

## CONSERVATION

# Poison Gas of Peace

The use of poison gas in wartime has been outlawed, but the poison gas of fumes and smoke in peacetime continues to fill the air, destroying health and defacing buildings.

By BARBARA TUFTY

► THE HAUNTING SCENT of burning autumn leaves drifts down the street as a neighbor peacefully rakes fallen leaves from his yard and sets fire to them.

The young man hops into his car, turns the ignition and roars off in a swirl of braggadocio, noise and exhaust smoke.

As chilly nights of fall descend, the thermostats of homes, offices and schools are turned up and furnaces begin to hum.

These are all scenes of peace and affluence in the United States, a roaring, active nation of thriving individuals with seemingly unlimited resources of materials and opportunities, and wide open spaces in which to throw things away.

Yet on closer inspection the expanding population is using up its resources at an alarming rate, and the spaces around us are not so all-absorbing nor so limitless as they appeared. Each peaceful pile of burning leaves, each fuming exhaust and uncleaned furnace is contributing to an enveloping mass of poisons in our air that has already reached the danger point in some areas.

## 190 Million People Contribute

Each person seems to think his small mess could not possibly cause trouble, but when 190 million people each day contribute in various small ways to add to the air's dirty blanket, they compound the huge problems being tackled on a large scale by industries, state and Federal Governments.

The common pollutants in the sky today are basically of particles and gases, plus a mixture of both.

Particles are the tiny bits of solid or liquid materials churned and whirled about in the air by winds and storms. Dust particles include many man-made specks, such as pulverized metals produced by heavy industry's crushing and grinding operations or radiation fallout from nuclear experiments. Polluting mists are composed of fine chemical sprays resulting from painting, cleaning or coating. Fumes include some of the smallest solid particles formed during various processes in chemical, metal and other industries or, like the increasing amount of lead, issuing from improper burning of vehicle fuels.

Polluting gases include molecules of various noxious chemicals. Sulfur dioxide, for instance, is a colorless gas with a suffocating odor created by burning such sulfur-bearing fuels as coal and heavy oil in metal-smelting or chemical plants. Nitrogen oxides issue from furnaces and automobiles, and carbon monoxide comes from vehicles and other sources that incompletely burn such carbon-containing materials as coal, gasoline and paper.

Smoke is a mixture of these particles and gases, resulting from incomplete burning of fuels. The solid black particles are soot, which is essentially a soft powdered form of carbon. Fly ash, an unburnable residue of fuel, often combines with soot.

Offensive odors are extremely difficult

pollutants to study and define. Chemists believe that they are caused by various minute substances accompanied by gases.

There has always been a certain amount of polluting particles in the air. In fact, man needs a certain amount of "dirty air" in order to survive, points out Dr. John A. Day of Linfield College, McMinnville, Ore. These airborne particles form the nucleus of water droplets. Without them, no clouds would build up, and our planet would not be watered by life-sustaining rain, snow or other water precipitation.

In the strictest sense, air becomes contaminated whenever anything is added to it. Yet the atmosphere can contain many contaminants and still remain unobjectionable, says Charles N. Howison, executive secretary of the Air Pollution Control League of Greater Cincinnati and committee chairman of the national Cleaner Air Week, Oct. 24 to 30, designated by President Lyndon B. Johnson and Congress to focus attention on the air pollution problem and to consider means for combating it.

## Spark Was Industrial Revolution

The serious problems of air pollution really began with the start of the industrial revolution in England in the mid-18th century, when man began to build factories and to channel fumes into the sky from countless smokestacks and chimneys.

In a relatively short period of time, man has displayed an amazing talent and perseverance in changing his natural environment and despoiling it in the process. He has ingeniously devised ways of generating heat, of transforming metals and creating materials, of transporting himself through the air, sea and on land. But he has not been very careful to clean up the mess he makes.

Gradually, unobtrusively, and in many cases irrevocably, he has sorely blighted the earth with careless city wastes and sprawling communities.

For the last few centuries, Americans believed the air, land and waters of this continent were unlimited. Until relatively recently, a small population was scattered across an empty land. If a family or individual used up the soil or other resources, they merely moved on, leaving nature to cover their cast-away trailings and traces.

Early industries were scattered so far apart from one another that the air easily absorbed the discharged wastes. The atmosphere seemed limitless, the winds seemed always to blow and sweep the dirt away, and there seemed no special need for conservation of either the raw materials or the wastes.

