

Tightening up on VCM

A "no detectable level" standard for exposure to vinyl chloride monomer (VCM) in the workplace was recommended last week by the Labor Dept's. Occupational Safety and Health Administration.

The recommendation, set forth as a proposed permanent standard for worker exposure to VCM, is certain to stir up industrial opposition as too expensive to comply with.

A spokesman for one major producer, Goodyear, says: "We would be unable to operate under this level, and we doubt anyone else could."

Just last month, OSHA issued a 50-parts-million temporary emergency standard that came under fire from organized labor as too lenient (*CW*, Mar. 27, p. 12). The permanent standard is scheduled to take effect June 10, unless it is stalled by objections and hearings.

In addition to setting an exposure level, the proposed permanent standard would limit manufacture, use and handling of VCM to specified areas of a plant. It also would require sensitive monitoring equipment throughout the workplace to determine minimal worker exposure, continuous-flow and pressure-demand respirators for workers wherever VCM reaches a detectable level, protective clothing for workers in all VCM areas, and annual company-paid medical examinations of employees.

New Mortality Study: Also last week, the Manufacturing Chemists Assn. reported results of its study of the health status of workers continually exposed to VCM for at least a year prior to the end of '72. The study, conducted by Tabershaw-Cooper Associates, determined the health condition of 7,128 former (352 of whom were deceased) and present workers in 35 VCM and polyvinyl chloride plants in the U.S. According to MCA, the findings indicate that the mortality rate for employees exposed to VCM was about 25% less than the rate for the entire U.S. male population and compared favorably with the rate in other industries.

Meanwhile, the Consumer Product Safety Commission still is attempting to gather information on aerosol products using VCM as a propellant that may come under its jurisdiction. Last week, in its latest move, the agency ordered all makers of aerosol household products containing VCM to produce data on patterns of use, toxicity, and period of production. The agency says it is considering a ban on these products.

Tops in chemical industry

(Dollar amounts in millions of constant-value '67 dollars)	Employees' and proprietors' earnings in chemical industry*	
	Projected for '90	Change from '71
New Jersey	\$2,652.4	+109.8%
Texas	1,800.4	+163.7
New York	1,697.1	+ 87.1
Illinois	1,435.6	+129.5
Ohio	1,311.0	+113.4
Tennessee	1,243.5	+126.8
Pennsylvania	1,197.7	+105.8
California	1,178.9	+126.7
Michigan	1,029.2	+107.8
Delaware	827.7	+105.1
Virginia	777.2	+119.0
Indiana	727.8	+138.2
North Carolina	666.8	+176.2
Louisiana	655.3	+140.4
Missouri	632.2	+138.2
South Carolina	598.8	+153.1
West Virginia	471.3	+ 81.6

*Wages, salaries, other labor income and proprietors' income. Source: Bureau of Economic Analysis, U.S. Dept. of Commerce.

Mapping CPI growth

Texas, Tennessee and North Carolina will be big gainers of chemical industry operations during the '70s and '80s, a team of Commerce Dept. economists predicted last week. Chemical companies also will be stepping up their activities in Louisiana, Missouri and Indiana, the group believes.

Nationwide, according to the department's newly computed projections of population and personal income, the chemical industry's employees and proprietors will receive \$22.549 billion in '90, up 120.7% from their '71 earnings. The increase reflects a rise in the number of employees and also a continuing escalation of salaries and wage rates; but all the projections of income are in constant-value '67 dollars.

More moderate increases in individuals' earnings are expected in three other chemical process industries: pulp and paper, 99.6%; petroleum refining, 53.7%; primary metals, 38.1%.

If the projections are on target, Texas and Tennessee will each advance one place among top-ranking states in chemical industry production and administrative operations, and North Carolina will leapfrog from 16th to 13th place (*table, above*).

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Moving toward control of toxic chemicals

After three decades of unprecedented and virtually unregulated proliferation of new chemical products, American industry now confronts a frightening fact and a formidable question. The fact: Long-term exposure to an unknown number of chemicals can produce irreparable damage to the organs of employees who work with them—and chemicals are used in every nook and cranny of U. S. industry, not just the \$70-billion, 1-million-worker chemical industry. The multifaceted question: How can the dangerous chemicals be identified from among the 10,000 chemicals now in production and the eight new chemicals considered for production each week? And what will it all cost?

Some political answers are already taking shape. Temporarily stalled behind emergency energy legislation, a Toxic Substances Control bill that would require company testing of new chemicals under Environmental Protection Agency rules awaits action by a Senate-House conference committee. Backed by labor, Representative David Obey (D-Wis.) plans to press a House Appropriations subcommittee for more money, both for the National Institute for Occupational Safety & Health (NIOSH) and for the National Institute for Environmental Health Sciences (NIEHS), to be used specifically for research in petrochemical health hazards. Whatever the immediate fate of both measures, recalculation of the acceptable trade-off between worker health and industry growth seems clearly in the cards. The likely result will be higher costs and slower growth.

