D.2 IN CANADA

The Canadian data base includes estimates of actual emissions for more than 70 sectors of the economy. The methodology used to derive these estimates is described in detail for each of the sectors investigated in Reference 1. Basically, for point source types of emissions, substantial information is extracted from government surveys made of individual plants or installations and often based on stack testing at the source. In other cases where such firsthand information is not available, and for area source types of emissions, the emission factor approach is used. In these instances, either U.S. EPA emission factors (2), or these factors corrected for Canadian conditions, or emission factors developed by Environment Canada are utilized. Information regarding production and fuel consumption by the various sources comes from other federal government departments and is supplemented by data from a number of industrial associations.

On a national basis the overall accuracy of the current Canadian SO_2 emissions inventory is estimated to be $\pm$ 30% at a 75% confidence level (3). The accuracy of the information varies widely between each sector, and within each sector investigated; it is far greater for the major point sources (e.g., Cu-Ni smelters), which together represent more than half of Canadian emissions, than for less significant sources. An uncertainty analysis has not been carried out for NO_x emissions, but as a first approximation, the overall accuracy of the NO_x data base is less than that of the SO_2 data because the important contributors of such emissions (e.g., transportation sources) are quite different.

The data base for present emission rates in Canada includes a mixture of data covering the period 1976 through 1980. For sulphur dioxide all area source information represents 1976 annual emission rates (1). Major point sources are at their 1979 annual emission rates and the most important Canadian copper-nickel smelter complex, representing fully 20% of eastern Canada emissions, is shown at its 1980 emission rate (3). On a weighted emissions basis, the aggregated SO_2 data base closely represents actual emissions for the year 1979.

For nitrogen oxides, all area source type emissions are from the 1976 base year (1). Major point sources are at their 1979 annual emission rate (3). On a weighted emission basis, the aggregated Canadian NO_x data base probably represents actual emission rates in 1977.

Table D.2.1 gives the total national emissions for SO_2 and NO_x prorated on the basis of the usual five categories of emission sources. Roughly two-thirds of SO_2 emissions in Canada are contributed by industrial processes; the other third results