

OSHA's rules spur suits

When John H. Stender, Assistant Secretary of Labor and head of the department's Occupational Safety and Health Administration, presented final standards for worker exposure to vinyl chloride monomer gas at the National Safety Congress in Chicago last week, he expected the Labor Dept. "to be sued by both sides." He was partially right within two minutes of the announcement, when the Society of the Plastics Industry filed a petition for review of the standards in the Second Circuit Court of Appeals in New York.

Other suits followed. Hooker and Union Carbide filed a similar petition in the same court. Firestone filed in the Sixth Circuit. Tenneco and Air Products in the Third Circuit. All companies will seek to get the actions removed to the Second Circuit Court. Also, B.F. Goodrich says it intends to request a legal review.

But one attorney familiar with the long struggle over the standards tells *Chemical Week* that "it will be a very tough case for the industry to overturn," citing what he described as an "excellent preamble" to the standards from OSHA.

The standards are not the "no detectable" limit originally proposed by the agency, but the three-step program is much tougher than industry proposed at hearings earlier this year. Until the end of 1974 the 50-ppm maximum exposure set by OSHA as a temporary emergency standard in April stays in effect. In 1975 the maximum exposure will drop to 5 ppm, measured over a 15-minute period,

with a 1-ppm time-weighted average (TWA) for the eight-hour day. But where engineering of these controls is not possible, maximum exposure will be 25 ppm, with respirators to be available, but not mandatory, for worker use. After Jan. 1, 1976, there will be no exceptions to the 1-ppm TWA and 5-ppm maximum limit, with respirators mandatory at higher exposures.

The other side, the labor unions, is also expected to attack the standards because of the implementation timetable and allowance for the use of canister and cartridge respirators. "It would appear this thing has a number of loopholes in it," says United Rubber Workers President Peter Bommarito. He also takes issue with the use of respirators at the workers' discretion during 1975. Other union spokesmen say they need more time to examine the standards.

Death Knell: Industry sources say it is impossible to operate at the lower exposure levels, could mean the demise of the 17 U.S. plants that produce the monomer, the 37 that polymerize it to make polyvinyl chloride (PVC) resins and the thousands of plants that mold, extrude and otherwise shape the resins into plastic pipe, vinyl flooring, house siding and phonograph records.

An Arthur D. Little study for SPI indicates that about 2.2 million jobs in the U.S. depend on PVC production and that the annual loss to industry in sales and production would be \$65-90 billion if the material were banned. (Some 5 billion lbs./year of PVC are now produced in the U.S. Wholesale value of all products is \$3 billion.)

The question now seems to be whether the courts will upset the OSHA determination, whether legal delays can give the industry sufficient time to tool up to the new standards or whether, as one industry observer states, "a political and economic solution must be imposed by Congress to save the industry."

Counting Criteria: Object of the new standards is protection for 1,500 workers in monomer production, 5,600 PVC plant employees and about 350,000 workers at PVC fabrication plants.

Exposure to VCM at the old standard of 500 ppm, or higher, has been linked to about 28 deaths worldwide from mesothelioma, a rare liver cancer, since it was first noticed in January 1974 in former workers at B.F. Goodrich's Louisville, Ky., PVC plant. Technical basis for the OSHA standard is animal tests in Italy and the U.S. (*Ch. 17, p. 10*) demonstrating angiosarcoma in rats, mice and

humans at 50-ppm exposure.

Ralph Harding, president of SPI, calls the standards "unrealistic," says it probably will be impossible for most, if not all, plants to meet them and that they "appear to have been developed on some basis inconsistent with recorded facts."

Trouble Spots: Stender is more optimistic about the industry's ability to cope with the regulations. But he says the PVC plants will be "hardest pressed." The batch-process polymerization of vinyl chloride in kettles is the point of highest exposure to the monomer gas.

Vinyl chloride maker Dow Chemical is bringing legal action seeking to block the OSHA regulations. The company says it has been operating at below 10 ppm and considers the new standard "more restrictive than necessary." Dow questions the "ability of the industry to develop the needed technology." On the other hand, Rohmtech says all its PVC pipe fabricating plants will meet the new standards and that it will expand its 1-report, 1-ex resin plant to 150-million-lbs./year.

Shell loses a round

Environmental Protection Agency Administrator Russell Train last week ordered Shell Chemical to stop production of aldrin and dieldrin for most uses, claiming the pesticides can cause cancer. The ban will remain in effect until EPA completes hearings to determine whether the pesticides' registrations should be canceled.

Shell, sole manufacturer of the pesticides, would have to cancel plans for 1975 production of about 10 million lbs., but could sell the material it has in stock.

The two pesticides are chlorinated hydrocarbons used largely on corn, citrus fruits and certain seeds.

Aldrin breaks down into dieldrin after application.

Train had earlier disclosed his intention to impose the ban because lab tests with rats and mice showed dieldrin increased the incidence of malignant tumors (*Ch. 14, p. 13*). Shell requested a hearing, and last month EPA administrative law judge Herbert Perlman urged that manufacture of the pesticides be suspended.

Last week, Shell appealed Train's latest order in the U.S. Circuit Court in New Orleans. The Environmental Defense Fund, the group that initiated the complaint, also filed suit last week in federal appeals court in Washington, D.C., requesting that the ban be extended to use and sales of existing inventories.