Long recognized as a grave risk by occupational health experts, the problem of "chemical health collapse" moved abruptly from the scientific journals to the daily newspapers with the discovery of seven deaths from angiosarcoma, a rare liver cancer, among long-time workers on the vinyl chloride operations of three chemical companies, and the diagnosis of noncancerous liver damage in hundreds of workers exposed to the chemical. The Occupational Safety & Health Administration (OSHA) hastily issued a temporary exposure standard of 50 parts per million (ppm) for the 700,000 workers exposed to vinyl chloride, with a permanent zero standard due to be proposed this week. The link between vinyl chloride and liver damage thus took its place with the links between benzene and leukemia, cadmium and nerve disorders, and a growing list of other chemical occupational hazards.

An information gap

Theoretically, Congress dealt with this problem back in 1971, when it created OSHA. Among other tasks, OSHA was charged with issuing freshly researched health standards to replace outdated consensus standards. A 500-ppm vinyl chloride exposure level, for example, was still in effect long after most companies had set their own levels at 200 ppm and Dow Chemical Co. had brought down its standard to 10-to-50 ppm. But nothing much actually changed. Only 15 of 550 projected OSHA health standards were issued in three years. This was due partly to cautious leadership and cumbersome methods of converting NIOSH criteria documents

into OSHA standards, but mostly due to the agency's lack of information on the thousands of chemicals flooding into the workplace. With a budget of \$25.5-million and a staff of 611, NIOSH must start from scratch in analyzing each.

"We have this Toxic Substances List of 15,000 chemicals, which will double by next year at the present rate of chemical development," says NIOSH Deputy Director Edward J. Baier. "But when it comes to knowing just how dangerous each chemical is—let alone how carcinogenic—we just don't have the data. If these products were tested prior to their introduction at the worksite, we might not be surprised by any more vinyl chloride incidents."

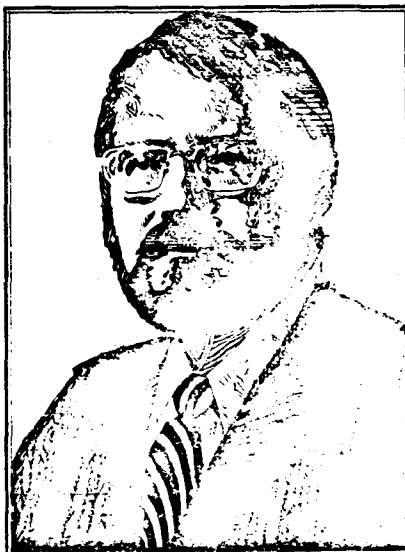
The Toxic Substances Control bill would provide for just such preproduction testing under rules that could have mild-to-massive impact on the chemical industry. While both the House and Senate versions direct the EPA to specify companies' testing methods and to forbid production of new and existing chemicals found to be dangerous, they differ sharply on two crucial points:

- The House bill would require testing of only those new chemicals listed as potentially dangerous, with results to be reported to the EPA 90 days before production. The Senate version would require, additionally, that companies notify the EPA of all new chemicals considered for production so that it could order testing of suspect chemicals not on the list. EPA says it cannot predict what industry will develop tomorrow and put it on a list today. Industry objects to an approach that—says John A. Georges, director of environmental affairs for E. I. du Pont de Nemours & Co.—"assumes every product is dangerous until proven otherwise."

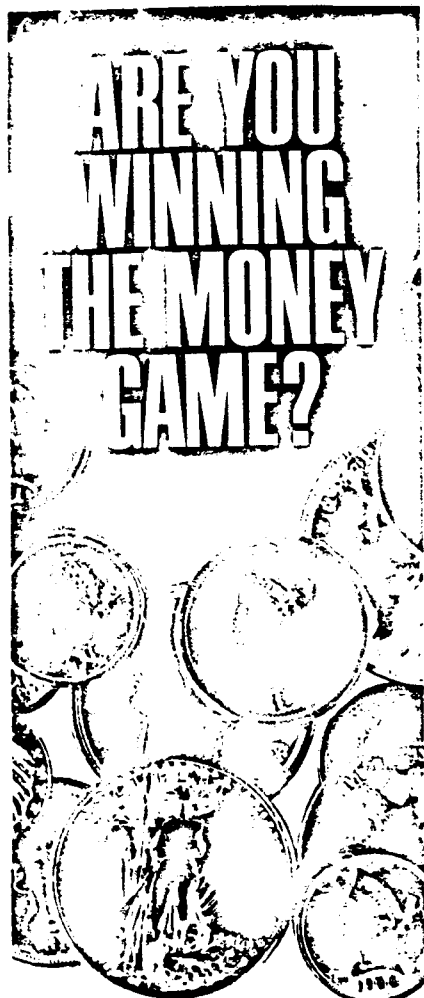
- The House version would enable the EPA to ban production of a chemical only if health hazards could not be corrected under other federal legislation, such as the Water Pollution Control Act. The Senate version would leave the choice of weapons to the EPA on the ground that different laws work better for different conditions—for instance, that banning a product may be wiser than trying to clean up its toxic sewage, if substitute products are available and clean-up methods are uncertain. Industry argues that this provision puts too much power into the hands of the EPA administrator.

