

ENVIRONMENT v. MAN

Subtle New Pollutants Endanger Health

IT was only 106 years ago that experimenting British authorities closed down the common water pump in a busy London square and saw the bustling city's cholera rate drop dramatically. From that experience came a valuable lesson in public health: disease can be transmitted by polluted water. In the years since, along with his progress in sanitation and health, man has picked up new ways of polluting his environment. The new, more subtle contaminants bear such exotic names as alkyl benzene sulfonate and acrolein, and they differ in one major respect from the contaminants of a century and a half ago. They are man-made—the undesirable by-products of technological progress.

In the U.S. alone, more than 400 totally new chemicals are introduced each year. They kill bugs, clean carpets, run automobiles and wash dishes. Some of them even fight disease. But when their usefulness is ended, they often find their way—as waste—into the air people breathe, the water they drink and the food they eat. Often invisible and immune to bacteriological attack, they damage plants, kill fish, slip undetected through sewage-treatment plants, and blanket entire cities with clouds of noxious vapor. Some, like sulphur dioxide, are clearly toxic—memorably so in the five-day siege of sulphurous smog in Donora, Pa. (pop. 13,000), which struck down 5,910 and killed 18 in October 1948. Others, doctors think, may have

serious cumulative effects on human health—which will not show up for perhaps 20 or 30 years. Some may cause lung disease and consequent failure. Dr. John R. Heller, president of New York's Memorial Sloan-Kettering Cancer Center, last week estimated that more than 15% of all cancers might be traced to environmental pollutants. Says Dr. Robert A. Kehoe of the University of Cincinnati: "The technology of our time has created a wealth of materials and made available the forces of nature for man's use. At the same time, it has failed to bring to these materials and forces the understanding of their biological effects that will keep them under adequate control. The effort must be made to reduce the gap between technology and biology before it is too late. It is clear that reckless man can turn loose and build up physical forces which may destroy himself and his kind."

What's in the Air?

In many U.S. cities, blue skies are less common than they once were, and smarting eyes a chronic complaint. Air pollution is no respecter of size; more than 10,000 U.S. communities are afflicted to some degree. Most U.S. smog is of the eye-irritating "Los Angeles type," composed primarily of nitrous oxides and petroleum products loosely known as hydrocarbons, much of it traceable directly to automobile exhausts. Every day in the Los Angeles basin, more than 12,500 tons of pollutants are discharged (80% by autos) into the air—and without the city's severe industrial controls, the daily dosage would be 3,300 tons higher. Its economic and psychological effects are staggering. Smog has cost the Los Angeles area an estimated \$375 million in research, control and crop losses. A state-sponsored survey released this month shows that three out of every five Angelenos feel bothered by smog.

Is smog a health menace? Says Los Angeles' Dr. Paul Kotin: "There is no question that it is not good for you." Kotin himself has produced cancers in rats and mice by painting their bodies with smog components. Natural exposure to smog has caused scarring in the lungs of laboratory animals, and inhalation of sulphur dioxide fumes produces "airways resistance" (inhibited replenishment of the blood's oxygen supply) in both guinea pigs and humans. In London, where the word smog originated, chronic bronchitis-emphysema, an irreversible pulmonary disorder that can cause eventual heart failure, is now the third biggest killer (behind heart disease and cancer) of men over 45, and British doctors attribute its rapid rise to polluted air. Recent samplings of London smog have revealed dangerous concen-

trations (300 to 400 parts per million at auto exhaust-pipe level) of poisonous carbon monoxide in the city's air. Normal danger level: 100 parts per million, inhaled over an eight-hour period.

But the unhappy truth is that scientists still know very little about smog's effects on human health. Many doctors suspect that exposure to polluted air over a period of years, like habitual cigarette smoking, probably produces serious pulmonary disease. But, explains Dr. Walsh McDermott of Cornell University Medical College, the kind of long-term study needed to prove this hypothesis is "not particularly fashionable" among scientists who prefer to delve into more dramatic fields of research. The extent of the menace is undetermined, but it nevertheless exists. Says Dr. McDermott: "We can continue to breathe what is very probably toxic air on the premise that it is an unavoidable byproduct of our wonderful society and that, on balance, life is pleasanter with the polluted air than without it. Or we can choose to have our wonderful society and clean air too."

