

The literature of air pollution disasters was enriched recently by the publication of a paper reporting excess mortality, presumably due to elevated levels of pollutants resulting from an extended temperature inversion in New York City as long ago as November 1953. This excess mortality in the largest metropolis in the United States was determined retrospectively by an examination of death records (13). It parallels in that respect the experience of the 1952 disaster in London, the largest metropolitan area in Great Britain. However, while the London episode was studied almost concurrently, the study in the United States was made more than 5 years after the event.

In the 1953 incident, 220 excess deaths were attributed to cardiac and respiratory diseases, again paralleling the London episodes. These deaths must have been accompanied by increased morbidity. Unfortunately, the precise magnitude of this morbidity is uncertain, since it is extremely difficult to obtain reliable morbidity data for past years.

There are some possible source of illness data, such as hospital admissions, physician visits, group medical practice usage, health surveys, and the like. It is obvious that it is no easy matter to collect such data after the lapse of nearly a decade. The less current the records, the greater is the danger that they may no longer exist. Therefore, it was gratifying to find that an examination of the records on emergency room visits to the largest New York City hospitals for November 15-24, 1953, undertaken recently by the same group which reported on mortality in New York City, revealed about twice the expected number of visits by patients with respiratory and cardiac conditions (14).

The line of demarcation between an acute air pollution episode and the chronic long-term effects of low levels of air pollution can become quite blurred. This difficulty is exemplified when we look for causes of the large number of asthmatic responses to sublethal levels of pollutants which have been observed in New Orleans, Pasadena, and Nashville.

In New Orleans, it was demonstrated that there had been sharp periodic increases in emergency clinic visits to Charity Hospital by nonwhite asthmatics. This has occurred often enough so that adequate documentation is now possible (9c). The usual number of visits to Charity Hospital by asthmatics was 25 per day for the period 1953 to 1961.

Frequently, however, outbreaks of asthmatic attacks have seriously strained the facilities of the hospital. In August 1958, for example, an outbreak of asthma involved 100 people, with 3 deaths. There have been instances of daily admissions of 150 and even 200 Negro adult patients. Asthma outbreaks have been accurately predicted in advance on at least two occasions; the predictions were made on the basis of meteorological data which had shown that the outbreaks were associated with particular wind movements.

We are now able to report that these asthma outbreaks are thought to be related to particles of a silicon-containing compound emitted into the atmosphere as a result of poor combustion of garbage and refuse in the New Orleans city dumps. This could very possibly be an instance of an air pollutant acting as an allergen and creating an allergic response in certain susceptible individuals. Obviously, testing of skin and pulmonary sensitivity and further research are indicated to verify or disprove this hypothesis.

How are we to consider the response of asthmatics to insults to the respiratory tract in such diverse air pollution areas as Los Angeles and Nashville? Are these responses the product of acute or chronic insults? In the Los Angeles area a study was conducted from September 3 to December 9, 1946, of 137 bronchial asthma patients of 5 practicing physicians (15). The study revealed that the average number of patients afflicted on days when oxidant values were above a level that caused eye irritation was significantly greater than the average number on days when oxidant values were below this level. Similarly, the number of persons who had attacks on days when plants showed damage from air pollutants, a biological indicator, was significantly greater than the number on other days.

In Nashville, also, it was found that attack rates were significantly different when comparison was made of days with the highest and the lowest sulfur dioxide levels (16). The statistical significance was even greater when the daily data on asthma attacks were lagged 1 day to take account of possible delayed reactions to sulfur dioxide. A possibly corroborative finding was that the pattern of attacks for adult asthmatics reflected differences in air pollution levels in different sections of the city. Thus, the attack rate was three times as high in an area of high pollution as it was in a low-pollution area. It is particularly noteworthy that the sulfur dioxide levels in Nashville are not very high even at their worst.