1997 Annual Report on the Federal-Provincial Agreements for the Eastern Canada Acid Rain Program

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Introduction

This report presents a snap shot of 1997 emissions of sulphur dioxide (SO_2) and compares them to our domestic commitments in the Eastern Canada Acid Rain Program. Although nitrogen oxides also contribute to acidification, SO_2 has been the main target for reductions to date.

The report does not describe the actions taken by the provinces and industry to reduce SO_2 emissions since they have been described in previous reports (in particular the *1994 Annual Report on the Federal-Provincial Agreements for the Eastern Canada Acid Rain Program*). Nor does the report include the latest scientific findings on acidifying emissions since they have been recently published in the *1997 Canadian Acid Rain Assessment.*

The eastern Canada cap

The Eastern Canada Acid Rain Program established a cap on SO_2 emissions in the seven easternmost provinces of 2.3 million tonnes, for a 40% reduction from actual 1980 levels. The Program called for the cap to be met by 1994. This cap is also enshrined, and extended to the year 2000, in the Canada-U.S. Air Quality Agreement.

To meet this regional cap on schedule, the seven eastern provinces "divided up the pie" into individual slices — or provincial caps — that they agreed to meet by 1994. Each provincial cap was enshrined in a bilateral agreement between each respective province and the federal government. Some of the agreements expired at the end of 1994 (Manitoba, Newfoundland and Prince Edward Island), while others were re-negotiated in 1992-1993 and extended until the end of 1999 (Nova Scotia, New Brunswick, and Quebec). The Ontario agreement extends its 1994 commitment in perpetuity.

The goal of the Eastern Canada Acid Rain Program was to protect moderately sensitive ecosystems from acid rain. Achieving this goal, however, also depends upon the U.S. Acid Rain Program which calls for a 40% reduction in national SO_2 emissions by 2010.

Progress

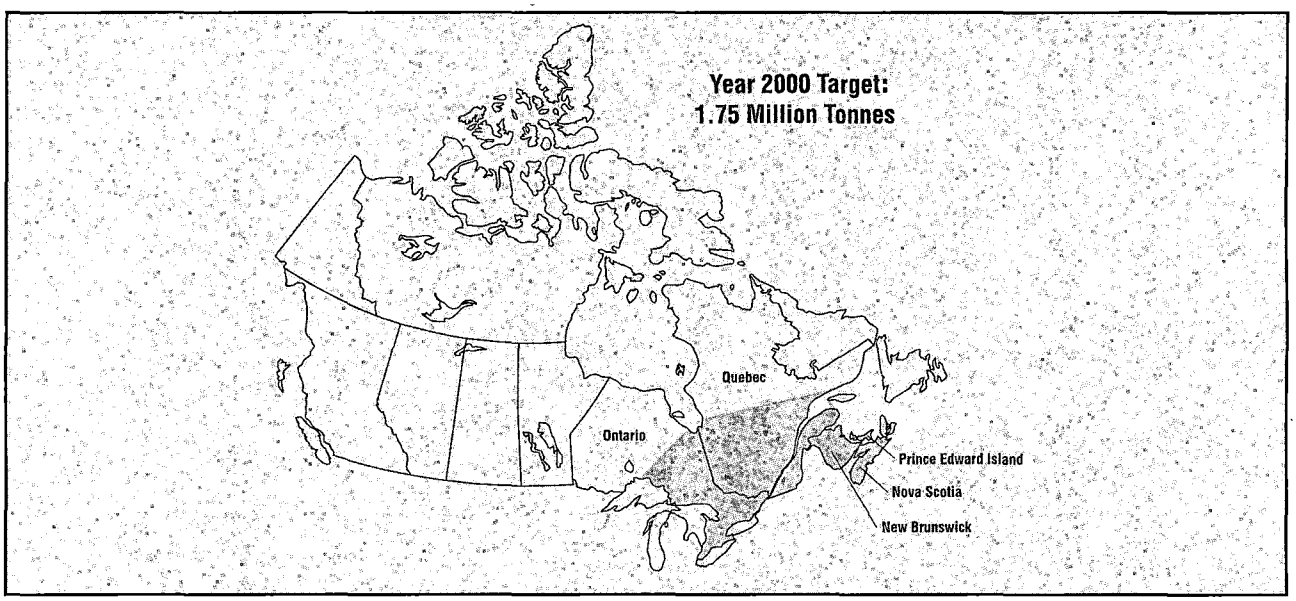
In 1997, the seven eastern provinces collectively emitted 1.75 million tonnes of SO_2, 24% below the 2.3 million tonne cap, and a 54% reduction from 1980 levels. Smelters made up 49% of the eastern Canada total, while power generation made up 21%. The remaining 30% came from petroleum refining, aluminum production, the pulp and paper industry, cement and concrete manufacturing, and transportation.

The provinces with caps still in effect — Ontario, Quebec, New Brunswick, and Nova Scotia — all had SO_2 emissions well below their respective caps, as did Manitoba. (Newfoundland and P.E.I. both met their 1994 caps in 1994, as required.)

Table I shows SO_2 emissions by province between 1980-1997, while Table 2 shows SO_2 emissions from the large point sources in eastern Canada. As Table 1 indicates, 1997 SO_2 emission levels were largely unchanged from 1996, with the exception of Ontario Hydro and New Brunswick Power. Both utilities had to generate more power from their fossil-fuelled power plants to compensate for decreased power production at their nuclear plants (due to lay-ups and maintenance), hence the increase in emissions.

