

that an individual suffering from chronic disease has aggravated symptoms. There is abundant evidence that they cut down on performance of otherwise healthy individuals when they exert themselves. There is abundant evidence that they are harmful to plants. On the other hand, the area in which we are almost totally lacking in knowledge is what the effect will be of exposure to relatively low concentrations of materials over a period of 10, 20, or 30 years."

Dr. Bennett said, in short, that air pollution is indeed known to be a health hazard, and that what remains to be determined is exactly how serious a hazard it is. I am basically in accord with this view, though I do not agree in detail with everything Dr. Bennett said. I believe he and I are very concerned with determining at what level of a given pollutant or combination of pollutants injurious effects begin to take place, effects which culminate in increased morbidity and mortality years later.

In my opinion, it is overly conservative to say that we are "almost totally lacking" in knowledge of the effects of long-term exposure to relatively low levels of pollution in the air. There is already a substantial fund of scientific knowledge which indicates, without doubt, that long-term exposure to ordinary levels of air pollution in urban communities is associated with the worsening and, quite possibly, even with the initiation of chronic respiratory diseases such as asthma, bronchitis, and emphysema.

I submit that much of the speculation and controversy about whether or not air pollution causes disease is irrelevant to the significance of air pollution as a public health hazard. We are accustomed to thinking that a disease state is brought about by a single cause—a carryover from a period in public health history when virtually total emphasis was placed on *the* bacterial or viral agent which had to be identified before a communicable disease could be recognized and dealt with. That there is frequently a simple association between an infectious disease agent and the acute disease reaction which it provokes is an observation that has been and still is important in public health work. But we have learned that it is not the master key that unlocks all the secrets of disease and health. The idea that one factor is wholly responsible for any one illness is patently too simple to provide all the answers we need to deal with the chronic diseases which are a growing problem today.

Chronic bronchitis is a good example. It develops over a long period of time and can become crippling through a combination of many factors—air pollution, smoking, repeated and recurring bouts with infectious agents, occupational exposures—all affected, perhaps, by an hereditary predisposition. What then is *the* cause of chronic bronchitis? The answer is obvious. There is probably no single cause, but there is sufficient evidence that air pollution can and does contribute to its development. This is what really matters, whether we choose to consider it *the* cause, one of several causes, or simply a contributing factor.

Mr. DADDARIO. This committee tomorrow will hear from Dr. Robert Ekhart, who will be representing the American Petroleum Institute, and Dr. Harold MacFarland of Hazleton Laboratories.

We shall adjourn until tomorrow morning at 10 o'clock at this same place.

(Whereupon, at 12:45 p.m., the committee adjourned, to reconvene at 10 a.m., Friday, January 19, 1968.)