

come vice president of the Carnegie Corp., points out that foundations had wanted the tax to be called an "audit-fee," meaning a payment to cover the Internal Revenue Service's expenses in auditing foundation records. Such a fee might not have meant less in terms of dollars but, says Robinson, it would have "preserved the principle that foundations are tax-exempt."

The other portions of the tax bill curtail some common abuses of foundations as tax shelters.

One provision of the bill, for example, restricts dealings between foundations and persons or businesses closely involved with the foundations. All too often, under the previous law, individuals have donated money or property to foundations set up to receive tax benefits, while retaining effective control over the ostensibly donated assets. The self-serving transactions now prohibited include the sale or exchange of property and the lending of money, goods or services.

In a similar attempt to insure that foundations really carry out the functions for which they claim to be organized, the bill requires them to disburse annually at least 6 percent of their average noncharitable assets in grants or other donations. Also, foundations and the principal persons connected with foundations will generally not be allowed to own more than 20 percent of any corporation's voting stock. Since the purpose of this latter provision is to discourage foundations from involving themselves in pure business speculations, the limitation will not apply to foundations with a fundamentally charitable interest in neighborhood-renovation corporations or in small businesses in central cities.

All these restrictions match those that foundations have set for themselves in the past through a joint committee of the Foundation Center, the Council on Foundations and the National Council on Philanthropy. Francis Keppel, former Federal commissioner of education and now president of the General Learning Corp., says foundations have no objection to laws that "protect them against the misuse of the philanthropic purpose." He speculates that the new bill may thus "strengthen the position of foundations."

Such may be the long-term effect of the bill, but the immediate result will be a period of uncertainty for foundations. "We don't know how some of the provisions in the bill are going to be enforced," says a high official of the Carnegie Corp. "Until these questions of administration are cleared up, we're in a cloud. At the moment, the main effect of the bill is to inhibit our program planning." □

december 27, 1969

DETERGENTS

Phosphates on the spot

Phosphate is important in a laundry detergent because it helps the other main ingredient: the surfactant, which does the actual cleaning. The surfactant molecule has a water-attracting (hydrophilic) end and a water-repelling (hydrophobic) end. It is the hydrophilic end that breaks up the dirt on clothing or dishes; the hydrophobic end, by repelling water molecules, reduces surface tension. The effect of reducing surface tension is like removing a skin from the surface of the water, thereby giving it greater fluidity and making it a better wetting agent.

The phosphate aids the surfactant by acting as a sequestering, or water-softening, agent. It immobilizes hard-water ions, such as calcium, that might otherwise react with the surfactant to form an insoluble salt and thus render the surfactant ineffective. In this way, phosphates prevent dirt redeposition by keeping dirt particles suspended.

When the detergent has done its job, it is disposed of through the regular sewage system and ends up in lakes and streams, where it contributes to algae growth and the eutrophication of the water courses.

Although the detergent industry recognizes that phosphates are aquatic plant nutrients, it contests the idea that detergent phosphates are the reason for eutrophication. The Soap and Detergent Association cites fertilizer, human waste, industrial effluents and natural run-off from the land as being far and away the biggest phosphate sources.

The detergent contribution is minor compared to these others, claims sanitary engineer Charles G. Bueltman, vice president and technical director of the association. "It clearly follows," he says, "that the elimination of detergent phosphate alone could not possibly mitigate or diminish excessive algae growth. The opinion, therefore, that removal of phosphates alone would help alleviate the algae problem is not supportable from a technical point of view."

Nevertheless, the detergent industry is in hot water with Congress.

A bill is in the House legislative hopper that, if passed, would outlaw phosphates in detergents. The reason: eutrophication. Phosphates are believed to be the primary agent responsible for the growth of algae and aquatic plants that are choking most of the nation's lakes and streams.

The bill's sponsor, Rep. Henry S. Reuss (D-Wis.), concluded two days of hearings on the bill last week. The

results of the hearings will be sent to the House in support of the bill.

"We feel we took kind of a beating," summed up a representative of a phosphate manufacturer. "We feel like there's a whipping boy approach."

The indications are there's more whipping to come. "It is essential that phosphate be removed as a basic composition in detergents," declares Carl L. Klein, assistant secretary of the Department of the Interior for Water Quality and Research.

The detergent industry, however, maintains that phosphate can't come out because of its vital role for which no alternative has been found. In fact, the first detergents, which were phosphateless, were resoundingly rejected by American housewives.

But detergent phosphates are neither indispensable nor innocent, according to critics.

Dr. I. A. Eldib, a chemical engineer and president of Eldib Engineering and Research, Inc. in Newark, N.J., contends that out of six billion pounds of synthetic detergents sold last year, 2.6 billion were phosphates, "most of which ended up in our lakes, rivers or ground water."

"Synthetic detergents and fertilizers are the two principal users of phosphates," he says. But "it is generally conceded that the application of chemical fertilizers to farm lands does not cause significant fertilization of streams by surface run-off; they are applied during the growing season and are tilled into the soil."

