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Our Polluted Air

ARTICLE II: Is It Killing Us?

By HOPE MacLEOD

ARE WE BREATHING ourselves to death?

The U. S. Public Health Service has identified air pollution as a contributory cause of cancer.

Physicians say it damages sensitive lung and respiratory tissue, irritates the eyes, produces fatigue, cuts down working efficiency and makes people tense.

The National Tuberculosis Assn. says:

"Polluted air can make your eyes water and burn. It can blur your vision. But even worse, it can upset your breathing. You may have to make an effort to breathe. And you may not get all the oxygen your body needs to stay healthy.

"Air pollution has been known to kill, to sicken and to destroy. It is particularly hard on people with serious chest conditions—chronic lung or heart disease. Such people have to work harder to breathe the impure air."

Dr. Stephen M. Ayres, director of the cardio-pulmonary laboratory of St. Vincent's Hospital, points out that "pathologic studies of human lungs demonstrate the impact of air pollution on man. The lungs are pink. Carbon particles accumulate in the lungs of city dwellers producing the characteristic 'black lung' seen at autopsy."

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More and more studies are showing a link between bad air and bad health, up to and including excess deaths.

While most doctors seem to agree that it's unhealthy to breathe polluted air, actual proof is difficult with what we have so far in documented evidence.

"One source of the difficulty in defining the health effects of air pollution arises from the fact that there is no specific air-pollution disease," says Dr. Norton Nelson, director of the Institute of Environmental Medicine at the New York University Medical Center.

"That is, there is no particular pattern of symptoms that defines itself as having arisen from air pollution. On the contrary, it is apparent that air pollution in its effects on health . . . acts primarily through the exacerbation of existing disease."

But the number of those suffering from respiratory diseases is skyrocketing. The number of deaths from bronchitis and emphysema has been doubling every five years and lung-cancer deaths are rising—to 500,000 a year.

"With every breath we take," according to the Public Health Service, "an increasing percentage of us comes a little closer to a diagnosable diseased condition. These ills are mostly disease of the bronchial tree—from the common cold to lung cancer."

Some pollutants in the air, such as lead, may build



Dr. Selikoff . . . Time doesn't always heal.

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Probably the most frightening aspect is that lung cancer deaths have been climbing so rapidly in recent years.

"And while many factors are involved," according to the PHS, "the striking difference between the urban and rural mortality rate for lung cancer points to one of them—air pollution. The rate in our large metropolitan areas is twice the rural rate, even after full allowance is made for difference in smoking habits.

"The death rate from lung cancer is apparently directly proportional to city size, and the same can be said, in general, for levels of air pollution . . . In Norway, where there is much less air pollution, the lung cancer rate is half that of the U. S."

The PHS cites laboratory investigations that provide further clues. In one, mice, sensitized with influenza virus and exposed to oxonized gasoline—simulated photo-chemical smog—developed bronchogenic cancer of the type humans get.

In another study, hamsters were repeatedly exposed to intratracheal doses of hydrocarbon found more often in city than country air, and all developed bronchogenic cancer.

"Air pollution," says the PHS, "contributes to disease and premature death."

Dr. Leonard Greenburg, former Air Pollution Control Commissioner and now professor at Albert Einstein College of Medicine, did a study a few years ago on Staten Island that found the death rate from lung cancer among men living on the north shore, which lies in the path of much aerial filth wafting from New Jersey a few miles across the water, to be 55 per 100,000. On the relatively unpolluted south shore the rate was 40 per 100,000. Among women,

up in the body until they reach harmful levels. Others—carbon monoxide is one—are not cumulative in their effects, says the PHS, but can cause temporary disability or even death if concentrations are high enough.

Emphysema, a disease in which lung tissue is progressively destroyed, "today in this country is the fastest growing cause of death," according to the PHS. In 10 years emphysema deaths among American males rose from 1.5 per 100,000 to 8 per 100,000.

