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House of Commons
Canada

FROM WORDS TO ACTION

STANDING COMMITTEE ON ENVIRONMENT

SUB-COMMITTEE ON ACID RAIN

The Honourable David MacDonald, P.C., M.P.
Chairperson

Stan Darling, M.P.
Chairperson
Sub-committee on Acid Rain

December 1992

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HOUSE OF COMMONS

CHAMBRE DES COMMUNES

Monday, December 7, 1992

Le lundi 7 décembre 1992

Chairperson David MacDonald

Président David MacDonald

Minister of the Environment and Chairman of the Standing Committee on Environment

Ministre de l'environnement et président du Comité permanent de l'environnement

Environment

Environnement

RESPECTING:

CONCERNANT:

Parliamentary Standing Order 100(3), implementation of acid rain abatement program initiatives

Chapitre 100(3) du Règlement, étude des initiatives des programmes de réduction des pluies acides

INCLUDING:

Y COMPRIS:

Report to the House on the Acid Rain Act

FROM WORDS TO ACTION

STANDING COMMITTEE ON ENVIRONMENT

SUB-COMMITTEE ON ACID RAIN



The Honourable David MacDonald, P.C., M.P.
Chairperson

Stan Darling, M.P.
Chairperson
Sub-committee on Acid Rain

December 1992

HOUSE OF COMMONS

Issue No. 50

Monday, December 7, 1992

Chairperson: David MacDonald

CHAMBRE DES COMMUNES

Fascicule n° 50

Le lundi 7 décembre 1992

Président: David MacDonald

Minutes of Proceedings and Evidence of the Standing Committee on

Procès-verbaux et témoignages du Comité permanent de l'

Environment

Environnement

RESPECTING:

Pursuant to Standing Order 108(2), consideration of acid rain reduction program initiatives

INCLUDING:

Fifth Report to the House:
From Words to Action

CONCERNANT:

Conformément à l'article 108(2) du Règlement, étude des initiatives des programmes de réduction des pluies acides

Y COMPRIS:

Le Cinquième rapport à la Chambre:
De la parole aux actes

Third Session of the Thirty-fourth Parliament,
1991-92

Troisième session de la trente-quatrième législature,
1991-1992

ACKNOWLEDGEMENT

The Committee wishes to acknowledge the dedication of the Chairman of the Sub-committee, Mr. Stan Darling, Member of Parliament for Parry Sound—Muskoka, to the issue of acid rain. To say that Mr. Darling cares passionately about acid rain control would be an understatement. His perseverance and commitment over the years are in large part responsible for the present day acid rain control initiatives. To Stan, we wish to say a personal thank you.

The Committee was also very fortunate to have been able to rely on the experience and knowledge of the other Members of the Sub-committee. The Honourable Charles Caccia, Member of Parliament for Davenport, brings with him a wealth of experience and knowledge as a former Minister of Environment and a deeply committed environmentalist; Mr. Yvon Côté, Member of Parliament for Richmond—Wolfe, Vice-chairperson of the Standing Committee, represents an area in the eastern townships which is very sensitive to the effects of acid rain; and Mr. Len Taylor, Member of Parliament for The Battlefords—Meadow Lake, who provided a well balanced view, particularly from a western Canadian perspective. To them we also say thank you.

Finally, we wish to acknowledge the contribution of the Research Officer from the Library of Parliament, Dr. Alan Nixon, and the Clerk of the Sub-Committee, Normand Radford.

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Pursuant to Standing Orders 108(1) and 108(2), your Committee established a Sub-committee and assigned it the responsibility of examining the subject of acid rain reduction program initiatives.

The Sub-committee submitted its First Report to the Committee.

Your Committee adopted the following Report which reads as follows:

CHAPTER FOUR: COSTS AND ECONOMIC INSTRUMENTS

A. COSTS

B. COSTS OF ADMINISTRATION

C. EMISSIONS TRADING

CHAPTER FIVE: VISIT OF THE SUB-COMMITTEE TO WASHINGTON D.C.

A. ACID RAIN ALLEYS

B. AIR QUALITY

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D. OUTLOOK OF STATES

E. CANADA'S AIR QUALITY AGREEMENT

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PREFACE

Some 13 years have now passed since the problem of acid rain was first brought to the collective attention of Canadians. In July 1979, the Great Lakes Science Advisory Board warned that the aquatic and terrestrial ecosystems in the Great Lakes Basin were being threatened by acid rain and the first report of the United States-Canada Research Consultation Group on the Long-Range Transport of Air Pollutants, jointly released by the Governments of Canada and the U.S., recognized acid precipitation as "a problem of the greatest common concern at the present time."

A Sub-committee on Acid Rain was first established in 1980 and reported to the House of Commons through the Standing Committee on Fisheries and Forestry. It released its first major report, *Still Waters*, in the fall of 1981. In this report, the Sub-committee recommended large reductions of emissions of sulphur dioxide (SO₂) and nitrogen oxides (NO_x) in Canada from the non-ferrous smelting industry, the fossil fuelled power plants of Ontario Hydro, Nova Scotia, and New Brunswick, and the transportation sector. The report expressed the conviction that Canada "had to put its own house in order," before hoping to persuade the U.S. to control its own emissions.

In 1984, a second major report, *Time Lost* was issued by a Sub-committee on Acid Rain. This report drew attention to the fact that, while public awareness of the issue of acid rain had increased in the three years since *Still Waters*, only limited progress had been made toward a solution. *Time Lost* made 16 recommendations, all of which focused on stricter standards for NO_x and other pollutants from motor vehicles, and on ways to assist the smelting sector to finance controls for its SO₂ emissions.

In 1988 the *Report of the Special Committee on Acid Rain* was released. At that time, the Committee was able to report that, although the acid rain problem in North America was far from a final solution, Canada had made important progress in the control of domestic SO₂ and NO_x emissions. The Committee also expressed optimism that "while the Reagan administration had resisted all appeals, from within and outside the United States, to develop an acid rain control program. . . that the next administration will be more inclined to deal constructively with the issue."¹

That optimism was well-founded. In November 1990, President George Bush signed into law the *Clean Air Act Amendments* of 1990, Title IV of which, Acid Deposition Control, scheduled reductions of 10 million tons of annual SO₂ emissions and of two million tons of annual NO_x emissions to come into effect by the end of the century.

In addition, Canada and the United States entered into a bilateral accord. The Canada-U.S. Air Quality Agreement was signed by Prime Minister Brian Mulroney and President George Bush on 31 March 1991. The Agreement committed Canada and the United States to scheduled reductions of acid rain-causing emissions and established a framework to deal with transboundary air pollution problems.

¹ Canada, House of Commons, Special Committee on Acid Rain, *Report of the Special Committee on Acid Rain*, Queen's Printer for Canada, Ottawa, 1988, p. 2.

The seven eastern Canadian provinces are already approaching their 1994 target for SO₂ emissions. Achievement of this, together with implementation of the acid deposition control provisions of the 1990 *Clean Air Act Amendments*, will ensure significant reductions in the most damaging effects of acid rain over a large portion of eastern Canada.

