

and later exposed to inhalation of an artificial smog of ozonized gasoline. These are but a few highlights of investigations that have been carried on and which indicate conclusively that air pollution is associated with the important chronic respiratory diseases of lung cancer, emphysema, chronic bronchitis, and asthma.

But this is not to say that air pollution is *the* cause or *the* agent which brings on any one or all of these diseases. There may be several agents. Chronic bronchitis, for example, which has been established in Great Britain as a specific disease entity, develops over a long period of time and may become crippling through a combination of many factors—air pollution, smoking, repeated bouts with infectious agents, occupational exposures—all affected, perhaps, by hereditary predisposition. The point is, Mr. Chairman, whether we call air pollution one of several causes or name it as a contributing factor, the evidence is abundantly clear that air pollution is a hazard to health.

As Undersecretary Cohen has pointed out, there are many cogent reasons why we must control air pollution. But by far the most compelling reason, the principal reason why the American public and its representatives have demanded that we restore the atmosphere, is that air pollution contributes to illness and death.

Just as our perception of the nature of the air pollution problem has changed drastically in the past few decades, so has the problem changed, and so has our ability to deal with it changed. In 1955 when the Federal air pollution program was initiated, there was little exact knowledge of the kinds and quantities of pollutants in the air, or of the mechanisms by which they accumulate or are dispersed. The National Air Sampling Network and the Continuous Air Monitoring Program, both operated by this Department have since gathered extensive data on the amounts and chemical composition of particulates in the air, and the concentrations of such gaseous pollutants as nitrogen dioxide, nitric oxide, carbon monoxide, oxidants, total hydrocarbons, and sulfur dioxide. Advances in meteorology have enabled us to gage the atmosphere's total mixing or absorptive capacity over a particular geographic region, and thus to estimate the degree of air pollution control needed for a given area.

The technological means of controlling the sources of air pollution have also been rapidly developed in the past several years. Particulate pollutants can be removed by devices which employ principles of filtration, electrostatic precipitation, or centrifugal force. Gaseous pollutants can be taken out through liquid scrubbing, vapor recovery, combustion, and solid absorption. Open burning once widely employed to dispose of a city's trash and to get rid of leaves, upholstery in scraped automobiles, battery cases, tires, etc., can and has been in some cases replaced by processes which do not pollute the atmosphere. Smoke pollution from domestic, commercial and industrial incinerators, boilers, and heating systems can be largely eliminated through improved fuel burning equipment and proper firing practices. Carbon monoxide and unburned hydrocarbons discharged from the gasoline powered motor vehicles have been brought under partial control. In fact, through control devices or through process modification most sources of air pollution in the United States today can be brought under control.

It seems to me, then, Mr. Chairman, that we have two fundamental realities to face concerning the problem of air pollution in the United States today. First of all, air pollution is today a major problem in this country. It not only costs the country billions of dollars each year in agricultural losses, transportation delays, and material and structural damage, it contributes in a very real way for most Americans to the incidence of disease and the premature occurrence of death. Further, all the major trends of growth in our society—increasing population, increasing urbanization, increasing industrialization, increasing use of fuels, increasing use of motor vehicles—all project a severely worsening air pollution problem in the near future. The 1965 population of 195 million is expected to swell to 250 million in 1980. A larger percentage of this larger population will be living on roughly the same land area presently occupied by our current urban population. The gross national product, probably the best indicator of our overall economic activity and therefore the best indicator of the demands on our environment, is expected to climb from the 1965 level of \$650 billion to \$1010 billion in 1980. Last year's fleet of 85 million motor vehicles is expected to climb to 120 million in 1980. And our present discharge to the atmosphere of the United States of roughly 24 million tons of sulfur dioxide will, if present trends continue, soar to almost double that amount, or 43.6 million tons by 1980.