

Battle lines drawn on vinyl chloride issue

Chemical management says workers now have adequate protection from suspected cancer agent; labor wants emergency standard set

Chemical management and labor have drawn the battle lines for what shapes up as another bitter struggle over how best to safeguard workers from a suspected cancer-causing agent. Industry witnesses at a Labor Department fact-finding hearing 10 days ago asked that further controls on exposure to vinyl chloride or other chemicals involved in making the monomer or polymerizing it to polyvinyl chloride be set by ordinary rule-making. But AFL-CIO unions argued that four confirmed liver cancer deaths at a B. F. Goodrich PVC plant warrant issuing an emergency temporary standard.

The unions probably have the clout to get this immediate emergency rule as they did for the first 14 carcinogens the department's Occupational Safety and Health Administration chose to control. But when OSHA issued permanent standards for these agents, industry won on most key issues. It may do so again, for the deaths at BFG may be seen as resulting from very high exposures years ago when, as one industry expert puts it, firms were "much more cavalier" toward vinyl chloride's hazards, save for fires and explosions.

AFL-CIO is urging that a vinyl chloride rule be set comparable to what OSHA's advisory panel asked for the 14 agents which included no measurable exposure to a carcinogen, other safe work practices, closed systems, and use permits.

Besides these controls, the unions want all vinyl chloride and PVC workers to get periodic medical and lab tests along the lines of an AFL-CIO protocol. Labor also demands that the amount of residual vinyl chloride in PVC resins be cut "to less than 0.01% as quickly as possible." This 100-p.p.m. level compares with the 500 p.p.m. to 3000 p.p.m. of monomer now entrapped in resins prior to packaging and shipment, AFL-CIO says.

Stressing the safety of current operations, BFG, Dow Chemical, Shell Chemical, and the Manufacturing Chemists Association all support the less-immediate route to a rule to im-

prove upon the current federal ceiling of 500 p.p.m. vinyl chloride exposure. BFG Chemical is implementing "as rapidly as possible" most of the temporary, precautionary procedures recommended, in the wake of the deaths, by the National Institute for Occupational Safety and Health, says the firm's president, Anton Vittone, Jr. The procedures cover such items as protective gear, monitoring of plant and personnel, and general housekeeping practices, but set no new limits for chemical exposures.

MCA member firms are aware of the procedures and are reducing employee exposure voluntarily, says Albert C. Clark, vice president-technical director. "Substantial research is now in progress," he adds, that "will provide a firm basis for any standard applicable to VC/PVC manufacture." Regular rule-making "would allow the orderly

Rats inhaling vinyl chloride get rare liver cancer

Exposure level (p.p.m.)	Rats with liver angiosarcomas	Number of rats exposed
10,000	6	69
6,000	11	72
2,500	9	74
500	7	67
250	2	67
50	0	64

a Atmospheric exposure of Sorague-Dawley rats to vinyl chloride, four hours daily, five days a week, for 12 months. Note: No liver angiosarcomas were observed in controls or rats exposed similarly to 2500 p.p.m. vinyl acetate. Source: Unpublished research by Prof. Cesare Maltoni, Istituto Di Oncologia, Bologna, Italy

development of data," stresses Richard J. Reynolds, Shell's vinyl chloride manager.

BFG's disclosure of first three deaths, then a fourth fatality due to angiosarcoma of the liver among polymerization section workers at its Louisville, Ky., plant created the push for a new vinyl chloride limit (C&EN, Jan. 28, page 6; Feb. 18, page 6). Without the disclosure, "it is entirely possible that the significance of the tumors would not have been realized for several more years," admits Dr. Marcus M. Key, NIOSH director. At a Cleveland briefing two weeks ago, he stressed that "an occupational cause or causes [for the deaths] must be presumed," adding that a "serious situation" exists for PVC workers "throughout the world."

So rare that NIOSH believes there are only 20 to 30 deaths a year from it throughout the U.S., angiosarcoma of the liver can be misdiagnosed as cirrhosis of the liver. Such was the case at first for two of the four BFG cases. All four exhibit a concurrent, nonalcoholic cirrhosis, says Dr. Henry Falk of the Center for Disease Control, Atlanta, Ga.

The BFG workers had average exposures of some 19 years to vinyl chloride and 10 years to vinylidene chloride, with variable exposures to such chemicals as vinyl acetate, methyl acrylate, ethyl acrylate, methanol, and chlorinated solvents, Mr. Vittone says. At first there was "high suspicion" among surviving BFG workers that vinylidene chloride was carcinogenic, observes NIOSH's Vernon E. Rose. Although this question will be probed later, further evidence of a link between vinyl chloride and the deaths has been revealed.

Prof. Cesare Maltoni, director of Istituto Di Oncologia, Bologna, Italy, has experimentally created liver angiosarcomas in rats inhaling vinyl chloride. The cancers occur down to the 250-p.p.m. level, but so far not at the 50-p.p.m. level. (Significantly, many firms claim they already operate at this level or will do so soon.) The rats also develop zymbal glands carcinomas and kidney nephroblastomas at low levels that, along with the angiosarcomas, he has never found in his rats before.

Based on four BFG cases, the Center for Disease Control concludes that "it seems distinctly possible that the problem may be industrywide," Dr. Irving J. Selikoff, Mount Sinai School of Medicine, New York, N.Y., claims to have found liver and lung changes among workers at Goodyear Tire & Rubber's PVC plant in Niagara Falls, N.Y., similar to those in a West German study of PVC workers reported late last year. At this writing, two more BFG cases, including a death in 1964 with angiosarcoma a contributing cause, have been revealed. An Imperial Chemical Industries case is still unconfirmed by the firm.

"What we now know about the relation between cancer and vinyl chloride is only the tip of the iceberg because of the long latency period," says Anthony Mazzocchi, legislative director for Oil, Chemical and Atomic Workers International Union. He may be right. But what corrective steps are taken remains to be seen.