Progress in dealing with the menace of acid rain has been slow and often frustrating but, thanks to the persistence and tenacity of a great many organizations and individuals in Canada and the U.S., significant progress has been made. There is, however, still much to be done before the issue of acid rain can finally be laid to rest. In the words of the Minister of Environment, the Honourable Jean Charest:

The good news is that the major elements of a permanent solution are finally being put into place. . . There's a sense that maybe because a framework of a solution has been found, that the solution is upon us when in fact it's important to pursue these matters. . . The simple answer . . . is that acid rain is not solved and . . . much more work needs to be done.²

Many sensitive areas in central Canada and in the Atlantic provinces do not have the capacity to buffer acid precipitation. They will still be vulnerable and may remain in need of additional measures if their aquatic ecosystems are to be protected. In addition, many of the impacts of acid precipitation, particularly those on terrestrial ecosystems, on trees and forests, on agriculture, and on human health, are still inadequately understood. The economic and social burden of acidification is still far from being fully accounted for. Canada must maintain the resolve to see this issue through until acid rain is no longer a threat to its waterways, its forests and agricultural lands, and to the health of its citizens.

This present Sub-committee on Acid Rain was struck on 13 June 1991 by the Standing Committee on Environment. Its mandate is to study and report from time to time on the Canadian acid rain program and the new acid rain initiatives of the Green Plan, with particular emphasis on evaluating Canadian sites that are threatened despite Canada-United States acid reduction programs.

The subject of acid rain has been extensively documented in recent years. The Sub-committee decided therefore not to revisit the technical aspects of the issue but to concentrate its efforts on an overview of the status of acid rain initiatives in Canada and the United States. To accomplish this objective, we relied primarily on hearings with a relatively small number of witnesses, existing documentation, and information obtained during the Sub-committee's visit to Washington D.C.

This report outlines the activities of the Sub-committee on Acid Rain since October 1991 and summarizes the major issues that arose in hearings. It provides a brief overview of progress on acid rain initiatives and the challenges that remain.

² Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, May 7, 1992, 7:4.

The Federal-Provincial Agreements

A. GENERAL PROGRESS

In March 1985, Prime Minister Brian Mulroney announced the Canadian acid rain control program. This followed an earlier agreement reached on February 1985 between federal and provincial environment ministers "on the apportionment, by province, of sulphur dioxide emission reductions to decrease acid deposition in eastern Canada."³ The objective of the program was to ensure that total sulphur dioxide emissions in eastern Canada would not exceed 2.3 million tonnes by 1994, a 50% reduction from the "1980 base case."

Jurisdiction of the environment is shared in Canada between the federal and provincial governments. Canadian efforts to control acid rain are spearheaded by the provinces, which regulate and/or negotiate voluntary agreements with those responsible for producing acidifying pollutants. The task of the federal government has been to try to reduce the flow of acid pollutants into Canada. The key forum for the development and implementation of new national environmental initiatives is the Canadian Council of Ministers of the Environment where the federal and provincial governments, participate as equal partners.⁴ The Canadian program differs from that in the U.S. in that the federal government does not have the power to enforce the program, a fact which sometimes causes concern for our American colleagues. Nevertheless, this approach has served Canada well and the Sub-committee was heartened to hear of the spirit of cooperation that has prevailed between the provinces and the federal government.

Still, progress is sometimes slower than the Sub-committee would like. Between 9 March 1987 and 12 February 1988, agreements to limit total SO₂ emissions to 2,474 kt per year were reached by the Government of Canada and the governments of the seven eastern provinces. A small excess of 174 kt of emissions reductions was thus left unallocated by these agreements.

In its 1988 report, the Special Committee on Acid Rain recommended that the federal and provincial governments allocate the remaining 174 kt of SO₂ emissions reductions by 31 December 1989.

The current agreements for eastern Canada will expire on 31 December 1994. The federal government announced, in the Green Plan, its intention to renegotiate, in 1991, agreements with the eastern provinces to cap sulphur dioxide levels permanently at the

³ *Canada/Ontario Agreement Respecting a Sulphur Dioxide Reduction Program*, March 10, 1987, p. 1.

⁴ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, May 7, 1992, 7:5.

⁵ Government of Canada, *Canada's Green Plan*, Minister of Supply and Services Canada, Ottawa, 1990, p. 121.

reduced 1994 levels until the year 2000. It also announced plans to negotiate agreements, by 1994, with all provinces to permanently cap national sulphur dioxide emissions at no more than 3.2 million tonnes by the year 2000.⁵

An agreement to amend the federal-provincial agreements to allocate the remaining reductions and to extend the agreements to cover the period from 1994 to the year 2000 was reached at the November 1990 meeting of the Canadian Council of Ministers of the Environment.⁶ The Sub-committee was informed that negotiations on these new agreements were at an advanced stage. The federal Environment Minister expressed confidence that the agreements would be signed in the near future.⁷

The Sub-committee was also informed that work toward a new set of comprehensive federal-provincial agreements “to encompass a new national strategy to control emissions that cause acid rain” had begun and that the federal government anticipated having the agreements in place by mid-decade.⁸

The annual progress reports on the program required by the federal-provincial agreements, which cover the activities of the preceding year up to 31 March, are due by 31 July each year. At the time the Sub-committee was holding its hearings, only the report covering the year up to March 1990 had been issued. It is the Sub-committee’s opinion that regular and timely reports are an essential part of the acid rain program.

B. PROVINCIAL RESPONSES

As part of its study, the Sub-committee wrote to the Provinces informing them of the study and inviting them to submit any information. Several responses, including a specific brief from the Province of New Brunswick, were received. The Province of Ontario provided extensive and valuable documentation of its comprehensive Acid Precipitation in Ontario Study (APOS). Alberta is continuing with a five-year, \$2.5 million initiative to refine the interim target loading numbers provided by the Western and Northern Canada Long Range Transport of Atmospheric Pollutants (LRTAP) program. The province also plans to put in place modelling and dry deposition monitoring tools for the implementation of its strategy. Alberta supports consideration of alternatives to the traditional “command and control” and indicates that it has been actively participating in the economic instruments studies being undertaken by the Canadian Council of Ministers of the Environment. The Alberta response stresses that arbitrary caps on SO₂ emissions do not guarantee environmental protection and that the appropriate emissions management response should be derived from the appropriate target loadings for sensitive ecosystems in all of Canada.

Saskatchewan reported that it currently does not have a problem with acid rain. The industrial sources of SO₂ and NO_x are located in the southern prairie environment, which is naturally buffered against acid precipitation effects. It points out that Saskatchewan Power

⁶ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, March 25, 1992, 4:6.

⁷ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, May 7, 1992, 7:6.

⁸ *Ibid.*

Corporation has nevertheless been investigating new, and less expensive control technologies to reduce SO₂ emissions from its next coal-fired power plant. Saskatchewan is involved with the other provinces and territories in western and northern Canada in developing a strategy to prevent problems in the future.

The Northwest Territories voiced concern that SO₂ emissions limits might be imposed on them in order to meet the national SO₂ emissions cap and expressed a preference for limits on emissions of SO₂ based on assessed critical loading rates. The Northwest Territories estimate that its annual emission rate of SO₂ is about 20 kt, a figure 10 times higher than emissions rates for the Northwest Territories which are available from federal inventories. A large proportion of the aquatic and terrestrial ecosystems of the Northwest Territories are sensitive to acid deposition but, at current loading rates, significant impacts have not been found.

The Yukon Territory notes that, in comparison to southern and European jurisdictions, it produces almost no SO₂ emissions. It is nevertheless pursuing energy conservation initiatives and developing air quality regulations under its recently passed *Environment Act*.⁹

The most extensive response was from the Province of New Brunswick. It noted that it had been the first province to sign a federal-provincial agreement to reduce annual emissions of SO₂ to 175 kt by 1994 and to maintain that cap until the year 2000 or until a new agreement is reached on a national emissions cap.