Testing costs run high

Chemical companies say that their testing costs would rise moderately under the House bill, but so astronomically under the Senate bill that estimates fail them. Union Carbide Corp.'s chemical and plastics group spent \$900,000 on testing during fiscal 1973 (on sales of \$1.67-billion and pretax profits of \$212-million) and is spending \$1.1-million this year. It projects a testing cost of \$1.5-million for 1975, "given a reasonable bill," says Thomas W. Carmody, vice-president of the chemical and plastics group. Dow, which spends \$8-million annually for testing (on U. S. sales of \$1.7-billion and post-tax profits of \$215.5-million), expects "only a modest additional cost" under the House bill, says Chester E. Otis, (continued on page 114)



Dr. Frederick de Serres: "I feel that 1974 may be the year everything explodes."



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Commentary/Social Issues

Continued

manager of the public issues office. But both decline to guess future testing costs under the Senate bill.

For their part, EPA officials pooh-pooh talk of sky-high costs. Many chemicals would require no testing at all under the Senate bill, says EPA legislative director Gary Baise. Most others would require only the standard 30-day toxicity protocol, which measures general effects on two species of animals, he says. But tests for suspected carcinogens are something else again, and these are the tests that industry fears the EPA may demand for many chemicals. Lifetime animal tests take two years and cost up to \$300,000 per chemical, according to the National Cancer Institute. Nobody yet has come up with a quick, cheap, reliable substitute.

The likeliest candidate, in some views, is mutagenesis testing—measuring the ability to change cells rather than the specific ability to cause cancer (one type of unnatural cell change). Conceivably this could save millions of dollars by weeding out chemicals that might otherwise go the two-year, \$300,000 route. Dow and Pfizer, Inc., are studying the technique, and Dr. Frederick de Serres of the NIEHS, a leading authority in the field, predicts good tests for chemicals within a year.

An even tougher bill?

But passage of the Toxic Substances Control bill may not wait for the development of quicker, cheaper tests. On the other hand, Congressional failure to pass the bill this session, either because time runs out or the conferees remain deadlocked, may produce a bill even less attractive to industry. Senate majority conferees indicate that, rather than compromise further, they will let the current bill die and start again in the next Congress—a post-Watergate Congress likely to be friendlier to a tough bill than the present session. The message seems to be that industry must expect a fairly expensive solution to the problem of identifying potential vinyl chlorides, if not this year, then next—and that this, in turn, means that it will be producing fewer products.

"The bill will have a hidden cost in new products that will never be developed and new uses for old products that will never be explored," says George Hanks, environmental affairs manager for Union Carbide. "Small companies especially will think twice before un-

dertaking anything that may require extensive testing. They can't afford it."

Environmentalists such as Barry Commoner argue that this is good, that the ever-accelerating flood of the past 30 years should be slowed while industry catches up on its health homework for those chemicals already developed and society decides how many more it can absorb. Taking another tack, labor argues for a tough bill as a means of protecting worker health with minimal economic disruption. Spotting dangers through preproduction testing makes more sense than waiting till afterwards, when jobs and investments are at stake, says Sheldon Samuels, director of health, safety, and environmental affairs for the AFL-CIO's Industrial Union Dept.

Potential time bombs

Extensive testing may increase costs to consumers as well as producers, labor spokesmen concede freely. "Safety and health costs are part of the cost of doing business," says IUD Secretary-Treasurer Jacob Clayman. "In some cases they will be passed on to the consumer."

Although chemical companies take no such placid view of the increased cost of doing business under a Toxic Substances Control bill, their present prospects suggest considerable ability to pay more for health research without endangering their own economic health. "Resource shortages guarantee an era of incredible growth for chemicals," says Union Carbide's Carmody. "Look at detergents. There's just no way back to soaps based on fats. We need the fat for food now. The same is true for most natural resources." As a result, Carmody says, "I can't imagine a really important product being priced out of the market."

Carmody's premise may be tested sooner rather than later. Another vinyl chloride incident would almost certainly propel a tough Toxic Substances Control bill out of committee and onto the statute books, and occupational health experts rank the likelihood of such an incident as somewhere between possible and probable. Since chemically caused diseases often have latency periods of 10 to 20 years and many chemicals went into production 10 to 20 years ago, time bombs may be ticking away on countless production lines. "I feel," says the NIEHS' Dr. de Serres, "that 1974 may be the year everything explodes."

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