PUBLIC HEALTH

Our Polluted Inheritance

Congressional hearings on extending Federal funds to areas engaged in pollution control have focussed attention on on a nation-wide problem.

WE MAY be destined to live the rest of our lives in pollution.

Pollution has been handmaiden to our national progress. It costs America an estimated $7.5 billion a year. This amounts to $42 for each man, woman and child, although some estimates run as high as $65 per person per year.

This economic tax, in many ways, is paid by the average citizen, but he may not realize it:

In Cincinnati, Ohio, a smokestack spewed hydrogen sulfides into a rainstorm. This gas rose into the slow-moving cloud overhead. Early the next morning, the cloud passed over Reading, Ohio, and some early risers watched with dismay as their houses coated with paint containing lead turned black. Houses in an area 100 feet wide and half a mile long had to be repainted.

In Los Angeles, a hen laid a green egg. She tried again. Same result. After many tries to lay a white egg, the hen gave up and quit. The owner later learned that a smog chemical had combined with the moist eggshells to make the green hue.

In Washington, D. C., a woman took down her soiled window curtains to wash them in the bathtub. She added a mild liquid soap, dumped in the curtains and watched with horror as the material disintegrated. An air pollutant had settled on the material and attacked it, needing only a good "bath" to finish the job.

Tax in Health

Those examples show how air pollution taxes the American wallet. There are other taxes too. We pay a tax in health.

Respiratory illnesses jump when pollution closes in on a city or town. Persons of frail health have collapsed under this added hazard. Many have died.

Twenty deaths in the little mill town of Donora, Pa., were atributed to a mass of polluted air trapped by surrounding mountains. This 1948 tragedy brought illness to another 5,910 persons.

Between Dec. 5 and 9, 1952, a smoke-filled fog engulfed London, killing 4,000 and wreaking $28,000,000 in property damage. A study of the mortality showed persons of all ages were affected, especially those over 45 who succumbed chiefly to bronchitis and pneumonia.

Smarting eyes, although a nuisance, are considered one of the least dangerous of polluted air's threat to health. Certain chemicals found in air pollution have been shown to cause cancer in mice. Will they likewise cause cancer in man? Research is currently aimed at digging out the answers to such air pollution questions.

Already our population has grown rapidly past the 177,000,000 mark. Air pollution is also increasing rapidly. Scientists are finding out what air pollution is, and engineers are working on ways to control it. But without a rising tide of public support, it appears our best efforts can be described only as "inadequate." We will be saddled with a polluted inheritance.

People Want Smoke

Dennis O'Harrow, executive director of the American Society of Planning Officials, Chicago, told the Conference on Air Pollution held November 1958 in Washington, D. C., of an instance when people "wanted" smoke.

Eight years ago, he said, he visited a city supported by a steel industry. The year before, a smoke-abatement ordinance had been passed, but little happened.

"I asked one of the councilmen why there had been such a long delay in starting to clean up the air around this city," Mr. O'Harrow said.

"He replied, 'You ain't seen nothing yet. Smoke is still here and my guess it that always will be.'

"Then he pointed out the window to a black cloud pouring from one of the stacks in the valley and said, 'See that? That means work. No smoke, no work. The people don't want to get rid of smoke because smoke means jobs.'

"So far as I know," Mr. O'Harrow said, "the smoke-abatement ordinance is still not really enforced in that city."

But the fact that smoke goes with prosperity is not so. There are too many good smoke-catchers commercially available.

A rising tide of public action against air pollution is beginning to flow now in various parts of the country.

One notable eddy of public agitation appears on the West Coast. The Los Angeles Mirror News attacked what it considered a weak state program for backing up Los Angeles County's air pollution measures. It called for "a series of laws that provide for state-wide (auto) exhaust inspection and control; requirements for installation of exhaust control devices when available, and a ban on the sale of automobiles after 1961 without exhaust control devices."

The automobile was singled out because it has been found a chief contributor to smog. Los Angeles seeks strong state action because its own stiff control measures have heavily policed local industry, yet smog is worse now than ever. Like Los Angeles, other cities with serious air pollution problems now face a stalemate or the possibility of losing ground in their battle against pollution.