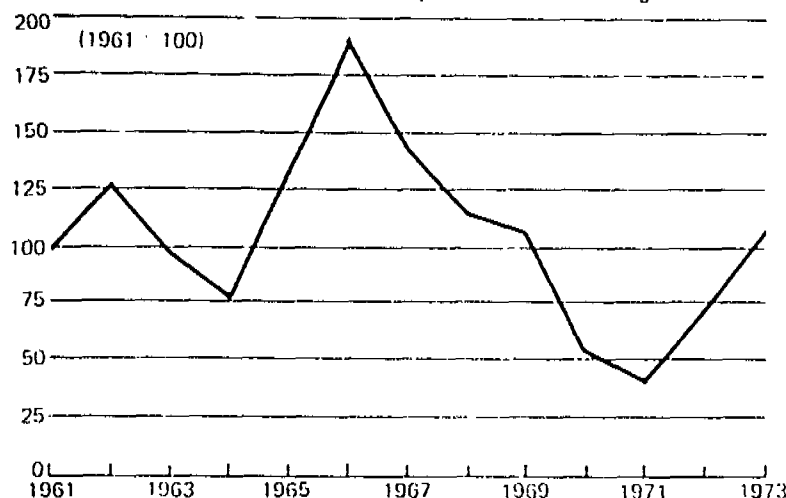


OSHA'S STENDER Spelled out timetable for tougher vinyl chloride exposure rules.

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Top of the news

Demand for scientific manpower is accelerating* . . .



*The Deutsch, Shea & Evans engineer/scientist demand index based on cut in inches of advertising.

. . . but the supply of new graduates is lagging

Year	Chemical engineering degrees			Chemistry degrees		
	B.S.	M.S.	Ph.D.	B.S.	M.S.	Ph.D.
1966	3,234	1,142	360	NA	NA	NA
1967	3,433	1,081	402	7,643	1,612	1,912
1970	3,730	1,055	452	7,794	1,665	2,145
1971	3,626	1,086	395	7,956	1,941	2,097
1972	3,600	1,158	413	7,908	2,019	1,929
1973	3,586	986	405	8,060	2,005	1,880

NA, not available. Sources: Engineering Manpower Commission, American Chemical Society.

ing, is attributed by most manpower experts to an upsurge in energy and environment-related spending by industry and government. Another up-and-coming field for chemists is health sciences research.

One barometer of the state of the chemical job market is the number of new chemistry Ph.D.s who have taken postdoctoral research positions. These are normally regarded as "holding patterns," whereby new graduates mark time by performing research or teaching in academic departments until they can locate permanent positions. A typical example: Ohio State University reports that three years ago 61% of its new chemistry Ph.D.s accepted postdoctoral positions; two years ago the number was 50%; last year 36%.

While the biggest gain in employment opportunities for chemists has been registered at the doctoral level, new B.S. chemists are still experiencing difficulties in locating positions. A placement official

at California Institute of Technology says that the job outlook for B.S. chemists is still tight. "They're going to graduate school because there aren't many jobs available," he adds. "This is leading them away from industry and into fields like medicine and education."

Although chemistry jobs are more plentiful this year, starting salaries have not risen substantially. This is particularly true at the bachelor's level, where median starting salaries, according to the American Chemical Society, rose from \$9,000 last year to \$9,750 this year. At the master's level, ACS reports a change in average starting salaries for graduates from \$10,800 in 1973 to \$11,900 in 1974. The heftiest gains in starting salaries were recorded at the doctoral level: \$14,900 last year to \$16,190 this year.

The improved employment prospects in chemistry, particularly at the Ph.D. level, have not yet generated a rise in the number of Ph.D. graduates (see table). New doctorates in chemistry, which have

been declining since 1971, are expected by most experts to continue falling for much of the rest of the decade, largely reflecting slim enrollment in graduate schools during the slow 1970-1971 period.

The U.S. Labor Dept.'s Office of Education confirms that first-year graduate enrollments dropped significantly at that time from an average of about 7,150 between 1968 and 1970 to 6,821 in 1971. And a survey of academic departments by CBE indicates that enrollments have since fallen further. In one typical case, the University of Washington reports that its total enrollment of chemistry majors dropped from 350 a few years ago to this year's 260. In contrast, the school says chemistry class enrollments have increased as much as 10% this year over last year. Officials at the university attribute this trend to majors in other fields electing chemistry courses.

While the over-all chemistry enrollment has continued to decline, the situation has been most marked at the graduate level. Most schools still report a firm desire on the part of undergraduates to major in chemistry. However, academicians see this development as linked to the increasing popularity of premedical studies among undergraduates.

While manpower specialists agree that decreasing chemistry enrollments and graduation rates may eventually lead to a shortage of chemists, they concede that the timetable for this development depends on a lot of unpredictable variables, chief among which is the state of the U.S. economy over the next couple of years.

Nevertheless, several predictions can be made. In college teaching, a traditional outlet for chemistry Ph.D.s, most experts predict modest growth. For example, Allan Carter of the University of California at Los Angeles, asserts that the college-age population will not grow substantially during the next 50 years, with the result that new college teachers will not be needed in great numbers.

Outside the academic sphere, the outlook for chemists is brighter. For example, the Labor Dept.'s Occupational Outlook Handbook predicts that the demand for chemists in industry will exceed supply by 1985. And the Bureau of Labor Statistics foresees an average yearly demand of 6,800 new industrial chemists from now until 1985. But the course that industry's actual hiring rates will take depends on economic and technological developments such as the need to make greater use of recycling and unconventional raw materials that now can only be guessed at.