

of the transboundary flow of sulphur dioxide into eastern Canada is emitted by sources in states within approximately 300 miles of the border. About 50 percent of the transboundary flow comes from the Ohio River Valley. Scientists advise that total U.S. emissions would need to be reduced by 10 million tons to achieve the necessary reduction in the transborder flow, assuming at least three-quarters of the total reductions come from sources within 300 miles of the international border east of Manitoba. If these scientifically derived targets are not met, the result will be continued damage to the Canadian environment.

Under the Clean Air Act of 1970, and major subsequent amendments to it, the United States has made significant improvements in the air quality of many parts of the country and has reduced the transboundary flow of acid rain pollution by 15 percent since 1980. However, U.S. emission forecasts indicate that in the absence of new emission management measures, the transboundary flow will increase by 10 to 30 percent by 1995.

There is as yet no U.S. program designed to reduce emissions to the level necessary to stop the damage being caused in Canada by acid rain originating in the United States. However, there is clear indication that both the Administration and Congress want to institute a U.S. acid rain reduction program. There is an emerging consensus that SO<sub>2</sub> emissions should be reduced by 10 million tons over the next decade. Such a program, with the appropriate distribution of the reductions, should be sufficient to reduce the transborder flow to an acceptable level. This, in conjunction with Canada's own acid rain control program, would stop the acid rain damage in Canada.

## The Cost

Conservative estimates, based on scientific analysis, suggest that the damage is enormous. Acid rain pollution, directly or indirectly, affects large areas of North America and touches many aspects of our daily lives. It is damaging basic resources and affecting important indus-

tries in both countries, including tourism, fisheries, agriculture and forestry. There is evidence that it is also a threat to human health.

In eastern Canada, some 14,000 lakes are already acidified, with the loss of virtually all indigenous fish species. Another 150,000 have been damaged. According to the Environmental Protection Agency (EPA), in the United States, nearly 3,800 lakes are being damaged and 1,100 are acidified. The damage is also severe to streams in the eastern United States and Canada, where tens of thousands are being acidified.

Acid rain is one of the major contributing factors to the phenomenon of forest decline being experienced in North America, affecting both coniferous and deciduous trees, particularly in eastern North America.

Corrosion and deterioration of materials in buildings and monuments, including structures of great cultural, historic and aesthetic importance, are, at least in part, caused by acid rain pollution.

There are also indications of more ominous costs. Appearing in 1987 before a U.S. Senate panel, health experts from the American Lung Association, the American Public Health Association and the American Academy of Pediatrics testified that scientific knowledge about the health effects of acid rain is sufficient to conclude that, at current levels, it is harmful to human health. These experts reiterated their concerns in 1989 in testimony before the same committee. There is growing evidence of a direct link between exposure to acid rain pollution and respiratory problems in children and asthmatics.

## The Bill

Canada's acid rain control program is estimated to cost \$410 million annually or about \$15 per capita. According to work done by the EPA and the Library of Congress' Congressional Research Service (CRS), comparable reductions in emissions in the United States could cost \$2.5 to \$4.0 billion annually or \$10 to \$15 per capita.

The economic benefits of controlling acid rain emissions are difficult to estimate and existing estimates are no doubt conservative. Based on studies

done by Environment Canada, the benefits of reducing acid rain in Canada are estimated to be worth about \$1 billion annually. A study prepared by the CRS estimates the benefits of controlling acid rain in the United States at \$5.5 to \$8.2 billion annually. CRS notes that a significant portion of the benefits would occur in urban areas.

The cost of reducing acid rain is substantial but so is the cost of inaction. And it will grow the longer action is delayed.

## A North American Solution

Each country must necessarily design its own acid rain reduction program according to its particular circumstances. As indicated by Prime Minister Mulroney in his 1988 address to Congress, Canada's objective is to secure, as quickly as possible, the reduction of the acid rain that crosses the border to a level the environment can safely tolerate. To achieve this goal, Canada believes the two countries should conclude an accord that would acknowledge explicitly the transboundary nature of the problem and establish the obligations and commitments of each side to the other. It would also establish the yardsticks against which progress can be measured and provide a measure of insurance to each side about the other's long-term commitment. Finally, the prospect of an accord could facilitate agreement in the U.S. on a program to reduce emissions.

The accord must:

- *set specific SO<sub>2</sub> emission target levels so that the transboundary flow from the United States is reduced to two million metric tonnes (about 50 percent of the 1980 level);*
- *set a timetable to attain these reductions as quickly as possible.*

Canada's own acid rain control program will be fully implemented by 1994 and will reduce the transboundary flow into the United States by 50 percent.

The precedent for this approach has already been set. The 1972 Great Lakes Water Quality Agreement established targets and a timetable for reducing pollution in the Great Lakes.

# Canada

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