But now nature's cleansing powers are being over-strained, and the dynamics of wind, air and weather need the help of man to clean up the smudges and stains of expanding civilization.

Through ignorance and apathy many nations have allowed the air pollution

(Continued on p. 269)



Fremont Davis

**TRASH IN THE SKY**—The cast-off junk of an affluent nation not only litters the earth, but when burned improperly sends tons of poisonous ash and chemicals into the sky.

## Poison Gas of Peace

(Continued from p. 262)

problem to grow to huge proportions. As human population increases, so does man's activity and the amount of industry.

Since 1930 the United States population has increased about 50%. The standard of living has gone up even faster—individual homes have increased more than 100%, and the number of automobiles increased 175%. The nation's expenditure for industrial plants and equipment has gone up 500% and the power generated, in kilowatt hours, has zoomed up 600%.

The layers of air above this highly affluent and industrialized nation are filled with tattle-tale residues that read like a ledger of our various activities.

Half-burned fuels from domestic and industrial furnaces; smoke and fumes from trains, airplanes and motor vehicles; gases from the incomplete conversion of raw materials into finished goods; pesticides and fertilizers sprayed over crops and forests; radioactive materials from nuclear energy activities; ashes from millions of burning dump heaps and trash cans; and dust from road and building construction.

This constant spewing of our thoughtless rubbish is now so widespread that it is causing considerable damage when weather conditions inhibit dispersal. The rain of grime falls over the fields like a suffocating blanket, withering the green leaves of cotton, barley, alfalfa, pine, citrus and other crops and trees, and causing damages that cost U.S. agriculture hundreds of million of dollars each year.

The acid-laden pollutants blow against buildings, eroding the stone, and marble and limestone are turned into a chemical compound that is washed away by the rain. Leather is made brittle, rubber cracks and loses its elasticity, paint discolors, and glass is etched by fingers of pollution. Machinery and delicate medical and industrial apparatus are damaged. All of this silent, constant destruction from the dirty sky adds up to an appalling \$11 billion a year—a figure that does not include damage to human health. Heavy pollution has caused acute

illness and sudden death, and long-term exposure to lighter concentrations takes its toll in gradual deterioration of health, chronic diseases and premature death.

Fortunately, people are now becoming aware of the dangers of polluting the air, states Vernon G. MacKenzie, chief of the division of air pollution, U.S. Public Health Service. Substantially new positions have been taken to examine the causes of pollution and act on its prevention and control. The Clean Air Act of 1963 has proved a powerful and successful force in giving Federal grants to agencies for establishing and improving control programs throughout the country.

Although most industries are not making enough effort to clean up their dangerous wastes, several conscientious industries realize that if they do not make improvements the Federal Government may impose controls to protect the people. They are taking costly steps to conduct research and build equipment for converting, filtering or dispersing the dangerous pollutants. Cities such as Los Angeles and Cincinnati have instigated many controls, including laws outlawing burning trash cans, smoking chimneys or the sale of new cars with faulty exhausts.

But most important to halting the stream of pollutants into the atmosphere is the growing awareness of millions of people to the lethal dangers of polluted air. Every person can exert considerable influence on getting the air cleaned up by contacting, working with and encouraging those agencies that have legal means and adequate funds to control pollution. Many individuals are realizing they should rely not only on huge expensive programs of industry and government to clean the air, but also on their own independent ability to clean up their own waste messes, and incidentally save money around the home because of the improved performance of clean equipment.

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## YOUR HAIR

ITS HEALTH, BEAUTY AND GROWTH

BY HERMAN GOODMAN, M.D.

A medical specialist tells you what you can and cannot do to save and beautify your hair, stimulate healthier hair growth, and deal with many problems, as dandruff—gray hair—thinning hair—care of the scalp—baldness—abnormal types of hair—excessive oiliness—brittle dryness—hair falling out—infection—parasites—hair hygiene—glands—diet—coloring—and myriad other subjects concerning hair. Discusses the many problems of hair retention, regrowth and removal.—SCIENCE NEWS LETTER. 287 PAGES—Profusely Illustrated! Price \$4.95, postfree. 10-day Money-back Guarantee. EMERSON BOOKS, INC., 251 W. 19th Street, Dept. 617-P, New York, N.Y. 10011

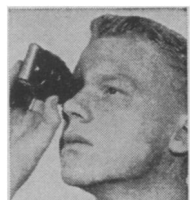
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