

were required before these cities decided to initiate plans to build sewage treatment plants.

Industry is becoming more aware of its heavy role in contributing to the desecration of the land, but needs still more effective methods to control the waste materials it discards.

Today about 125,000 individual industries are cooperating with their nearby communities, but about 25,000 of all major types of industry are still discharging untreated wastes directly into the community streams.

A hoped-for boost to reluctant industries lies in a recently introduced bill before the finance committee of Congress, permitting companies to write off in one year the cost of installing equipment to control water pollution. This action, however, has been asked from Congress each year for many preceding years, consistently without being passed.

One way industries can help clean up the water supply is to build their own treatment plants or to help their communities build them. They can also recover valuable natural resources from wastes rather than dispose of them in the waterways. The steel industry recently pioneered a process for recovery of valuable chemicals from waste liquids.

Another method is to conserve their sky-rocketing water needs by reusing and recirculating plant water many times, rather than disposing of it after only one use.

Detergent Industry Acts

The detergent industry has shown needed action in planning rapid changeover from producing "hard" foaming detergents, which resist ordinary sewage treatment, to the "soft" kind that can be naturally decomposed by bacteria in the water.

Detergents contain mixtures of various cleansing chemicals, the most common of which is alkyl benzene sulfonate, commonly known as ABS. In "hard" detergents the organic structure of this ABS resists decomposition by bacteria, but in "soft" detergents, the structure is so arranged as to accept being broken down.

By the end of 1965, the U.S. soap industry is expected to be completely converted to these "soft" detergents.

Research into new ways of purifying sewage is underway. Chemicals with positively charged organic ions can be added to sewage to nullify negatively charged particles; and scientists are now testing controlled radiant energy from radioactive substances to accelerate natural purification processes.

Most methods of detecting pollution in water involve long complicated procedures of taking samples from water sources and examining them in the laboratories. Faster and more accurate procedures are now being tested for automatic monitoring around the clock to produce a steady flow of information about the intensity and consistency of pollution.

Agricultural scientists are investigating better pesticides that are more selective in what they destroy, or are easily broken down into simpler, harmless elements. New biological methods are now discovering certain organisms that are deadly to specific pests but harmless to beneficial insects, animals or plants.

Sex attractants are now being extracted from female insects to lure male insects

into traps where they can be destroyed without harmful results to other biological systems.

Methods of preventing the good earth from slipping away from the hillsides and empty lands into rivers have been put into effect by planting grass, shrubs and trees on unused land, burned-over areas, or raw roadside tracts, where the plant roots can hold the soil in place.

America needs more research support to continue the work of detecting, breaking down and disposing of the waste products—as well as to devise methods of preventing the slow spread of scum over our land and lives. Individual members of communities need to wake up to the problem at their doors and to demand action from industry and local, state and Federal governments in an all-out effort to halt the flow of chemical, biological and radiological particles seeping into our streams and rivers from which we and our children drink.

• Science News Letter, 85:154 March 7, 1964

CHEMISTRY

New Soft Detergents For Home Use on Market

➤ THE SOAP INDUSTRY is already rushing new non-foaming detergents to markets for home use, in the hope of eliminating the scum and suds that float over the nation's rivers and streams.

Yet Americans should not expect that this change over from "hard" to "soft" detergents will solve water pollution problems, believes Dr. Leon Weinberger, chief of the research branch in the water supply and pollution control office of the U.S. Public Health Service, U.S. Department of Health, Education and Welfare.

Adequate facilities for treating water supplies have to keep step with new detergent products, he stated.

With timetable precision each of the six major manufacturers of detergents is moving ahead as fast as possible to change over to soft detergents by 1965—the year set for U.S. Government action if foaming detergents are still a problem.

Hard detergents, or ABS, are not readily broken down by natural bacterial action in streams and rivers, or by ordinary sewage treatment.

Soft detergents, called LAS (linear alkyl sulfonate), have the ability to be broken down into simpler compounds by bacteria in the water.

The main difference between the two detergents is in the complex carbon petroleum-derived molecule, explained Dr. Weinberger. In the hard detergent, the molecule is a chain; in the soft, it is straight.

Both detergents use petroleum products as the base material.

The German chemists working on detergents during World War II could have developed the straight molecule material, but instead chose to develop the chain molecule. Germany is now the only country that has banned hard detergents, and by autumn of this year will have changed completely over to the soft variety.

The chemical change over involves an extensive change in the equipment of industries, pointed out by Dr. Weinberger.

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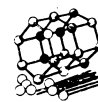
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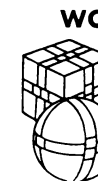
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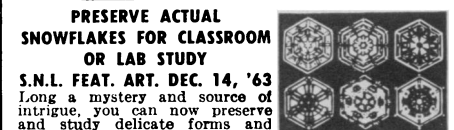
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