Many experts say these cities are merely holding their own at present. In the light of expected industrial expansion to meet our growing population needs, they will lose ground in fighting the pollution menace, unless they can get strong local laws.

The Federal Government can take only limited action. Air pollution is peculiarly a local problem. The metallurgical plant in one town may send out entirely different pollutants than a blast furnace, or a rock quarry, or a chemical plant. Each represents a local condition that must be met locally with local ordinances and state laws for the most effective "clean up" program.

Out of our 49 states, only seven have state-wide air pollution enforcement statutes: Delaware, Florida, Oregon, Idaho, Massachusetts, New Jersey, and New York. Laws in four states, California, Ohio, Tennessee and Washington, provide state assistance for local enforcement efforts.

Two new California measures empower the state to set "standards" for clean air, related to health and crop damage, and to determine by Feb. 1, 1960, maximum allowable emissions from auto tailpipes.

Rural Control

More state legislatures might pass air pollution controls if they were not "rural controlled," one observer believes. But even farmers are taxed by pollution. In 1956, court cases due to livestock and crop losses traceable to fluorine alone amounted to more than $50,000,000. Visible injury to California crops is estimated at $6,000,000 a year. This does not include losses due to retarded growth, reduced yield, poor food quality.

Although only a handful of cities throughout the nation have attacked smoke or pollution problems, there is evidence of growing mobilization against them. Joint pollution programs are now in prospect for New York and New Jersey, Ohio and West Virginia sharing the same air mass in the upper Ohio Valley. An international program is being developed for Detroit and Windsor, Ontario.

To help states, and their polluted cities, the Federal Government has authorized $12,000,000 in the last four years to be spent on pollution research and development. Much of this money has gone into the "engineering" of air pollution, and in setting up a network of more than 200 air sampling stations. These are equipped by the U. S. Public Health Service and operated by local people.

Dramatic Results

Data funneled into PHS's pollution headquarters in Cincinnati in 1957 are believed to have yielded the most significant results yet achieved. They showed dramatically how the air of some cities, proudly considered "very clean" by residents, in truth was shockingly polluted.

The need for tighter pollution controls is apparent: our population is expected to reach 220,000,000 in ten years. Our gross national product is expected to climb from $450 billion to $765 billion in this same period. Today, expenditures for research

run about $12 billion; by 1969 research expenditures should hit about $30.6 billion.

New consumer products can mean new types of pollutants. Considering this growth, 180 cities of 50,000 population or more already have, or can expect to have shortly, an air pollution problem that warrants year-round attention by full-time personnel.

Phoenix, Ariz., exemplifies the alert city looking toward the dawn of a new era. Phoenix expects a greater concentration of industry in the years ahead. It already is establishing zoning laws on the theory that advance planning is less costly than hindsight clean-up. These zoning laws are based on weather and geographic considerations, as well as permissible density of population and industry.

On the other hand, a city of 82,000 in Illinois lacks many basic measures that contribute to clean air. It fails to require use of even the inexpensive Ringelmann Chart which indicates the shade of smoke. This device permits observations of smoke plumes from coal-fired heating or power plants. The chart enables the user to determine the efficiency of combustion by the cleanliness of smoke.

Black smoke represents incomplete combustion, inefficiency, wasted fuel dollars. A simple adjustment can feed more air to the fire and minimize "fallout" from coal smoke. In Pittsburgh smoke clean-up is estimated to save each person $41 a year, largely because of better combustion.

Finding economical ways of dealing with the gaseous sulfur and nitrogen compounds is one of the top-drawer projects for researchers. Many of the compounds are relatively inert, making it difficult to trap them easily.

The U. S. Public Health Service has named the automobile as the biggest, single source of future widespread pollution. From the automobile come hydrocarbons that under certain weather and geographic conditions make eye-smarting smog and chemicals corrosive to metals. Up to 30% of these hydrocarbons escape from the car's fuel system—its carburetor float bowl, and fuel tank. Some escape from the crankcase, but most are spewed out the tailpipe.

Responding to growing pressure, automobile makers have stepped up research to produce three possible exhaust cleaners now in the prototype stage. One is a flame-type afterburner designed to kill "live" fuel leaving the engine. The second is a low-temperature catalytic converter designed to oxidize hydrocarbons. The third is a high-temperature catalytic converter. Reductions in hydrocarbon and carbon monoxide emissions achieved experimentally with these exhaust cleaners ran from 60% to 90%

But eventual control even of all automobile exhaust gases does not mean the air pollution problems will be solved.

