

OVERVIEW OF THE NATURE OF TRANSBOUNDARY AIR POLLUTION PROBLEM

Although all pollutants eventually impact on the ecosystem, not all air pollutants generated by various sources cross international, state, or provincial boundaries. The main pollutants, which are, or have the potential to be harmful, are oxides of sulphur, oxides of nitrogen, particulates, oxidants and acid precipitation.

With sulphur dioxide as a notable exception, the natural sources of many gases far exceed the anthropogenic (man-made) sources, at least on a global basis, as shown in Table 2-1. However, deposition processes tend to operate partially on a regional scale and therefore observed background concentrations for these gases can vary from high to extremely low. Man-made sources of pollutants are often centered near urban complexes, and therefore, pollutant concentrations and related deposition can be elevated in an "airshed" that is larger than most watersheds or political boundaries, but smaller than the global circulation.

Pages 3-1 to 3-17 of the Aquatic Impacts Section provide additional information which is useful for the purpose of understanding the nature of the transboundary air pollution effects problem. These pages describe the complexity of the problem; how its effects are measured; and how it relates to the hydrologic cycle. The descriptions provide a framework for understanding effects on terrestrial systems, man-made structures, and health and visibility, as well as aquatic systems.

APPROACH FOR FUTURE PHASES

The ultimate success of the Impact Assessment Work Group in meeting its charges is dependent on the development of scientific information. Direct or indirect dose/response relationships can commonly be measured experimentally in the field or in the laboratory, but the slowness of many of the effects considered here requires long-term observation not yet available, or even initiated in many cases. The Work Group will continue to follow scientific developments closely for incorporation in future reports.

In some sensitive areas in the two countries, changes (responses) have been noted, but no information on exposure to pollutants (dose) is available. In such cases, in the absence of more information, the dose must be calculated using atmospheric transport and deposition models. The Impact Assessment Work Group not only provides input (sustainable loadings) to the Atmospheric Modelling Work Group, but also requires input (a calculated dose) from that Work Group, in order to carry out its mission.

Specifically, the objectives of the May, 1981 Phase II report are to provide a refined spatial/geographic resolution to the transboundary air pollution problem; to determine various loadings/effects relationships for individual regions or zones identified as sensitive; and to