The non-utility sector of New Brunswick's economy will continue to be responsible for less than 30% of provincial emissions. New Brunswick Power has seen construction of two new gas turbine stations, rapid advancement of construction of the coal-fired unit and scrubber at Belledune, and approval for the conversion of the Dalhousie station to burn Orimulsion[™] with the included retrofit of a scrubber. Both scrubbers will be designed to ensure compliance with Environment Canada emissions guidelines. Other elements of the provincial emissions reductions plan include a commitment to reducing the rate of growth of electricity demand and the strategic use of low-sulphur fuels.

New Brunswick continues to monitor levels approaching 30 kg/ha/year and states that the deposition target recommended by the Research Monitoring Committee of less than 8 kg/ha/year for all areas of New Brunswick is unattainable. The province further states that the adequacy of protection provided by deposition targets must be reassessed.

⁹ Yukon Territory, *Environment Act*, assented to May 29, 1991.

CHAPTER TWO

International Agreements

Atmospheric pollutants respect neither provincial nor national boundaries. The extent of the impact of different pollutants depends on their transportation properties. Ground-level ozone tends to be a local problem while, at the other end of the spectrum, carbon dioxide and other greenhouse gases are a global problem. Sulphur dioxide is essentially a continental problem. Thus, while a unilateral Canadian program of controls on acid-rain-generating emissions might carry moral or political suasion, it is recognized that a permanent solution to the problem in North America must include the United States.

The 1981 report of the Sub-committee on Acid Rain, *Still Waters*, recommended "that Canada and the United States reach an agreement on the necessary legislation and mechanisms to substantially reduce transboundary air pollution, particularly as it relates to acid rain, by the end of 1982."¹⁰ Again in 1988, the Special Committee on Acid Rain recommended the signing with the United States of a bilateral agreement on SO₂ emissions to reduce transboundary flows by 50% from 1980 levels.¹¹

Since 1988, two very significant events have taken place. The first was the passage of the *Clean Air Act Amendments* of 1990, which were signed into law by President Bush on 15 November 1990. The second was the signing of the Canada-U.S. Air Quality Agreement by Prime Minister Mulroney and President Bush on 13 March 1991.

A. THE 1990 CLEAN AIR ACT AMENDMENTS

The 1990 *Clean Air Act Amendments* (CAAA) is a comprehensive piece of legislation which addresses major air pollution concerns. Title IV of the *Amendments*, Acid Deposition Control, aims at reductions of annual emissions of sulphur dioxide by 10 million tons and annual emissions of nitrogen oxides by 2 million tons by 1 January 2000. By the year 2010 the electric utilities will be placed under a permanent cap of 8.95 million tons and annual total industrial emissions of SO₂ will be limited to 5.6 million tons.¹² The program will primarily affect electric utilities, which account for 70% of sulphur dioxide emissions and 30% of nitrogen oxide emissions in the U.S.

The program to cut sulphur dioxide emissions will be implemented in two phases. In the first phase, which will last from 1995 through 1999, 110 coal-burning electric utility plants located in 21 eastern and midwestern states will be regulated. In the second phase, which

¹⁰ Canada, House of Commons, Sub-committee on Acid Rain of the Standing Committee on Fisheries and Forestry, *Still Waters*, Minister of Supply and Services, Ottawa, 1981, p. 92.

¹¹ Canada, House of Commons, Special Committee on Acid Rain, *Report of the Special Committee on Acid Rain*, Queen's Printer for Canada, Ottawa, 1988, p. 60.

¹² In the U.S., SO₂ and NO_x emissions are expressed in "short tons" while in Canada, the metric ton or tonne is used. A short ton equals 0.907 tonnes.

starts in 2000, smaller and cleaner plants burning coal, oil or gas will also be regulated. All existing units with an output capacity of 25 or more megawatts will be affected. In addition, annual emissions limits on the large coal-burning plants will be tightened.

The passage of the CAAA is of very considerable significance to Canada in that it spells out a firm and definite U.S. commitment to reduce acid-rain-causing emissions. Those reductions are still in the future, however. Dr. Tom Brydges, Director, Integration Services, Atmospheric Environment Service, Environment Canada, sounded this caution:

We have to be vigilant. I think we have to make sure that the U.S. utility industry delivers. There are some who feel that the battle may not be over with these people. The *Clean Air Act* is through but the point now is to be vigilant and make sure it does happen.¹³

B. CANADA-UNITED STATES AIR QUALITY AGREEMENT

The first air pollution issue tackled by the Air Quality Agreement is acid rain. Annex 1 of the Agreement, which details precise commitments and schedules for reductions of the acid rain precursors SO₂ and NO_x, essentially affirms the programs of the two countries.

The significance of the Agreement is much broader as it establishes a structure to deal with mutual concerns regarding transboundary air pollution. It provides for Canada and the United States to enter into future commitments to control other air pollutants which would be specified in new annexes. The federal government has already indicated that the next issue it wishes to address is urban smog.

The basis of the Agreement is a recognition of the tenet of Principle 21 of the 1972 Stockholm Declaration on the Human Environment, which provides that states have a responsibility to ensure that their activities do not cause damage to the environments of other states. To this end, the Agreement commits the countries to consult on transboundary air pollution problems and to consider mitigating measures, and provides for a dispute settlement mechanism.

Importantly, the Agreement establishes an Air Quality Committee to assist with the implementation of the Agreement and prepare progress reports. The first of these reports was to be submitted to both governments a year into the Agreement with additional reports following every two years or less.

The Agreement, through the International Joint Commission (IJC), provides a means of public accountability. The reports of the Air Quality Committee are to be released both to the public and the IJC, which has the responsibility to invite comments and may hold public hearings on the progress reports. The IJC, in turn, is to submit to both governments a syntheses of the views expressed and subsequently release it to the public.

Under the terms of Article VIII of the Agreement, the first report of the Air Quality Committee was to be submitted to the Parties within a year after entry into force of the Agreement, that is, by 13 March 1992. That report was not, however, released to the public

¹³ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, October 9, 1991, 2:13.

until 17 June 1992. The Sub-committee understands that the delay was caused in part by the Canadian requirement to produce the report in both official languages. We feel that it is in the public interest that the reports of the Air Quality Committee be released as quickly as possible and we therefore urge the government to continue to assign a high priority to this task.

Annex 2 seeks to harmonize both countries' scientific and technical activities, which are essential to determining the adequacy of the acid rain control programs. The coordination of research and monitoring activities and the exchange of scientific and technical information will improve understanding of transboundary air pollution and the ability to control it. Activities on the scientific and technical front have already begun and cooperation between Americans and Canadians was described by Environment Canada officials as exemplary.¹⁴ This sentiment would later be reflected by officials from the Environmental Protection Agency and the State Department during the Sub-committee's visit to Washington.

C. THE HELSINKI PROTOCOL

In July 1985, 21 countries including Canada signed the Helsinki Protocol, which called for a 30% reduction of SO₂ emissions from 1980 levels as soon as possible and, at the latest, by 1993. Among the countries that did not sign were three major industrial polluters, the United States, the United Kingdom, and Poland.¹⁵

As of August 1991, all of the original signatories with the exception of the former German Democratic Republic (which became part of a unified Germany in 1990) had ratified, approved or accepted the Protocol.

