

A. SUMMARY OF FINDINGS AND CONCLUSIONS

A.1 INTRODUCTION

Reviewed in this report are emissions of pollutants that undergo transboundary transport, the currently available technologies (process and control), costs of their application for the reduction of SO_2 and NO_x emissions for both new and retrofit installations and research and development activities. The cost for control equipment is a function of the degree of control desired, and is greater for retrofit installations than for new installations. While no detailed intersectorial analysis has been carried out for control costs it would appear that on a per unit of reduction basis, SO_2 controls may be far more costly for certain sectors than others. In addition, the impact of imposing controls on industry may not be limited to control costs. The problems of raising large capital sums, the payback period, the effect of tax and incentive legislation and the difficulty of bearing annual costs will all require detailed examination in the development of optimal control strategies.

Emissions (historical, present and projected) are listed for the fossil-fuel-fired electrical generation sector (eastern U.S. and Canada), non-ferrous smelters (eastern Canada) and mobile sources (U.S. and Canada). These sectors, together with industrial, residential and commercial fuel combustion, account for the majority of anthropogenic SO_x and NO_x emissions in the eastern part of North America, and hence are judged to be the most important sources in the acid precipitation problem. A brief review is carried out for petroleum refining, solid waste incineration and the pulp and paper industry. These sectors are considered to be of secondary importance to the acid precipitation problem since their emissions of SO_x and NO_x are considerably smaller in magnitude than those of the three primary sectors. A preliminary estimate of the emissions inventory for certain other air pollutants including primary sulfates, volatile organic compounds and selected metals is also provided.

To date, regulatory activity has been centered on maintaining and improving local and regional air quality. From the emission projections contained in this report it appears that between 1980 and 2000, SO_2 emissions will increase 7.6%; NO_x emissions will increase 26%. For the eastern portion of the U.S. and Canada (26 states east of the Mississippi River and provinces from Manitoba eastward) SO_2 emissions will decrease by 1% while NO_x emissions will increase by 38%. For certain source sectors and certain emitting regions increases in emissions may be significant.

Research & Development for SO_x and NO_x control for combustion sources is currently centered in three principal areas of activity; improvement in flue gas desulfurization technology, combustion modifications and fluid-bed combustion. It is considered that this research is necessary and should be supported to the maximum practicable extent. Some of these current initiatives