

B. National air pollution potential advisory service forecasts: The national air pollution potential advisory service conducted by the Laboratory of Engineering and Physical Sciences, U.S. Public Health Service, as noted above provides an advance notification of meteorological conditions which may lead to acute levels of air contamination if sources of air pollution are active. The ability to issue advisories for broad regions of the conterminous United States with a high degree of reliability has been demonstrated. Presently advisories are issued for meteorological conditions that extend over large areas for relatively long periods of time. Under the present system the forecasts are a qualitative indication of atmospheric conditions and do not provide a quantitative estimate of the air quality that may be associated with these conditions, further the forecasts do not adequately account for the large diurnal variations of dispersion within the advisory area.

C. Local air pollution forecasts: For each community for which advance prediction of pollution is desired, it is necessary that there be a continually updated emission inventory preferably on a block-by-block and hour-by-hour basis. The larger the smallest unit area and time interval for which emission data is available, the less reliable the results. Each such community must also have available ground level and upper air wind, temperature, and pressure measurements, intensive and frequent enough to allow their use for prediction. The less intensive and frequent the coverage, the less reliable the results. Each such community must also have available a mathematical model compatible with its topography and weather regime and must have an intensive air quality monitoring network against which to test the accuracy of prediction of the model. There must be a long enough period of such testing to refine the model and develop the correlation between the model and reality. The less intensive the air quality monitoring network, and the shorter the period of refining the model, the less reliable the results.

If the emission inventory, meteorological and air quality measurements and mathematical model are all optimized for the community, and if trained-experienced air pollution meteorologists are available, the capability to predict selected air quality parameters 4 to 12 hours in advance exists with about the same probability of error as predicting local variations in the weather of the community that far in advance. The success of the mathematical forecasting models depends not only on the accuracy of the analytical expression relating source and diffusion parameters to air concentrations, but also on the accuracy of the forecasts of the dispersion parameters. "Air pollution forecasting" cannot be separated from weather forecasting in general and improvements in either area will be reflected in the other. Considerable effort is presently being expended to improve forecasting techniques in general and specifically in the mesoscale area. To hasten improvements in mesoscale meteorological forecasts, a special committee has been appointed by the Federal Coordinator for Meteorological Research.

4. Utility of air pollution forecasts systems: The benefits of an air pollution potential and an air quality forecast system are many but because the capacity of the atmosphere to dilute wastes has a finite