Canada plans to meet the 30% reduction commitment under this agreement by implementing its eastern Canada program.¹⁶ Based on total national emissions of 4.6 million tonnes of SO₂ in 1980,¹⁷ the 30% reduction commits Canada to an emissions level of close to 3.2 million tonnes of SO₂ in 1993. Thus by meeting its obligation under the Helsinki Protocol, Canada will also be achieving its year 2000 target well ahead of schedule.

Of the seven eastern provinces, only Ontario had still to implement substantial reductions from 1990 emissions levels. In 1990, Ontario's emissions were 1,250 kt of SO₂¹⁸ compared to the 1994 target of 885 kt.

In Canada's Green Plan, the federal government stated its intention to press for renegotiation of the Helsinki Protocol under the United Nations Economic Commission for Europe (ECE). The first negotiating session took place in February of 1992 and it is expected

¹⁴ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, April 29, 1992, 6:14.

¹⁵ Canada, House of Commons, Special Committee on Acid Rain, *Report of the Special Committee on Acid Rain*, Ottawa, 1988, p. 63.

¹⁶ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, May 7, 1992, 7:6.

¹⁷ Canada-United States Air Quality Committee, *Canada/United States Air Quality Agreement: Progress Report*, March 1992, p. 17.

¹⁸ *Ibid.*, p. 16.

that the Protocol may be ready for signing by November 1993. It will not, however, be ready for the fall 1992 meeting of the executive body of the ECE. The United States will be signing onto the second Helsinki Protocol and Canada is looking with the United States at "harmonizing" an approach in dealing with the new Protocol.¹⁹

In most areas, Europeans are still well above the acceptable deposition values and another across-the-board cut like the "30% club" is not realistic.²⁰ The approach this time is different from the uniform requirement of the first Protocol when a 30% reduction was regarded as an eminently achievable first step.²¹ The new protocol will be based on the more objective measure of critical loads which are targeted to the exact reduction required. This could mean variable reductions in different countries, ranging from 80% to 20%.²² Canada has been a key contributor in this respect, for example, in its ground-breaking work on critical loads.²³

Historically, with 30%, every country paid its own way but, in the current European context, such a scheme is probably not feasible. The Europeans are interested in a mechanism based on the Canadian model of least-cost controls and Canada has been involved in an attempt by the Europeans to develop such a program.²⁴

The models predict that least-cost controls focus on central Europe. Countries like Czechoslovakia and Poland, for example, have very high emissions which would be relatively cheap to control but these countries do not have the resources to introduce controls themselves. These difficulties are heightened by the plight of the former Eastern Bloc countries which are in a state of not only economic but also political instability.²⁵

Least-cost controls raise interesting but difficult issues, such as the transfer of money and technology across national boundaries. Evidence provided to the Sub-committee indicated that Finland and possibly Sweden have already established pollution control in Poland at their own cost.²⁶

¹⁹ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, May 7, 1992, 7:9.

²⁰ *Ibid.*, October 9, 1991, 2:14.

²¹ *Ibid.*, May 7, 1992, 7:9.

²² *Ibid.*

²³ *Ibid.*, March 25, 1992, 4:7.

²⁴ *Ibid.*, October 9, 1991, 2:14.

²⁵ *Ibid.*

²⁶ *Ibid.*, October 9, 1991, 2:22.

CHAPTER THREE

Progress

At present, all the eastern provinces are expected to achieve their 1994 SO₂ emissions targets.²⁷ Total 1990 SO₂ emissions for the seven eastern provinces are estimated to be 2,566 kt²⁸; this is already within 12% of the 1994 target of 2,300 kt. Total emissions of SO₂ from the eastern provinces are projected to be slightly below the 1994 cap of 2.3 million tonnes by 1994.²⁹

The difference between the eastern cap of 2.3 million tonnes and the national cap of 3.2 million tonnes, which is to come into effect in 2000, is due to the inclusion of the three western provinces, British Columbia, Alberta and Saskatchewan, and the Territories. Sulphur dioxide emissions in the western provinces are currently in a "holding pattern."³⁰ Alberta accounts for by far the largest share of emissions from the three western provinces at an annual emissions rate of about 600 kt of SO₂.³¹ Thus, when the western provinces are taken into account, there is almost no discontinuity between the eastern target of 2.3 million tonnes and the national target of 3.2 million tonnes. It should be emphasized that this does not imply that the western provinces will have to live within a cap of 900 kt. The national cap of 3.2 million tonnes does not specify any regional distribution of SO₂ emissions.

Total Canadian emissions of SO₂ in 1990 were estimated to be 3.5 million tonnes.³² Thus close to 80% of the reductions required to bring national emissions from the 1980 level of 4.6 million tonnes to the target of 3.2 million tonnes in the year 2000 have already been achieved. In fact, it appears likely that, as eastern Canada reaches its target by 1994, Canada will already be within the year 2000 national cap.³³

Calculations based on atmospheric transport models predict that the transboundary flow of SO₂ from the United States into Canada will fall to 1.9 million tonnes by the year 2000. This represents a reduction of 50% from the estimated flow of 3.8 million tonnes in 1980.³⁴

²⁷ *Ibid.*, October 9, 1991, 2:17.

²⁸ Canada-United States Air Quality Committee, *Canada/United States Air Quality Agreement: Progress Report*, March 1992, p. 16 (Estimates for 1990 are described as preliminary numbers based on submissions from the provinces).

²⁹ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, October 9, 1991, 2:17.

³⁰ *Ibid.*, October 9, 1991, 2:22.

³¹ *Ibid.*

³² Canada-United States Air Quality Committee, *Canada/United States Air Quality Agreement: Progress Report*, March 1992, p. 17.

³³ *Ibid.*, October 9, 1991, 2:16.

³⁴ Written response to questions asked at the April 29, 1992 meeting of the Sub-committee on Acid Rain.

The time-frame of the United States program is significantly behind that of the Canadian program. Phase I of the United States program does not require reductions until 1995.³⁵ It is therefore still too early to expect a significant reduction of the transboundary flow of SO₂ from that country into Canada.

Nevertheless, there is already some improvement in the deposition rates. Many parts of the country are already below the target load of 20 kg per hectare and the east coast is consistently below 20 kg per hectare.³⁶ The combined result of Canadian and U.S. reductions, when fully implemented, should bring sulphate deposition in virtually all of eastern Canada to less than 20 kg/hectare. At this level, the effects of acid rain should be substantially reduced.³⁷

Although this outlook is optimistic there is still reason for caution. The 1990 Canadian Long Range Transport of Air Pollutants and Acid Deposition Report indicates various components of the ecosystem, especially sensitive aquatic organisms, will still be at risk.³⁸

In 1990, there were an estimated 14,000 acidified lakes in the east and acidification will likely increase in the most sensitive regions, such as southeastern Quebec and parts of the Maritimes, even with the achievement of the 20 kg/ha/year target loading although, in Ontario and much of Quebec, lakes should begin to recover once the target loading is achieved.³⁹

The concept of a "target load" was developed in 1983 by the Canadian Council of Resource and Environment Ministers, which established 20 kg/ha/year as the target loading for the Canadian sulphur dioxide control strategy.⁴⁰ The 20-kg target was based largely on the loss of sport fish, which starts at pH levels of approximately 5.3.⁴¹ It was recognized, however, that this level would only protect waters that had at least a modest capacity for neutralizing acid.⁴²

The 20-kg figure also incorporated a safety factor in the sense that, if the 20 kg/ha/year deposition rate could be achieved in certain sensitive areas like the Adirondacks in the U.S., or even at the southern edge of the Precambrian Shield, then all of the other areas of Canada would be below the target load of 20 kg/ha/year.⁴³

³⁵ Canada-United States Air Quality Committee, *Canada/United States Air Quality Agreement: Progress Report*, March 1992, p. 19.

