total	484	516	397	367	550
<u>ONTARIO</u>					
Primary Metals	1090	729	250	325	490
Power Generation	396	195	106	72	175
Other	272	268	262	275	—
Total	1758	1192	618	672	885
<u>QUEBEC</u>					
Primary Metals	641	189	199	217	—
Other	457	202	183	189	—
Total	1098	391	382	406	500
<u>NEW BRUNSWICK</u>					
Primary Metals	15	6	14	13	—
Power Generation	123	141	90	67	123
Other	80	34	30	31	—
Total	218	181	134	111	175
<u>NOVA SCOTIA</u>					
Power Generation	125	143	133	134	145
Other	68	35	40	38	—
Total	193	178	173	172	189
<u>NEWFOUNDLAND</u>					
Power Generation	18	21	8	15	—
Other	38	36	37	47	—
Total	56	57	45	62	45
<u>PRINCE EDWARD ISLAND</u>					
Total	5	3	4	4	5
<u>EASTERN CANADA TOTAL</u>					
Primary Metals	2209	1424	851	913	—
Power Generation	662	500	337	288	—
Other	941	594	565	593	—
Total ²	3812	2518	1753	1794	2349 ²

1. Data for 1990 to 1995 are taken from annual reports by the provinces on their SO₂ control programs. The emissions levels represent the best estimate available at the time of writing the report. Note that even historic year estimates may be revised as better inventory data are made available.
2. The 1994 Eastern Canada Program target is 2,300 kilotonnes. The total of provincial objectives is currently being renegotiated from 2,349 kilotonnes to 2,300 kilotonnes. Renegotiated federal-provincial agreements are in place with Quebec, New Brunswick and Nova Scotia.
3. The revised emission limit reflects a renegotiated federal-provincial agreement.

TABLE:2

MINERAL EXTRACTION AND SMELTING: MAJOR SO₂ SOURCES (KILOTONNES)

	1980	1990	1994	1995	1994
	Actual				Limits
<u>MANITOBA</u>					
INCO (THOMPSON)	215	247	194	195	220
HBMS (FLIN FLON)	248	253	194	162	220
<u>ONTARIO</u>					
INCO (Copper Cliff)	812	617	162	236	265
FALCONBRIDGE (Sudbury)	123	70	54	45	100
ALGOMA (Wawa, Iron Ore)	155	42	34	44	125
<u>QUEBEC</u>					
NORANDA (Horne)	552	146	156	174	272
NORANDA (Murdochville)	91	43	43	43	65
<u>NEW BRUNSWICK</u>					
NORANDA (Belledune)	15	6	14	13	---

ELECTRIC POWER GENERATION: MAJOR SO₂ SOURCES (KILOTONNES)

	1980	1990	1994	1995	1994
	Actual				Limits
ONTARIO HYDRO	396	195	106	72	175
NEW BRUNSWICK POWER	123	141	90	67	123
NOVA SCOTIA POWER	125	143	133	134	145

Information

For more information on the Eastern Canada Acid Rain Program, contact the Inquiry Centre at (819) 997-2800 for copies of previous reports.

For more information on the National Strategy on Acidifying Emissions, contact Kathleen Hedley, Acid Rain Program, Environment Canada at (819) 953-4680.