PUBLIC HEALTH

Cleaning Up the Nation's Waters

The world's richest and most technologically advanced nation is fouling its own nest and threatening the health of its people, Vincent Marteka reports.

➤ THE UNITED STATES is now at the crossroads in dealing with the water pollution problem. Positive action must soon be undertaken or it will become a major health problem for this and future generations.

New synthetic chemicals are now being flushed by industries into lakes and streams, killing fish and wildlife and threatening the health of many citizens. Radioactive poisoning is filtering bit by bit into the nation's water supplies, in quantities about which sanitation experts can only guess.

These new sources, which have appeared since World War II, add to the existing sources of water pollution such as sewage and industrial wastes that have been around much longer.

Present laws are inadequate to cope with the rising tide of water pollution. Congress has shown signs of changing the situation by introducing anti-pollution bills in both houses, each with a favorable chance for passage.

The water pollution problem, though acute, is aggravated by constantly increasing demands for water. With the exploding population and increasing thirst of new industrial processes, the United States is expected to double the amount of water now consumed within 20 years.

Quality Must Be Maintained

Already the wheels of industry, dry lawns and thirsty people consume more than 300 billion gallons a day.

This water "quantity" requirement can be met only if water "quality" is maintained, the U. S. Public Health Service emphasized recently.

Today metropolitan and industrial wastes contain increasing amounts of new types of synthetic chemicals that do not break down easily when treated. These chemical wastes, which were virtually unknown a few years ago, are now silently lurking in high concentration in several major streams. Little is known about the hardy chemical specks, and the question of poison (toxicity) is added to the age-old problems of typhoid fever and other water-borne diseases.

Radioactive poisoning is also rearing its ugly head in polluting U. S. waters. Serious contamination could occur (and did) from some uranium processing plants, but the major problem is probably how to get rid of the highly radioactive waste from nuclear power reactors. Many persons strongly fear the problem is the major hurdle to the widespread peaceful use of atomic energy.

The current method of sealing radiation waste in concrete containers and dumping it far out at sea is risky. No one really knows how long it would take before the concrete goes to pieces in seawater, nor whether the ocean currents would carry the dangerous material to heavily populated shores.

In order to fight water pollution on even ground, a national water resource program with water pollution control as a crucial point is needed in the U. S. More Federal aid for constructing city waste-treatment plants, more grants for state and interstate water pollution agencies, stricter enforcement of anti-pollution laws and an active research program on all levels of Government must be incorporated in the program.

These and other provisions are included in the anti-pollution bills introduced in Congress.

The present inadequate total national effort for water pollution research is less than $6,000,000 a year. Less than one-third is spent by the Government.

"It is obvious," Sen. Robert S. Kerr (D.-Okla.), outstanding conservationist, said acidly, "that a country spending over $1.5 billion per year on 'soap operas' and other forms of television and radio entertainment should invest much more than $6,000,000 annually to find out how to keep these fine new products of our soap factories and other chemicals from spoiling our drinking water."

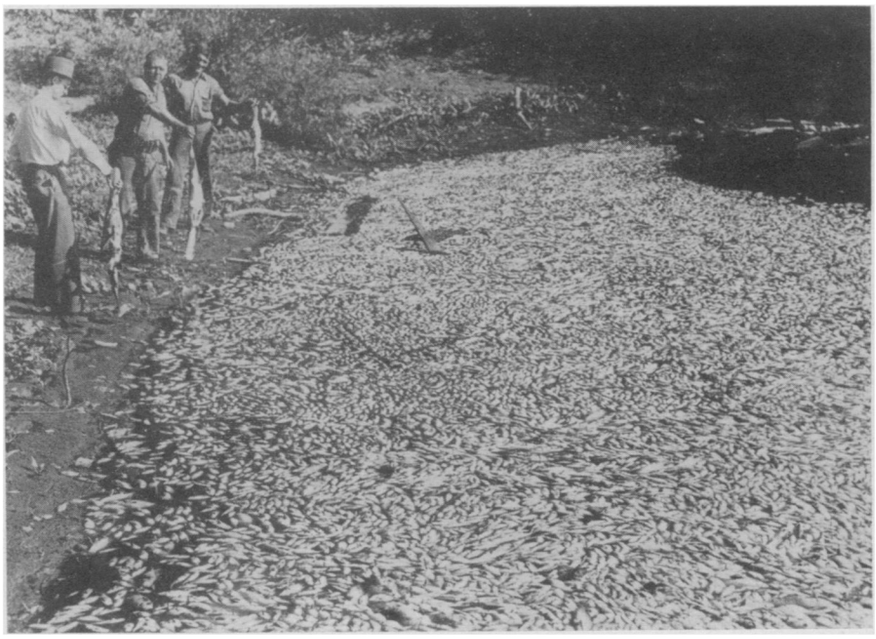
More research on the little known new chemicals is a must in any water pollution program. The long range effect of the supposedly "safe" quantities of these various chemicals in drinking water might eventually prove dangerous.