³⁶ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, October 9, 1991, 2:7.

³⁷ Government of Canada, *The State of Canada's Environment*, Minister of Supply and Services Canada, 1991, p. 24-19.

³⁸ *Ibid.*

³⁹ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, March 25, 1992, 4:5.

⁴⁰ Government of Canada, *The State of Canada's Environment*, Minister of Supply and Services Canada, 1991, p. 24-18.

⁴¹ Federal/Provincial Research and Monitoring Coordination Committee (RMCC), *The 1990 Long-Range Transport of Air Pollutants and Acid Deposition Assessment Report*, Part 1: Executive Summary, 1990, p. 1-ii.

⁴² Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, October 9, 1991, 2:7.

⁴³ *Ibid.*

With the improvement in the science of acid deposition, the more sophisticated concept of a "critical load" has now been introduced. The critical load is defined as "the highest deposition of acidifying compounds that will not cause chemical changes leading to long-term harmful effects on the overall structure or function of the aquatic ecosystem."⁴⁴ The critical load varies with the sensitivity of the area and is designed to protect even the most sensitive areas to higher pHs approaching a pH of 6, which means essentially pristine conditions. To achieve this level of protection, critical loads in some areas could be as low as 8 kg/ha/year.⁴⁵

Dr. Brydges of the Atmospheric Services of Environment Canada was optimistic about the current program of reductions, predicting that when it is in place "we will be virtually in range of the ideal critical loads." This optimism, though welcome, should be tempered with caution. Dr. Brydges himself warns that the models are having difficulties in making predictions. The uncertainty arises from two sources: the ability to predict deposition changes and the ability to predict the response of the ecosystem to those depositions. Consequently, as Dr. Brydges explains, "we do not yet have the ability to call for changes in the program."⁴⁶

This evidence argues that any program to control acid deposition should retain the flexibility to make adjustments in response to increased knowledge of the impact of acid deposition and the improved predictive power of the deposition/response models.

⁴⁴ Federal/Provincial Research and Monitoring Coordination Committee (RMCC), *The 1990 Long-Range Transport of Air Pollutants and Acid Deposition Assessment Report*, Part 1: Executive Summary, 1990, p. 1-ii.

⁴⁵ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, October 9, 1991, 2:7.

⁴⁶ *Ibid.*

CHAPTER FOUR

Costs and Economic Instruments

A. COSTS

In the 1985 announcement of the Canadian Acid Rain Control Program, the federal government, recognizing the difficult financial situation of the smelting industry, promised to contribute up to \$150 million as its share of the cost of controls.⁴⁷

In 1992, Environment Minister Jean Charest was able to testify before the Acid Rain Sub-committee that the federal government "in the first round of effort" had contributed \$65 million of direct funding, concentrated mostly in areas of eastern Canada.⁴⁸ This perhaps highlights the fact that the cost of controls has been substantially less than predictions made in the early 1980s. Dr. Brydges stated, in his appearance before the Sub-committee, that the cost of controls had been about 25% of the costs initially predicted when the Canadian control program was being designed.⁴⁹

Nevertheless, the costs are substantial. The capital and associated costs of smelter modifications are estimated to be \$827 million and the estimated costs to the provincial utilities are still greater: New Brunswick Hydro Electric Power Commission, \$210 million; Nova Scotia Electric Power Commission, \$590 million; and Ontario Hydro \$2.46 billion.⁵⁰

On the benefit side, the implementation of emissions controls has stimulated a modernization of the industry which has resulted in greater efficiencies. In addition, there are indirect spin-off benefits which can be attributed to the development and acquisition of control technologies within other sectors of the Canadian economy. We do not, however, have estimates of the value of these indirect benefits.

The federal government does not anticipate that there will be much need for further financial assistance as projections suggest that emissions should not be above 3.2 million tonnes by the year 2000.⁵¹ Federal government support for the acid rain control program will continue. The federal government announced in September 1991 that \$30 million in Green Plan funds would go toward Canada's acid rain control program. These funds are to be used to implement the federal-provincial commitment to cap SO₂ emissions permanently and to

⁴⁷ Office of the Prime Minister, Press Release, "Letter dated March 6, 1985, to Mr. Michael Perley of the Canadian Coalition on Acid Rain," Ottawa, March 6, 1985.

⁴⁸ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, May 7, 1992, 7:9.

⁴⁹ *Ibid.*, October 9, 1991, 2:18.

⁵⁰ Government of Canada, *The State of Canada's Environment*, Minister of Supply and Services Canada, 1991, p. 24-16.

⁵¹ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, May 7, 1992, 7:10.

verify the effectiveness of Canadian and American actions in the Canada-U.S. Air Quality Agreement. The funds are also to be used to support scientific efforts to improve our understanding of the effects of acid rain on forests, fisheries, wildlife, and human health.⁵²

B. COSTS OF ACIDIFICATION

Some attempts have been made to quantify the economic costs of acidification, especially to the recreational fishery and the forest industry. These estimates are, at best, imprecise. To some extent, the imprecision simply reflects insufficient or uncertain information but in others the assignment of costs is often problematic because the effects of acidification cannot readily be separated from other factors. For example, forests may be subjected not only to the stress of acid rain but to other environmental stresses such as drought, disease and predation by pests.

Typically, human health care costs resulting from exposure to acidic pollutants, which are difficult to separate from costs incurred by the effects of other atmospheric pollutants, are likely to be significant given the large segment of the Canadian population that may be exposed.

Some costs of acidification, such as the loss of enjoyment of nature or damage to artifacts of cultural significance, may be impossible to state in monetary terms. Yet these costs are still real and should be taken into account as fully as possible in the development of acid precipitation control programs.

C. EMISSIONS TRADING

Canada has traditionally relied on regulations to achieve its environmental objectives. The Minister of Environment told the Sub-committee that the federal government now intends to make the development of economic instruments a priority, although regulations will continue to play an important role.⁵³

This direction is consistent with the philosophy that economic instruments, working through the market, can provide producers and consumers with the incentive to integrate the environment into their decisions. To address the problem of acid rain, the Green Plan committed the federal government to determine, with the provinces, the feasibility of using emissions trading in both eastern and western Canada in a more cost-effective manner.⁵⁴

The essential characteristic of emissions trading is its flexibility which, in theory, offers a number of advantages over regulations. The first is that trading takes into account differences in the costs of abatement for different sources. In principle, tradeable permits provide a

⁵² Government of Canada, News Release, "Green Plan Provides \$30 million to Acid Rain Controls," Ottawa, September 23, 1991.

⁵³ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, May 7, 1992, 7:9.

⁵⁴ Government of Canada, *Canada's Green Plan*, Minister of Supply and Services Canada, Ottawa, 1990, p. 121.

source with low control costs a financial incentive to decrease its emissions below those of other sources and sell its excess permits to another source with high control costs. The combined cost is less than that of requiring both sources to meet the same emissions standards.

The second advantage recognizes that industry has the expertise to find the most appropriate and effective technical solutions. Given the freedom and the incentive, industry will be able to achieve overall environmental goals more effectively than if specific control measures are imposed.

Other advantages are said to include:

- a continuing incentive to reduce pollution;
- faster achievement of environmental goals than is possible through regulation;
- greater ease of achieving multiple environmental objectives than is possible than with regulations;
- a less cumbersome mechanism for government; and finally,
- easier accommodation of entry and growth in an industry.