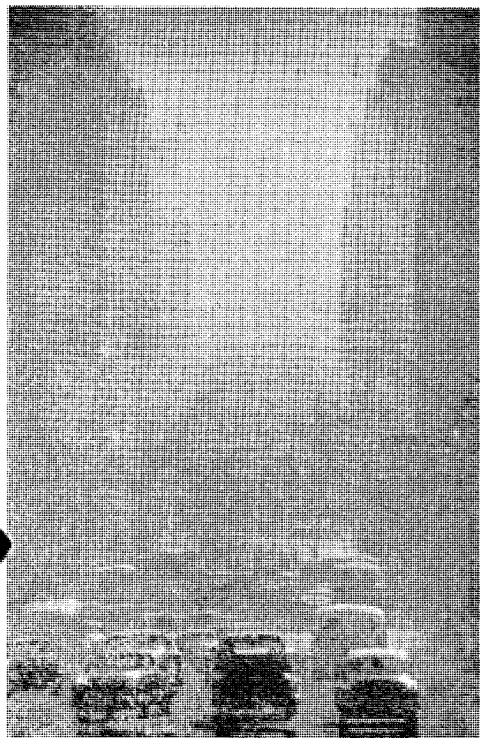
What's in the Water?

For decades the U.S. has prided itself on the purity of its drinking water. Today in many places the boast rings hollow. Sioux City, Iowa dumps ten tons of raw human sewage into the Missouri River daily; about half survives the trip downstream to the intake station through which Omaha, Neb. draws its entire city water supply. Necessity has forced Omaha to build one of the nation's finest water-purification plants, purchase \$36,000 worth of chlorine a year. Still, says a Nebraska sanitation official, the water at times tastes "like hell-fire." In St. Louis County, residents have been warned that future water supplies are imperiled by increasing pollution of the Missouri at Kansas City. Says a state engineer: "We have just about exhausted all the water-purification methods known at this time." A brief typhoid outbreak last year in Keene, N.H.—traced to contaminated water—killed one person, struck down 18 others. Incidence of infectious hepatitis, a debilitating and sometimes fatal viral disease of the liver, which can be transmitted by polluted water, is up 71% over 1959. Says the U.S. Public Health Service: "The problem of keeping enough water clean enough to protect the public health has become enormously complex, difficult and urgent."

At Cincinnati's Robert A. Taft Sanitary Engineering Center, scientists have identified approximately 100 petrochemical compounds—detergents, insecticides, herbicides and solvents—as water pollutants. Says Taft's Bernard B. Berger: "We have no idea how many petrochemicals are in

SMOGGY DAY IN LOS ANGELES

BILL BRIDGES



our streams. But we believe that for every one we've found, we have missed hundreds of others. Our ability to protect water quality has not kept pace with the development of these compounds." The new contaminants are difficult to spot and control; they cannot be removed from the water by current treatment methods. In high enough concentrations, most are toxic to fish, and some have been implicated as taste and odor producers in drinking water, but their effect on human health remains a mystery. An annoying new pollutant: common household detergent, which sometimes disrupts sewage-treatment processes, occasionally turns up in sufficient quantities to make drinking water foam as it pours from a tap. Says Berger: "We expect to get foam in a washing machine or on a beer, but we don't like to see it on a glass of water."

Even in the Great Lakes, where the water in some areas is still so pure it can safely be used to fill the cells of storage batteries, pollution is becoming a grave problem. In Milwaukee three county park beaches along the Lake Michigan shore have been closed to swimmers since August 1959, and last week Dr. Edward Krumbiegel, Milwaukee's health commissioner, warned that two more may shortly be closed if lake pollution is not controlled. Says Dr. John C. Ayers of the University of Michigan: "If laws and treaties are not observed, no place on the Great Lakes will be a safe source of drinking water supply."

