

Major pollution results from combustion of fossile fuels and the production of chemical and natural products. Certain types of naturally formed products can also be considered as pollutants, such as the terpenes formed by certain trees, ice fog in Alaska, etc.

Certain steps must be taken in studying the problems of air pollution:

We must be able to define the pollutants.

We must understand the reactions in the environment—chemical and physical.

We must know the interreaction with or effect of these pollutants on man, other animals, plants, spores, pollen, and other material.

We must try to avoid the adverse effects of pollutants.

In almost every aspect of the problem, meteorology plays an important role. We have to know the diffusion patterns above our land masses and more especially above areas heavily populated. Periods of inversion have prevented the normal movements and dilutions of pollutants and have brought conditions resulting in high levels of deaths and morbidity. Mathematical models could be helpful in predicting what might happen in an area and in attempting to prevent a problem by reducing the load expelled into the atmosphere.

A study of the atmospheric conditions within a small area can help define the chemical reactions occurring there and the effect the pollutants might have on the substrates with which they interact.

All of the above problems are becoming of increasing and critical concern especially to urban areas and are fast taking an important role in urban planning and development so as to avoid the unwarranted spread of the problem. Answers are also needed to try to avoid the problem in the many areas of the world where industrialization is just beginning, but will surely move at a very rapid pace since it can build upon the already known technologies.

Because many of the dispersal patterns are similar much can be gained by bringing interdisciplinary activities to bear on the solution of the problems. Expertise on allergens and infectious diseases, palynology, meteorology including micrometeorology and fluid mechanics, plant pathologists, entomologists, gene ecologists, statisticians, and those concerned with air pollutants is needed. By bringing workers in these disciplines; together under the aegis of an Aero-spore Committee, mutual benefit will result.

OBJECTIVES

The program will endeavor to further investigations of processes and controlling factors in the atmospheric transport of spores, small organisms, and particles and gasses that affect organisms, over distances both great and small. The program will inventory ongoing research and provide information exchange relative to the atmospheric dispersal problems. Uniform methods of making observations and recording data will be worked out through cooperation with counterpart IBP efforts in other countries. Directors of existing projects will be invited to adhere to the uniform system and to contribute to the national and international efforts. Where surveys of accomplished research and research in progress indicate gaps in critical information, the program will define the need and endeavor to recruit personnel to undertake investigations to remedy the deficiency. Some or all of the following information will be sought by each project:

- a. Sources of production of the particulates
- b. Process of lofting
- c. Trajectories while airborne
- d. Concentration gradients and diffusion
- e. Processes of deposition
- f. Factors affecting viability
- g. Phenology or time relations

The objectives of this program, in their basic forms, are regarded as follows:

(1) Provide an organization within which existing and new investigations of adherent dispersal problems can be integrated into a coherent area program.

(2) Review and evaluate subjects and areas that would benefit from cooperation, and assist in developing cooperation between adherent ongoing and proposed projects, especially interdisciplinary projects.