The federal government's Discussion Paper on Economic Instruments for Environmental Protection suggests that tradeable permits appear well-suited to the problem of controlling SO₂ emissions, since an overall emissions cap has already been established. It notes that some of the characteristics of a trading system already exist. Ontario Hydro, for example, is free to trade emissions between its various generating stations as long as it does not exceed its authorized level.⁵⁵

Canada, however, has had little practical experience with the use of economic instruments and their application in dealing with SO₂ emissions will present some special challenges in this country. As George Kowalski, Acting Director General, Policy Directorate, Corporate Policy Group, Environment Canada, explained to the Sub-committee:

The problem with emissions trading is not so much the theory behind it but whether you have the correct conditions to make it work. You have to have many sources. You essentially have to have a market similar to a competitive market, where firms can trade those emissions permits quite freely and a lot of sources can engage in the program.⁵⁶

The United States has incorporated emissions trading as a key element of its program to reduce SO₂ emissions from the electric utilities. Even in Phase I, to be implemented in 1995, the program will affect 110 facilities and Phase II will affect a great many more. The potential market for trading in the U.S. is therefore quite substantial.

⁵⁵ Government of Canada, *Economic Instruments for Environmental Protection: Discussion Paper*, Minister of Supply and Services Canada, 1992, p. 29-30.

⁵⁶ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, April 8, 1992, 5:8.

The Canadian situation is quite different. Canadian emissions of SO₂ are characterized by a small number of large sources. The 1994 limits for just six primary metals producers and three provincial utilities located in eastern Canada will account for approximately 50% of the year 2000 national target of 3.2 million tonnes. Emissions trading could thus be dominated by a small number of large sources. This problem could be further exacerbated by the division of Canada into trading zones. The government's discussion paper on economic instruments suggests that this difficulty could be at least partially offset by allowing some trading between zones.⁵⁷

The paper also suggests that interpollutant trading, for example between NO_x and SO₂, and trading between Canadian and U.S. sources are options that could be considered in order to expand the trading market. Both of these options will introduce additional issues. The geographical and environmental impacts of NO_x are different from those of SO₂ and overcontrol of one of these pollutants may result in inadequate control of the other. The implementation of a SO₂ control program is already complicated by the fact that jurisdiction is shared between the federal and provincial governments. The inclusion of the United States with a different political system, a different regulatory system, and different currency could complicate the situation still further.

The potential cost savings of emissions trading to the Canadian economy have yet to be estimated. The working group which was established under the Canadian Council of Ministers of the Environment (CCME) to look at the application of emissions trading to acid rain has been attempting to do this. The Canadian Acid Rain Control Program is already close to achieving its goals and presumably many of the costs have already been incurred. In these circumstances it may be appropriate to ask how much Canada will benefit from the introduction of emissions trading in SO₂.

The shared jurisdiction of the environment in Canada raises the question of how emissions trading systems will be regulated. In the case of acid rain, which involves transboundary flows of pollutants, it was suggested that it might be done through a joint federal-provincial body.⁵⁸

Other issues facing emissions trading include the initial allocation of emissions permits. Two main options are offered. One is to allocate allowances according to an historical baseline; the other is to allocate the permits by auction. The first option could raise an issue of fairness: would it be appropriate to, in effect, reward a corporation for its past history as a large polluter? If permits are distributed by auction, the government will recover the economic value of the permits at the expense of the sources. This could have an adverse economic impact on the smelting industry, an industry which is already depressed.

Trading poses some risk to environmentally sensitive areas as it provides less control over the geographical distribution of emissions. The discussion paper on economic instruments recognizes this problem and suggests that Canada might be divided into a number of trading

⁵⁷ Government of Canada, *Economic Instruments for Environmental Protection: Discussion Paper*, Minister of Supply and Services Canada, 1992, p. 29-30.

⁵⁸ Canada, House of Commons, Sub-committee on Acid Rain, *Minutes of Proceedings and Evidence*, Ottawa, April 8, 1992, 5:10.

zones comprising the Atlantic provinces, Ontario and Quebec, and the western provinces. Limited trading between zones, however, would somewhat reduce the ability to control the regional distribution of emissions. Any trading scheme would therefore have to strike a careful balance between the need to establish a viable emissions trading market and the protection of environmentally sensitive areas.

The discussion paper on economic instruments represents the first major step toward the consideration of economic instruments as a tool for achieving environmental objectives in Canada. One of the objectives of the discussion paper is to provide information on the practical design and implementation considerations and possible ways of addressing them.⁵⁹

The discussion paper is intended as the starting point for the second step in the government's examination of economic instruments: consultations with stakeholders. These consultations are expected to guide subsequent steps, such as pilot projects for emissions trading programs.⁶⁰

Two working groups have been established under the auspices of the CCME. One was to look at the application of emissions trading to control ground-level ozone in the lower Fraser River Valley. The other was to look at the application of emissions trading to control acid rain in Canada. The work of the acid rain group is expected to proceed in two phases. The first phase includes a detailed review of information on SO₂ emissions from Canadian and U.S. sources and their relative contributions to ambient air pollution and, based on that information, the identification of emission management areas. The second phase is to design an emissions trading system that would be implemented in these areas. Completion of the first and second phases was expected in the summer and fall of 1992 respectively.⁶¹

A. ACID RAIN TOLLS

For Canada, Title IV, Acid Deposition Control, which mandates a 10% reduction in emissions of SO₂ from the electric utilities, represents the most important provision of the CAAA. At the time of the Sub-Committee's visit to Washington, publication of the final "com- rules" had been delayed past the 15 May 1992 deadline. These core rules which would include an Allowance System, Permitting, Continuous Emissions Monitoring, and Excess Emissions set up the framework for an emissions trading system.

To a large extent, the delay was the result of heavy workload imposed on the EPA by the large number of comments received on the proposed rules combined with the short deadline mandated in the CAAA. Regulatory conflicts, which have been highlighted by the weak state of the economy and the fact that 1992 is an election year, had also contributed to the delay.

⁵⁹ *Ibid.*, April 8, 5:5.

⁶⁰ *Ibid.*

⁶¹ *Ibid.*, April 8, 1992, 5:8.

CHAPTER FIVE

Visit to Washington D.C.

The Sub-committee on Acid Rain travelled to Washington D.C. to meet with members of Congress and the Senate and their staff, United States government officials, and an environmental group. The purpose of the trip was to ascertain the status of the implementation of Title IV of the *Clean Air Act Amendments* of 1990. Title IV is the section dealing with acid deposition. The visit was also viewed as an opportunity for the members of the Sub-Committee to familiarize themselves with the political climate in Washington and to send a signal to American leaders and government officials that Canadians continue to be interested in the progress of the American acid rain program.

By 1990, national emission levels of SO₂ in Canada had already declined to 3.5 million tonnes, or about 110% of the year 2000 target of 3.2 million tonnes.⁶² In other words, the Canadian program had already achieved about 80% of the required reductions. In 1990, the transboundary flow of SO₂ from the U.S. into Canada was estimated to be 3.8 million tonnes. This is projected to fall to 1.9 million tonnes by the year 2000 as the second phase of the U.S. program goes into effect.⁶³ Over the next decade, reductions in U.S. emissions of SO₂ will have a significantly greater impact on the abatement of acid rain in Canada than the remaining reductions within the Canadian program. The success of the U.S. program is therefore vital to Canadian interests.

The main topic of interest was the status of implementation of Title IV of the *Clean Air Act Amendments* and the political climate surrounding the development of the regulations.

