14,000, and 17 persons died. Those present in the town during the period remarked on the heaviness of the fog, and on the intensity of the familiar odor of sulfur dioxide coming in large part from a local zinc roasting plant. Autopsies were performed on five of the dead; a common finding was acute irritative changes of the lungs.

In London, in December of 1952, the weather produced a pea soup fog and for a period of four days stilled the atmosphere to bring about an accumulation of pollutants. A few months later, when mortality statistics were reviewed, it was discovered that the city had experienced 4,000 excess deaths in a 7 day period which started with the first of the fog.

There have been other recorded episodes and some probably unrecorded. As recently as 1963, during a fifteen day period of acute air pollution in New York City, the average number of deaths exceeded the average number for corresponding periods in other years by 647. The combination of air pollution, cold weather, and influenza has been cited as the cause of the New York episode.

I would like to point out here, Mr. Chairman, that we have today no foolproof scheme by which we can predict the potential for an air pollution episode and on the basis of such prediction take timely action to prevent an episode. Virtually all our metropolitan areas and a great many industrial towns have the potential for an air pollution episode. They have the sources of pollution, and they experience to some extent the meteorological stagnations that cause pollutants to accumulate. The degree to which we can predict an air pollution episode depends not only upon our assessment of what will be discharged to the atmosphere some hours or days hence, but also upon the accuracy and reliability with which we can predict the weather at that time. Although the art of forecasting weather conditions conducive to the buildup of pollutants has been slowly but surely developing, this art has hardly been brought to the point where we can entrust it with our health and welfare.

At the present time meteorologists from the Environmental Sciences Service Administration of the Department of Commerce, on assignment to the Division of Air Pollution, forecast air pollution potential advisories daily. The areas covered by the individual advisories are at least 75,000 square miles, which is roughly the size of Oklahoma; and the lines defining the advisory areas are roughly 100 miles wide. The micro-climatic conditions prevailing in any particular communty depend upon a great many factors additional to those which produce these large scale anticyclones. While our Department, Mr. Chairman, has encouraged the States and local governments to use these air pollution advisories as one of the precautionary steps that can be taken to prevent mass tragedy, we consider this weather advisory activity only as supplementary to the control of air pollution.

Of even greater concern to us than the episodes of high levels of air pollution and their immediate effects are the effects on human health of long term exposures to low levels of air pollution, levels that routinely occur in virtually all of our metropolitan areas and in countless industrial towns throughout the United States. I would like to clear up any possible confusion on this matter of the health effects of chronic exposures to ordinary levels of air pollution. We are still accustomed to thinking that a disease state is brought about by a single cause—a carryover from public health history when almost total emphasis was placed on the bacterial or viral agent that had to be present before a particular communicable disease could be diagnosed. This postulate has served us well and continues to serve us well. However, the idea that one agent is wholly responsible for any one disease state cannot provide the solutions we need today in dealing with the increasing incidence of chronic disease. There is a considerable body of evidence which makes it unmistakably clear that air pollution is associated with chronic respiratory disease. Various studies have shown that death rates from cardiorespiratory causes correlate in general with air pollution levels. Other studies have shown that asthma attacks have correlated with variations in sulfate pollution and with the incomplete burning of refuse. One study demonstrated that persons living in a town where air pollution is high displayed significant differences in average airway resistance when compared with persons living in a town where pollution levels were lower. The result of laboratory studies involving exposure of animals, and in some cases humans, to controlled concentrations of ozone and sulfur dioxide agree generally with the results of these epidemiological studies. One significant investigation resulted in the development of lung cancer in laboratory animals infected with influenza virus