Although the Public Health Service has already been studying the water pollution problem in its laboratories, the program is too inadequate to meet the present need, Dr. Luther L. Terry, Surgeon General of the U. S. Public Health Service, emphasized. He said research was urgently needed in such highly toxic industrial chemicals as a chlorinated insecticide that kills and litters fish along the shores if even present in such tiny amounts as one drop for every billion drops of water

Control Programs Inadequate

Although states have primary responsibility for water pollution control, their programs, with few exceptions, are entirely inadequate. Most states and municipal agencies either ignore the problem altogether, or else they have their hands tied because of limited funds and power. The agencies must be provided with sufficient funds and given more power to carry out the programs effectively.

Carl W. Buchheister, president of the National Audubon Society, stressed the need for Federal administration of the program. States are virtually powerless, he charged, in requiring private industry to install waste-treatment plants when confronted with industry's threats to move their plants (a source of state income) to another state



FISH KILL—Polluted waters killed thousands of fish and littered the shores of the Scioto River in Columbus, Ohio, the Forest Service found.

that would not be so demanding. Some industries have cooperated with health authorities by constantly using the same water over and over again. By recirculating water through its mills, a steel company in California reduced its water consumption from 65,000 gallons to 1,200 gallons per ton. However, the quality of water still must be maintained.

The nation's streams and lakes are sagging from the burden placed upon them to act as a disposal unit for industrial, agricultural and municipal wastes. So great is the demand, it seems at times as if the "conquest of outer space might eventually become a necessity for survival rather than a pawn for prestige."

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GENERAL SCIENCE

News From Science Clubs

➤ SCIENCE CLUB PROGRAMS reported to Science Clubs of America are full of new and stimulating ideas. Some interesting activities, chosen at random from the files, include:

LAST SUMMER the members of the Alpha Zeta Club of Parkway Junior-Senior High School, Chesterfield, Mo., took a week-long field trip to a State Park to collect data for the club's project, the ecology of a wooded area. They spent a fall weekend in another State Park gathering additional information. Last year's project on the ecology of a pond, which won the club a $50 award at the Greater St. Louis Science Fair, is now on display at Rockwoods Reservation.

THE Alaska Polaris Science Club, sponsored by Carpet Masters, Inc., Anchorage, Alaska, reports that its most effective programs have included a chemical magic show, demonstrations by members of various experiments, plant study during field trips and instruction from older members in electricity and chemistry.

POPULAR ACTIVITIES of the Candler Science Club of Candler (N. C.) Elementary School, have been a trip to a pottery, followed by making and firing their own ceramics; a trip to see an 80-year-old locomotive used for bringing logs out of the woods; microscope work; a home-made rocket; a nature hike and an intercom constructed from an electronics kit.

THE SCIENCE CLUB at The Grammar School, Holywell, Flintshire, England, has been cooperating with Manchester University in the exploration of space by radio-telescope. Two of the boys adjust the small companion aerial to Jodrell Bank as instructed by Prof. Lovell's team. Their sponsor, J. Roughley, senior physics master at the school, stirs their enthusiasm for physics by giving them some of his humorous verse. A small sample goes like this:

Mass and Weight

When we're at school we learn to state
That objects have both mass and weight.
But what's the difference, you'll agree,
For anyone is hard to see. . . .
Now mass for mass has an attraction,
From whence a force springs into action;
And earth's the biggest mass you see!
Its pull, the force of gravity! . . .
'Tis simply known today as "g"
The mightiest force that e'er will be!
And though you may not land in clover,
Your friends will say, "That's him—all over!"

IN WAKEFIELD, Mass., the General Science Club at Wakefield Junior High School is planning programs which it will produce for elementary students.

THE MAGAZINE RACK at Argyle (Iowa) High School was the subject of a special report made to the school by the Argyle High School Science Club. The club's report induced the school administration to subscribe to four new science magazines.

THE CRUSADER Science Club, Central Catholic High School, Canton, Ohio, put on a science exposition called "Scierama." This club reports that its most effective programs center around individual projects of the members.

IN MADISON, Wis., the Shawe Science Club, Shawe High School, has a six-page mimeographed report on the construction of a bi-stable transistor flip-flop unit for a computor, which they will send to interested clubs or individuals on request and upon receipt of 8¢ in stamps. The club also has been producing and selling at cost its own "Chemi-Light" to be used for chemiluminescence experiments.

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MEDICINE

Advise Cancer Research With Whole Smoke

➤ FURTHER EFFORTS are needed to find out whether lung cancer can be produced in animal tissue by applying "whole" smoke instead of by artificially prepared condensates of smoke, Dr. Clarence Cook Little, scientific director of the Tobacco Industry Research Committee, has proposed.

In his 1960 annual report Dr. Little said that the "causation theory of smoking in lung cancer, heart disease and other ailments" is without clinical or experimental proof.

Other suggestions by Dr. Little:

Medical researchers should obtain information through direct medical examination instead of by questionnaire. They should collect information on personal characteristics and habits other than smoking.

They should approve and agree upon methods of classifying the major types of lung cancer to make studies more meaningful. Some reports have associated smoking with one type of lung cancer only.

More than 135 research reports have been published since the first tobacco industry research grants were made in 1954. New research money appropriated for 1961 brings the total to $4,650,000.

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