A. ACID RAIN RULES

For Canada, Title IV, Acid Deposition Control, which mandates major reductions in emissions of SO₂ from the electric utilities, represents the most important section of the CAAA. At the time of the Sub-Committee's visit to Washington, publication of the final "core-rules" had been delayed past the 15 May 1992 deadline. These core rules which comprise an Allowance System, Permits, Continuous Emissions Monitoring, and Excess Emissions set up the framework for an emissions trading system.

To a large extent, the delay was the result of heavy workload imposed on the EPA by the large number of comments received on the proposed rules combined with the short deadline mandated in the CAAA. Regulatory conflicts, which have been intensified by the weak state of the economy and the fact that 1992 is an election year, had also contributed to the delay.

⁶² Canada-United States Air Quality Committee, *Canada/United States Air Quality Agreement: Progress Report*, March 1992, p. 17.

⁶³ Written response to questions asked at the April 29, 1992 meeting of the Sub-committee on Acid Rain.

Despite the concerns, the consensus of the Sub-committee's contacts was that Title IV is the strongest section of the CAAA and that the Acid Rain Regulations would not be significantly weakened.

Uncertainty caused by delaying the rules was expected to make compliance more difficult and expensive for the utilities. Nevertheless, the utilities were still expected to comply with the reductions as the fine of \$2,000 per ton of excess SO₂ emissions is four to five times the estimated cost of controls. In any case, the Phase I reductions will not be technically difficult to meet and there is still ample lead time for Phase II.

Some utilities were said to already be taking action in order to comply with Phase I reductions. Of the 110 plants affected by Phase I, 12 to 15 were expected to use scrubbers and the remainder were expected to switch to low-sulphur fuels.

B. NITROGEN OXIDES

A number of issues concerning nitrogen oxides (NO_x), which are regulated under three titles of the CAAA: Title I, Ambient Air Quality Standards; Title II, Mobile Sources; and Title III; Acid Deposition, had still to be resolved.

One of the major issues concerned whether the two million ton reduction of NO_x required by the CAAA should come from the utilities alone or whether it should come from other sources as well. Another issue concerned the type of technology to control NO_x from utility boilers. The EPA favoured a technology known as "overfire air," which the Department of Energy feared might be too costly to the utilities. The outcome of these disputes, however, is unlikely to have a major impact and even less so in Canada due to the more localised nature of NO_x deposition.

C. EMISSIONS TRADING

The success of the emissions trading is important to Canadians first because it may have an influence on transboundary flows of SO₂ from the U.S. and next because designers of a proposed Canadian emissions trading system will be trying to learn from the U.S. experience.

It has been estimated by the U.S. that the trading program will save about \$1 billion a year. The U.S. electric utilities are strictly regulated and at the time of the Sub-committee's visit, it was still not clear to what extent the state public utilities commissions (PUCs) would encourage trading and it is possible that trading in emissions allowances may turn out to be less extensive and less cost-saving than forecast.

Although a widely publicized trade, between Wisconsin Power and Light (WPL) and the Tennessee Valley Authority (TVA), had already taken place by the time of the Sub-committee's visit, it was not seen as a sign that normal market trading had begun.

A concern with emissions trading is that it may afford less control over the regional distribution of emissions. However, the least expensive sources to control will be the large "dirty" Phase I sources many of which are located in the midwest. Trading is therefore expected to encourage greater emissions reductions in the midwest. This would benefit central Canada which is the recipient of much of the SO₂ emissions of this region.

D. OUTLOOK OF STATES

Individual states in the U.S. sometimes face the situation that federal requirements may not be sufficiently stringent to alleviate the air pollution problems of the most severely afflicted areas. Although states have the option of enacting legislation more stringent than the federal government's, they can find themselves caught between the demands of industry and the federal government.

Nevertheless, some states have taken a leading role; California, in particular, has enacted tough legislation on automobile emissions aimed at curbing smog and a group of nine northeastern states and the District of Columbia have signed an agreement to adopt the California standard for automobile emissions. The standard includes such measures as ultra-clean gasoline, alternative fuels such as natural gas or methanol and battery-powered vehicles.

E. CANADA-U.S. AIR QUALITY AGREEMENT

The Canada-U.S. Air Quality Agreement was discussed only at the Sub-committee's meeting with officials of the EPA and the State Department. Both the EPA and the State Department were pleased with initial progress on the Canada-U.S. Air Quality Agreement.

The development of a "structure" that would allow the Canada and the U.S. to deal logically with other air quality issues was considered to be an important early achievement. The next priority was to work out the provisions of Article V of the Agreement which deals with assessment, notification and mitigation.

The EPA was already sharing information with Environment Canada on "Prevention of Significant Deterioration" (PSD) and continuous emissions monitoring (CEM) and it anticipated increased cooperation in the future between Canada and the U.S. in a number of scientific and technical areas notably surface water quality.

F. GENERAL COMMENTS

The fact that 1992 is an election year in the U.S. has undoubtedly influenced the handling of the Clean Air Act Regulations. The recession and pressure from the business community have helped to heighten conflicts over regulations. Ironically, several of the Sub-committee's contacts noted that industry may be less concerned with overzealous regulation than with uncertainty and delays.

The environment in general and acid rain in particular were not expected to be major issues in the upcoming election. The climate was viewed as unlikely to change significantly after the election and regulatory conflicts were expected to persist as a result of continuing concern over a weak economy.

Despite concern over the effects of regulatory disputes on various aspects of the CAAA, the consensus was that the very specific provisions and deadlines of Title IV would prevent significant weakening of the Acid Rain Regulations. The Sub-committee feels that, although there is little cause for concern at this stage, the progress of the U.S. acid rain program warrants continued vigilance.

CHAPTER SIX

Recommendations

The Canadian Acid Rain Control Program was originally intended to achieve a deposition level of not more than 20 kg/ha/year of wet sulphate in the sensitive areas of the Canadian environment. This target level was an estimate, based on the best science of the time, of what would be sufficient to protect a moderately sensitive aquatic system, and was conceived as a goal that was achievable technically and scientifically. The emphasis has now changed from the concept of a target load to a "critical" load, which is defined in terms of a deposition level that will not cause long-term harmful effects on the aquatic ecosystem. For the most sensitive areas, this level may be as low as 8 kg/ha/year.

The Canadian acid rain program is already approaching its goal of 3.2 million tonnes and will achieve it possibly as soon as 1994. With the implementation of the second phase of the U.S. acid rain control program by the end of the century, atmospheric transport models predict that deposition levels will be below 20 kg/ha/year over virtually all of eastern Canada. Nevertheless, there are regions of southeastern Quebec and Atlantic Canada which may still be vulnerable. The ability of models to forecast deposition rates and to predict the response of ecosystems is still limited. In addition, establishing emissions trading systems will introduce a further degree of uncertainty to the distribution of acidic deposition. For these reasons, the Sub-committee recommends:

Recommendation No. 1

That the federal government, in cooperation with the provinces, devise least cost options and implement further reductions to SO₂ emissions as required to ensure that acid deposition not exceed critical loads or target loads, whichever is the lesser.

Recommendation No. 2

That the federal government undertake to negotiate further reductions of SO₂ emissions with the United States as required, to protect Canada's ecosystem.

Recommendation No. 3

That the design and implementation of any SO₂ emissions trading system in Canada, include all necessary measures to protect the environment and human health according to Canada's national and international obligations.