Experts believe our chief challenge today is to go after all sources with the many devices and controls now commercially available. The challenge, they say, is to develop new and better ways of eliminating pollutants. The challenge is to improve the air we breathe. At least we can "hold the line" so that it does not grow vastly worse.

Science News Letter, August 1, 1959

MEDICINE

Can Halt "Black Cancer"

VICTIMS OF "BLACK CANCER," can be rescued from one of the fastest of all cancer-killers by prompt treatment.

Black cancer is a synonym for malignant melanoma, one of the wildest and most rapidly fatal of all accessible cancers, Dr. Anita V. Figueredo of La Jolla, Calif., says.

Paradoxically, the great majority of these cancers are preventable through early and appropriate treatment, she explains.

This type of cancer represents two percent of all cancer cases. More than two-thirds of all melanomas arise in moles or birthmarks.

Any change in the size, color, consistency or behavior of a pigmented mole may be evidence of beginning malignancy. Thereupon, the entire area of the mole should be removed, she urges in the *Journal of the American Medical Women's Association* (June).

The condition calls for prompt treatment and total removal, the surgeon cautions. In recent years the five-year survival rates for victims of black cancer have fluctuated between 40% and 42%, lending hope to those patients who previously thought this type of cancer to be inevitably fatal.

Malignant melanoma has been surrounded for a long time with a special aura of doom. Statistics of survival have also been unfavorable, lending themselves to the general attitude currently held by most persons.

A more optimistic attitude might lead to quicker, more "curative" action on the part of the private practitioner, since a certain paralysis seems to accompany a feeling of inevitable failure, she adds.

Science News Letter, August 1, 1959

METEOROLOGY

Rename Discomfort Index

THIS SUMMER you have a chance to "do something about," not the weather, but the combination of heat and humidity that often makes so many persons so uncomfortable.

The Weather Bureau in June started experimentally in various cities throughout the country publishing for the summer what it then called the "Discomfort Index." The immediate results were cries of outraged indignity from citizens who thought their particular home towns were being maligned when the Discomfort Index hit high numbers.

So the Weather Bureau changed the name to "Temperature-Humidity Index." However, many radio and television weather reporters, to say nothing of the average citizen, find this a long and difficult-to-handle name. Therefore the Weather Bureau is welcoming suggested new names for the factor that indicates how humans react to the combination of heat and humidity.

Suggestions received thus far include such terms as Thermidity, Humi-Table, Weather Index, Broiling Point, Cooling Degree Index, Tole-Rate, Atmosfactor, Climature, Humiture, Thermosation and Fan Factor.

Besides a new and generally acceptable name for the Temperature-Humidity Index, the Weather Bureau would also like to learn how useful the index, whatever its name, is to the individual citizen.

Decision on the possible new name will be made by officials at the Weather Bureau, if they find one that most agree is acceptable.

Science News Letter, August 1, 1959

ENTOMOLOGY

Fabrics Insect-Proofed

IMMUNITY for fabrics against textile-destroying insects that cause millions of dollars damage annually to carpets, upholstery and clothes is promised in a new technique developed by Roy J. Pence, an entomologist at the University of California, Los Angeles.

A colorless, odorless, harmless (to humans) compound can be used to impregnate fabrics during the dye-vat process, rendering the material "indigestible" to carpet beetles, clothes moths and other insects.

It can also be applied in an aqueous solution to existing fabrics in the home.

The compound is one of a group of substances known as antimetabolites. Antimetabolite compounds are structurally similar to essential nutrients such as vitamins. Very slight differences in chemical structure are just enough to cause them to be "misfit" links in the insect's metabolic chain.

After the young insect ingests the vitamin "look-alike" it prevents him from utilizing the essential nutrient. (Vitamins in fabrics are supplied by spilled food and drink, skin secretions and other types of soiling.) As a result, a sort of beri-beri sets in, causing the insect to die of nutritional deficiency.

However, in some little-understood manner the mature insect recognizes the antimetabolite after the first or second "mouthful" and will leave impregnated material for "greener pastures" before any real damage is done.

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