Second Sulphur Protocol

In 1997, Canada ratified the United Nations Economic Commission for Europe "Second Sulphur Protocol," which established a new regional cap of 1.75 million tonnes of SO_2 for south-eastern Canada by 2000. The new cap applies to a region called the SOMA (Sulphur Oxide Management Area) that includes the major sources in Ontario, Quebec, New Brunswick, Nova Scotia, and Prince Edward Island. In 1997, SO_2 emissions in the SOMA were roughly 1.3 million tonnes, well under its cap.



Next Steps

Despite this good progress, acid rain remains a stubborn problem in eastern Canada. In fact, even with full implementation of the U.S. Acid Rain Program in 2010, an area approximately the size of France and the United Kingdom combined (791,000 square kilometres) is still expected to receive acid deposition in excess of critical loads or threshold levels. Scientists predict that SO_2 emission reductions of up to 75% in targeted regions of eastern Canada and the U.S. are required to protect the environment from acid rain. More details on the scope and nature of the problem can be found in the report *Towards A National Acid Rain Strategy*, published by the multi-stakeholder Acidifying Emissions Task Group in October 1997.

Furthermore, after 1999 the 2.3 million tonne cap for eastern Canada will no longer exist. As a result, federal and provincial governments are now finalizing *The Canada-Wide Acid Rain Strategy for Post-2000* to provide the framework for further SO_2-reduction-commitments in eastern Canada. *The Strategy* is expected to be submitted to Energy and Environment Ministers for approval in the fall of 1998.

The federal government is also actively seeking further SO_2 emission reductions in the U.S. beyond their current commitments. These emission reductions south of the border are essential for protecting sensitive ecosystems in eastern Canada. Simultaneously, the U.S. Environmental Protection Agency is also considering a further 50% SO_2 emission reduction as one of the ways for achieving the new U.S. National Ambient Air Quality Standard for fine particulate matter. (SO_2 can transform in the air into tiny sulphate particles that penetrate deep into the lungs, harming human health.)

Table 1: Total SO_2 emissions by province (kilotonnes)[1]

	1980	1990	1994	1995	1996	1997	Limits	
							level	time-frame
Manitoba								
Primary Metals	463	500	388	358	379	389		1994
Other	21	16	9	7	9	9		only
Total	**484**	**516**	**397**	**365**	**388**	**398**	**550**	
Ontario								
Primary Metals	1,090	729	250	325	329	291		not set
Power Generation	396	195	106	72	85	124		expiry
Other	272	242	262	223	253	229		
Total	**1,758**	**1,166**	**618**	**620**	**667**	**644**	**885**	
Quebec								
Primary Metals	641	189	199	215	189	170		until end
Other	457	202	183	163	177	166		of 1999
Total	**1,098**	**391**	**382**	**378**	**366**	**336**	**500**	
New Brunswick								
Primary Metals	15	6	14	13	13	13		until end
Power Generation	123	141	90	67	52	85		of 1999
Other	80	34	30	35	29	28		
Total	**218**	**181**	**134**	**115**	**94**	**126**	**175**	
Nova Scotia								
Power Generation	125	143	133	134	130	138		until end
Other	68	35	40	38	40	37		of 1999
Total	**193**	**178**	**173**	**172**	**170**	**175**	**189**	
Newfoundland								
Power Generation	18	21	8	15	14	16		1994
Other	38	41	36	47	55	54		only
Total	**56**	**62**	**44**	**62**	**69**	**70**	**45**	
Prince Edward Island	**5**	**3**	**4**	**4**	**4**	**5**	**5**	1994 only
Eastern Canada								
Primary Metals	2,209	1,424	851	911	910	863		
Power Generation	662	500	337	288	281	363		
Other	941	573	564	517	567	528		
Total[2]	**3,812**	**2,497**	**1,752**	**1,716**	**1,758**	**1,754**	**2,349**[2]	

1. Emissions data are taken from provincial reports and represent the best estimate available at the time of writing. Historic year estimates may be revised as better inventory data become available.
2. The Eastern Canada Program target was 2,300 kilotonnes by 1994. The total of provincial objectives is currently being re-negotiated from 2,349 kt to 2,300 kt. Re-negotiated federal-provincial agreements are in place with Quebec, New Brunswick and Nova Scotia, extending the time-frame from 1994 to the end of 1999, and reducing the provincial SO_2 caps.

Table 2: Major SO_2 sources (kilotonnes)

(a) Mineral extraction and smelting in eastern Canada

	1980	1990	1994	1995	1996	1997	1994 Limit
Manitoba							
INCO (Thompson)	215	247	194	195	195	210	220
HBMS (Flin Flon)	248	253	194	162	184	179	220
Ontario							
INCO (Copper Cliff)	812	617	162	236	236	200	265
FALCONBRIDGE (Sudbury)	123	70	54	45	53	54	100
ALGOMA (Wawa, Iron Ore)	155	42	34	44	40	37	125
Quebec							
NORANDA (Horne)	552	146	156	172	150	136	272
NORANDA (Murdochville)	91	43	43	43	39	34	65
New Brunswick							
NORANDA (Belledune)	15	6	14	14	13	13	—

(b) Electric power generation in eastern Canada (kilotonnes)

	1980	1990	1994	1995	1996	1997	1994 Limit
ONTARIO HYDRO	396	195	106	72	85	124	175
NEW BRUNSWICK POWER	123	141	90	67	52	85	123
NOVA SCOTIA POWER	125	143	133	134	130	138	145

Information

For additional copies of this report and/or other reports cited here, please contact Environment Canada's Inquiry Centre at 1-800-668-6767 or (819) 997-2800. Many of the reports are on Environment Canada's web site: http://www.doe.ca/pdb/doe.html.

For more information on the Acid Rain Program, please contact Peggy Hallward, Environment Canada at (819) 997-6819.

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