The increasing U.S. population is severely taxing antiquated, inadequate sewage facilities. The amount of sewage in the U.S. (over 50 million pounds of solids a day) has increased 70% in the past 20 years, and the U.S. Public Health Service says that 10,000 new municipal and industrial treatment plants must be built, another 1,700 modernized (at a total cost of \$2 billion) just to handle the overload. Some cities have been notoriously lax in sewage control; last month Health Secretary Arthur S. Flemming asked the Justice Department to bring suit against St. Jo-

seph, Mo., where residents voted down a bond issue for construction of a sewage-treatment plant ordered by the Federal Government. Says Secretary Flemming: "The battle must be waged on a broad front—in intrastate as well as interstate waters. If it is not, we may be confronted with a crisis of such gravity as to jeopardize the further growth and development of many areas of the country and even the health of millions of people."

What's in the Food?

Thanks to chemistry, food has never been more abundant, looked more attractive or, presumably, tasted better. More than 4,000 chemicals—ranging from sweeteners and emulsifiers to antispattering agents and chill proofers—are used in the processing, storage and handling of today's food. Most are probably harmless. Many others, taken in small doses, appear to have no immediate effect on human health. But neither does arsenic. The big problem—as with air and water pollution—is the possibility of chronic poisoning. Many chemical poisons, like arsenic, are cumulative in their effect. Although a single small dose will do no serious damage, some health authorities fear that continued ingestion over a period of months or years may cause tissue damage and death. Cancer-producing agents cause what scientists call an "irreversible reaction," which means that once the process of human cell alteration has started, it cannot be stopped. Sweeping new U.S. laws, violently opposed by the food industry, require manufacturers to prove that the multifarious chemicals used in the growth and processing of today's food are safe for human consumption, even over the years. But there is a big loophole: the only way to prove chemicals safe is to prove by laboratory experiment that they are not unsafe—and many tests are insufficiently reliable.

Although their presence in food supplies is restricted by law, illegal quantities of such contaminants as DDT, penicillin and hormones find their way, by accident or

by design, into the U.S. diet. Milk from cows which have been dosed with penicillin and certain antibiotics is supposed to be discarded for at least 72 hours after the drugs have been administered, but penicillin nonetheless occasionally winds up in consumers' milk. Dairy farmers have been known to doctor their bulk milk directly with penicillin to ensure that it will pass Government bacteriological tests. Food and Drug Administration officials concede that unauthorized use of pesticides is fairly common. The big problems: inspection and enforcement of FDA regulations. The FDA's inspection staff is limited to fewer than 500 men, and laboratory facilities for testing crop samples are inadequate. By and large though, food is policed far more strictly and successfully in the U.S. than in any other country. The FDA's 1961 budget for enforcement alone is \$16,852,000. This is probably not enough to do a thorough job, but it compares favorably with the Public Health Service's annual allotment for air pollution research and control, which has never exceeded \$6,000,000.

Today's pollution problem is bad. But by 1970 an estimated 75% of the U.S. population will be jammed into only 10% of the nation's land area, and the dangers of environmental contamination will be infinitely more acute. Says Cincinnati's Dr. Kehoe: "The new and dangerous environment that man has created for himself now provides a challenge to both curative and preventive medicine—a challenge that requires additional types of medical knowledge, new medical skills, and new settings for application of such knowledge and skills." Adds Cornell's Dr. McDermott: "To reduce pollution significantly would require changes in our personal habits and costly changes for our industry and our Government. It is pointless to search for a culprit in this situation. Unlike the veteran parent, we cannot say simply, 'I don't care who did it—you pick it up.' We must all pick it up together."

TIME, SEPTEMBER 26, 1960

Reprint No. 110

Price -.05¢

Courtesy Time; Copyright Time, Inc.

Reprinted by

LEE FOUNDATION FOR NUTRITIONAL RESEARCH
Milwaukee 1, Wisconsin