2. EMISSIONS

2.1   Emission Inputs to Models

Emissions inventories in the U.S. and Canada have traditionally been prepared on an individual point and area source basis as well as for aggregations of sources over various geographical units like square grids, counties, Air Quality Control Regions, states and provinces. It is generally thought that emissions inventories are more accurate for larger geographic units than for smaller units; however LRT models usually require smaller geographic aggregations of sources because of the way in which sources are parameterized and the desire to simulate sub-regional features of the concentration and deposition fields. Emissions inventories for the major pollutants like sulfur dioxide, nitrogen oxides, particulates, carbon monoxide and hydrocarbons have traditionally received the most emphasis because of concern over the adverse health and welfare effects of these pollutants. However, the acid deposition problem has prompted interest in the inventories of other potential acidifying or neutralizing substances like primary sulfates, ammonia and calcium. Most recently, there has been renewed interest in the emissions inventories of heavy trace metals like manganese and vanadium because of their potential role as tracers of emissions from a source in a specific category.

Modelers use emissions data in various ways. These include point and area sources which are (1) used within a given grid cell or geographic area as a single source emitting at one level in the atmosphere, (2) used and stratified vertically or (3) used as discrete puffs with masses proportional to the emission rate and time of travel.

The grid sizes vary from 70 by 70 kilometers to 190 by 190 kilometers.