picture. In the development of mathematical models for dispersion and transport, there are two areas of interest: (1) intraurban models for use in connection with local air pollution control programs or with long-range air resource management associated with urban planning; and (2) interurban models for the long-range transport of pollutants. The solid extensive urban complex referred to as "megalopolis" is, in terms of air pollution, a reality today on the northeastern seaboard. The area from the nation's capital to Boston is oriented somewhat parallel to the general circulation in the northern hemisphere, and the transport of pollution up the Atlantic seaboard poses a significant problem in the long-range development of this entire area.

The importance of this problem should be determined before it becomes acute, and consequently the Public Health Service is tooling up for a major study on the potential for intercity transport of pollution along the northeastern megalopolis. Development of models and practical means for checking their validity are under study. For the latter there is a need to produce several types of tracer materials, which must be nontoxic, chemically stable, nonexistent as pollutants in the atmosphere, and so distinctive in chemical structure that they may be monitored after thousands to millions of dilutions. Fluorescent particles look promising in the lower dilution range indicated, and new sensitive analytical technics, such as gas chromatography with electron capture detectors, make the prognosis promising for success in the higher range.

Other meteorologically oriented studies of importance concern the development of ground-based methods for measurement of atmospheric properties in situ, e.g., determination of temperature discontinuities (inversions) or pollution discontinuities, the latter usually being associated with inversions. Improved methods for visibility determination, or instrumentation for monitoring solar energy by wave-length distribution, are also of interest.

Control Methods Research

Research on methods for control of air pollution has been dictated to a large extent by the status of methods and equipment available when air pollution emerged as an important community problem after World War II. Practicable methods for particulate control are available to meet today's needs, albeit improvements that will increase collection efficiency and reduce equipment and operating costs are always desirable. In the future our increasing industrial base and mounting population will require ever-increasing efficiencies of collection even to maintain the status quo, let alone reduce present levels. The prognosis is toward atmospheric loadings with an over-all decrease in average particle size, and with consequent increase in the portion penetrable into the depths of the respiratory system. It is imperative, then, that we improve our basic understanding of removal processes and the engineering of these into more economical as well as more efficient control devices.

The control of automobile exhaust has already been discussed. A great deal of effort has gone into this area and will continue because of the economic promise of return on such control devices and their anticipated widespread mandatory use.

The control area of greatest need, affecting the nation as a whole, concerns sulfur oxide emissions from combustion equipment that uses fossil fuels containing appreciable quantities of sulfur. The association of sulfur oxides with health effects has already been discussed. The enormous quantities of fossil fuels consumed daily, and the future outlook for vast over-all increase in usage to