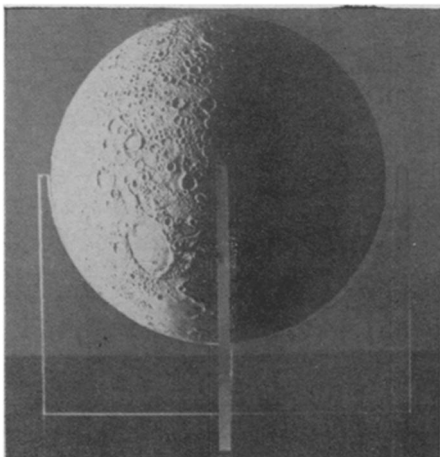
But putting phosphates into water is one thing; what happens to them is another. "Each lake is an individual, and you have to study individual situations," says a spokesman for one phosphate manufacturer. For example,



Interior

Choked streams spawn a bill.

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phosphates in a river flowing past an industrial plant could be precipitated out of solution because of the waste discharge from the plant and thus never get to be used as a nutrient for algae or other plants.

Industry's favorite example for justifying the individual approach is Lake Tahoe in California, where nitrates rather than phosphates contribute to algal growth. Furthermore, experiments are cited in which the addition of phosphorus did not increase algal growth, but carbon dioxide did.

One solution presently discounted by the industry is the use of a substitute for phosphates. Says Bueltman, "Although the industry is searching intensively for replacement materials, should they be needed, there is at this time no suitable phosphate replacement available for detergents."

Many candidates have been called but none elected. These include nitrilotriacetate (NTA), which although receiving considerable interest from detergent manufacturers, since it meets many of the requirements, is regarded not as a substitute but as an adjunct to be used with phosphates. One concern is that its environmental effects are unknown and dumping large quantities of it into streams could be dangerous.

Starch is another substance tried and found wanting by industry because, when modified to perform the functions of phosphates, it loses its biodegradability and so could build up in the environment.

Modified starches belong to a group of compounds called polyelectrolytes, polymeric compounds of large, organic molecules strung together in a chain made of carbon, hydrogen and oxygen atoms. Although the detergent industry feels that they show promise, they are scored because of performance weaknesses and their failure to meet the necessary biodegradability standards.

"It's a bunch of hogwash," charges Dr. Eldib. "They just don't want to do it." He says his firm has used polyelectrolytes, made principally from starch and cellulose, that perform as well or better than phosphates. Furthermore, he says, his firm has made a polyelectrolyte-based laundry detergent into a powder form for home use.

"The chainlike chemical structure of polyelectrolytes," he asserts, "allows us to try to vary the length of their chains and thus control their biodegradability to suit our needs."

However, they do pose an economic problem; they would raise the cost of detergents 13 to 21 percent, according to his own estimates. He feels, though, that volume production could bring their price down. □

BLACK LUNG

Action after a decade

Pneumoconiosis is a chronic lung inflammation caused by inhaling coal dust over a long period of time. The dust causes tissue changes that are often complicated by bronchitis, emphysema and cancer. If the lungs are unable to supply oxygen to the heart, cardiac problems can occur. In its simple form, the disease causes only slight disability, but in the complicated stage it causes irreversible, severe pulmonary disability. Because treatment cannot cure the disease but only relieve the symptoms, pneumoconiosis is often fatal. Studies have shown that, as a consequence, American soft coal miners have death rates twice as high as the general population.

Dr. Murray C. Brown, chief of the Public Health Service's Division of Occupational Health, says one of every 10 coal miners is afflicted with the disease, and among the retired and unemployed almost one in five shows evidence of the disease. Some 125,000 are handicapped to some degree by it, and at least 1,500 men die from it each year. Nevertheless, it has taken more than a decade—since the time physicians recognized that all forms of coal can produce anthracosis or black lung, a form of pneumoconiosis—for Congress to take action in connection with the disease.

Last week Congress gave overwhelming approval to the Federal Coal Mine Safety Act of 1969, strongest coal mine health and safety bill in history. The bill attempts to curb black lung disease by limiting levels of coal dust in mines and establishes safety provisions to prevent gas explosions.

But the bill also provides for the first time compensation to miners disabled by the disease; the cost of the program, however, is raising the threat of a veto from inflation-conscious President Nixon.

The bill provides that the Federal Government pay disabled black lung victims \$136 a month for disabled unmarried miners and up to \$272 a month for disabled miners with three dependents. Widows of victims would get \$136 a month. States would take over compensating new victims in two years, presumably by a tax on mine operators. According to the Administration, the cost of the bill would run as high as \$387 million a year. But Congressional leaders such as Rep. John Dent (D-Pa.) estimate the cost at no more than \$60 million a year to start, which would decrease as states take over payment.

The bill in its final form sets permissible limits on coal dust at a ceiling