"Studies have demonstrated that emphysema patients improve when they are protected from air pollution," the PHS says. "The fact that the incidence of emphysema is greater in our cities than in our rural areas points to air pollution as a contributing factor, as does the fact that deaths from emphysema are twice as high in the city as in the country."

A study by three Canadian pathologists of 300 autopsies in highly polluted St. Louis and an equal number in Winnipeg, with its relatively clean air, showed twice as much emphysema in the St. Louis 20-to-40 age group.

Another rapidly growing respiratory ailment, chronic bronchitis, was found in one study, to exist in 21 per cent of men 40 to 59 years old. Other studies indicate that 13 to 20 per cent of the country's adult males have this disease.

The rise in death rates from emphysema and chronic bronchitis, was found in one study to exist decade has been described by the New York Tuberculosis Assn. as "monumental"—an increase of over 500 per cent from emphysema and over 200 per cent from chronic bronchitis.

Still another disease, bronchial asthma, is often aggravated by air pollution, although it's difficult to say what role pollution plays because so many stimuli can bring on asthmatic attacks. Studies have long indicated, however, that occupational exposure to certain vapors and dusts can trigger such attacks. And many of these can be found in substantial amounts in ordinary city air.

Air pollution has even been connected with the common cold.

A study of two groups of Maryland residents, differing only in the amount of particulate matter (solid and liquid particles of smoke, dust etc.) they were exposed to, revealed that the group in the most polluted section had the most colds.



Dr. Dubos . . . Worst may be yet to come.

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those living on the north shore had a lung-cancer death rate twice that of those on the south.

Merril Eisenbud, the city's Environmental Protection Administrator, cautions that one should be careful about drawing conclusions from the Staten Island study because of socio-economic differences in the two areas. You'll almost always find more susceptibility to all diseases in the poorer, less advantaged neighborhoods, he points out.

Dr. Ernest L. Wynder, M.D. working at the Sloan-Kettering Institute for Cancer Research, painted mice with material taken from filters exposed to New York air, and produced cancer.

Although Wynder's work in the epidemiology of lung cancer led him to believe its main cause was cigaret smoking, he did note:

"In view of the fact . . . that tumor-initiators, tumor-producing components, and ciliotoxic agents have been identified in city air; remedial measures must be encouraged to reduce these components.

"As long as a likelihood exists that such pollutants may even to a limited extent contribute to lung cancer and that these substances can be reduced through practical measures, such measures must be undertaken."

Says the American Medical Assn.: "There is now no longer any doubt among medical investigators that air pollution is a medical problem in terms of the millions of persons exposed, the subtlety and variety of its effects, and its tendency is to worsen with increasing urbanization."

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A truly alarming aspect of the whole air-pollution problem is what a layman might call "delayed reaction."

Biologist Rene Dubos of Rockefeller University says:

"Since most kinds of environmental pollutants produced by modern technology did not reach significant levels until one or two decades ago, their worse effects are yet to be recognized.

"It is known that injection into newborn mice of particulate materials separated from urban air greatly increases the frequency of various types of tumors during the adult life of these animals.

"If this observation can be extrapolated to human beings, the worst effects of environmental pollution are yet to come, since it is only during the past decade that large numbers of babies have been exposed to high levels of pollutants in urban areas . . ."

Or as Dr. Irving J. Selikoff, head of the Mt. Sinai School of Medicine's Environmental Medicine division, puts it:

"Whatever it is that destroys the lung in emphysema doesn't do it in a year or two but takes a very long time. A kid starts smoking at 16, but the effects may not show until he's 56. Uranium miners don't show lung cancer for 10 or 20 years after they start.

"We don't know what air pollution ultimately will do. We must consider the future. We have a responsibility to future generations.

"If it can happen to birds and animals, it can happen to us. Things don't always turn out for the best. Time doesn't always heal everything . . ."

Says Dr. Richard A. Prindle of the PHS:

"One can only conjecture that this rising incidence of disease will continue and that the effect on the health of the nation—and over the technologically expanding world—may be augmented.

"The over-all effect of air pollution on the economy, the health and the welfare of the people may become a disaster."

TOMORROW: What Is It?

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