One of the difficulties facing the Sub-committee in its assessment of the status of the Canadian Acid Rain Control Program was the unavailability of recent SO₂ emissions levels for Canadian provinces. The most recent data available to the Sub-committee, which included all Canadian provinces, was for the year 1985. Except for the 1990 SO₂ emission

levels for eastern Canada, presented in the 1992 Progress Report of the Canada-U.S. Air Quality Committee, which were described as preliminary, the most recent estimate of eastern Canadian SO₂ emissions was for 1987. In the Sub-committee's view, it is essential to have more up-to-date information on SO₂ emissions in order to verify the effectiveness of acid rain control measures and to assure that Canada is meeting its national and international obligations to reduce SO₂ emissions. The Sub-committee therefore recommends:

Recommendation No. 4

That the federal government, in cooperation with the provinces, develop and implement a national system of tracking, compiling and reporting on SO₂ emissions; that yearly summary reports on national SO₂ emissions levels be published within one year of the year to which the report applies; and that such a system be in place in time to report on national SO₂ emissions levels for the year 1994.

Under Article VIII of the Canada-U.S. Air Quality Agreement, the first progress report of the Canada-U.S. Air Quality Committee was to be submitted to the parties by 13 March 1992. It was not released to the public until 17 June 1992. The federal-provincial agreements on acid rain mandate that yearly progress reports covering the preceding year up to 31 March, are to be produced by the federal government by 31 July each year. Only the report covering the year up to 31 March 1990 was available to the Sub-committee. The Sub-committee recognizes that production of reports is an onerous task, particularly when different departments, different levels of government, and international cooperation are required. The Sub-committee believes, however, that reporting on progress is vital to the public interest and is an essential and integral part of acid rain control programs. It therefore recommends:

Recommendation No. 5

That the federal government assign top priority to the preparation of progress reports and ensure that sufficient resources are available for reports to meet agreed deadlines.

The Canadian forest-products industry is one of the most important sectors of the Canadian economy, accounting for 20% of manufacturing output and 3.6% of the gross domestic product. The cost of acidification to the Canadian forest industry has not yet been determined, but the potential for loss through even a modest decrease in yield is clearly very significant. Owing to the complex nature of the interaction of different stresses, it has not been possible to determine unambiguously the role of acidification in the health of Canada's forests. Evidence of decline of northern locations of hardwood forest in Ontario and the decline of white birch in the Bay of Fundy region suggests that acid pollutants may play a significant role. The Sub-committee, noting that the federal government in the Green Plan commits itself to reporting by 1994 on the causes of forest decline and whether further emissions reductions are needed, recommends:

Recommendation No. 6

That the federal government, regardless of the prevailing economic policies, ensure that sufficient support is provided for research into the effects of acidification on Canada's forests in order to meet its commitment to report on this issue by 1994.

The federal government has similarly committed itself to reporting by 1996 on the effects of acid-rain-causing pollution on human health. Acid rain is not believed to pose a direct risk to human health; however, there is evidence that the inhalation of acid aerosols can irritate the respiratory tract and aggravate respiratory ailments. Human health may also be indirectly harmed by exposure to elevated levels of toxic metals in drinking water and foods. Although the health risks of acidic pollutants will not normally be severe, the potential exists for large numbers of people to be affected and the overall impact can therefore be significant. The Sub-committee therefore recommends:

Recommendation No. 7

That, following research into the effects of acid pollutants on human health, the federal government, through the Minister of Health and Welfare, present to Parliament an interim report on its findings before the end of 1993 and a final report before the end of 1995.

Although some attempts have been made to quantify the economic costs of acidification, notably to the recreational fishery and the forest industry, these estimates are, at best, imprecise. The subject of the costs of acidification appears, in general, to be poorly understood. Agricultural losses have not been estimated. Human health care costs resulting from exposure to acidic pollutants are difficult to separate from costs from the effects of other atmospheric pollutants but are likely to be significant. Other costs of acidification, such as the loss of enjoyment of nature or damage to artifacts of cultural significance, may not manifest themselves in direct economic terms but are nonetheless real. The Sub-committee believes that a better understanding of the costs of acidification will help better identify desirable emissions levels and serve as a guide to the future development of acid rain control programs. It therefore recommends:

Recommendation No. 8

That the federal government, in addition to its work on the economic impact of acid rain, also examine the other costs of acidification including where there is a loss in the quality of life; where there is a loss of the enjoyment of nature; or where there is damage to artifacts of cultural or historical significance.

The adoption of the California standard for automobile emissions, by California itself and by a number of states in the northeastern U.S., creates a unique incentive for the development of clean transportation technologies. By 1999, 2% of the cars sold in California will have to be battery-powered. This figure rises to 5% in 2001 and 10% in 2003. Other measures will include alternative fuels, such as alcohol or natural gas. The window of opportunity will be brief and others will be quick and willing to exploit it; accordingly the Sub-committee recommends:

Recommendation No. 9

That the federal government, regardless of the prevailing economic policies, increase support for research and development into clean transportation in the near term, particularly in the areas of alternative fuels and electric transportation (battery/fuel cell) technologies.

The Sub-committee believes that energy conservation and environmental goals are intimately related and that objectives in both areas can be more effectively achieved by a harmonization of policy and programs and therefore recommends:

Recommendation No. 10

That the federal government consider adopting fuel efficiency and emissions standards for mobile sources similar to those existing in the northeastern United States.

Recommendation No. 11

That the Minister of the Environment and the Minister of Energy, Mines and Resources work in cooperation to pursue an integrated policy approach to energy policies and environmental goals.

APPENDIX A

List of witnesses

Associations and Individuals	Date	Issue
From the Department of Environment Canada:		
Tom Brydges, Director, Integration Services, Atmospheric Environment Services;	October 9, 1991	2
Laura Tupper, Acting Director, Industrial Programs Branch.		
Peter Higgins, Assistant Deputy Minister, Conservation and Protection;	March 25, 1992	4
Wayne Draper, Associate Director, Industrial Program Branch;		
Hans Martin, Director, Air Quality & Inter-Environmental Research Branch.		
George Kowalski, Acting Director General, Policy Directorate, Corporate Policy Group;	April 8, 1992	5
Penny Gotzaman, Chief, Economic Analysis, Policy Directorate, Corporate Policy Group.		
Barbara Lukaszewicz, Manager, Acid Rain Program, Industrial Programs Branch, Conservation and Protection;	April 29, 1992	6
Pierre Pineault, Senior Program Engineer, Oil, Gas and Energy Division, Industrial Programs Branch, Conservation and Protection.		
The Honourable Jean Charest, P.C., M.P. Minister of Environment;	May 7, 1992	7

Associations and Individuals	Date	Issue
Wayne Draper, Associate Director, Industrial Programs Branch.		
From the Department of External Affairs and International Trade:		
Léonard H. Legault, Senior Assistant Deputy Minister (United States) and Coordinator, Free Trade Agreement;	April 29, 1992	6
David McLellan, Deputy Director, Environment and the International Joint Commission, United States Transboundary Division.		

GOVERNMENT RESPONSE

The Committee requests that the Government provide a comprehensive response to this Report in accordance with the provisions of Standing Order 109.

A copy of the relevant Minutes of Proceedings and Evidence of the Sub-committee on Acid Rain and of the Standing Committee on Environment (*Issues Nos. 1 to 10 of the Sub-committee on Acid Rain and Issues Nos. 49 and 50 of the Standing Committee on Environment which includes this report*) is tabled.

Respectfully submitted,

DAVID MacDONALD, P.C., M.P.
Chairperson.

