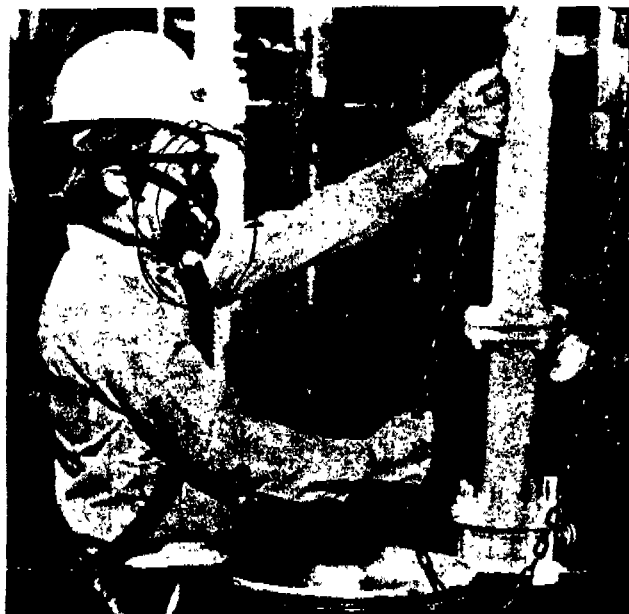




*note
half-mask*

PVC WORKERS use respirators with air-hose attachments to keep exposure to VCM below 1 ppm.

Masked men get drop on VCM

PVC plants meet new OSHA standard with few exceptions, but most must use respirators and lose some production to comply

If requests for variances are any criterion, most polyvinyl chloride plants have complied with the Apr. 1 deadline limiting worker exposure to 1-ppm. vinyl chloride monomer.

Only four companies—Firestone, Union Carbide, Air Products and Chemicals, Borden—have applied to the Occupational Safety and Health Administration for temporary variances. And all operating PVC plants appear to have reduced time-weighted average exposures to the monomer to well under the 25-ppm. limit that went into effect in April 1975. But meeting the new 1-ppm. limit requires "extensive use of respirators," say several chemical companies.

And with extensive engineering changes still being made at a number of older plants, requests for an extension of standards usually are being based on the difficulty of doing construction work while wearing respirators.

Air Products, for example, has a major rebuilding project under way at its Pensacola, Fla., plant, where it is expanding capacity from 80 million lbs./year to 150 million by December. And changes are being made at its Calvert City, Ky., unit. Delays in equipment delivery are slowing progress toward minimum use of respirators.

Firestone, whose request for an interim six-week extension was turned down by OSHA (CW, Mar. 24, p. 9), is waiting for

a response to its request for a variance until Sept. 30 for discretionary use of respirators. Last week the company closed its Pottstown, Pa., plant to complete six to seven weeks of construction work. Operation continues, with respirators, at Perryville, Md.

"The temporary variance was requested because it was our judgment that we could not continue the massive engineering changes and equipment installations required in our polymerization buildings if our craftsmen were required to wear respiratory equipment on a full-time basis," says Todd C. Walker, president of Firestone Plastics.

"Under the law, we can grant variances only when equipment is unavailable," says John Concannon, chief of the division of variance determination for OSHA.

Union Carbide isn't optimistic about its request for a one-year extension, and the company says 62 workers at its Texas City, Tex., suspension-resin plant will have to put on respirators for "extended periods and they won't like it." The average respirator time there is 30%, longer for maintenance work, Carbide adds.

Another reason for its request for an extension, says Carbide, is the "uncertainty about the Environmental Protection Agency regulations for VCM emissions from the plant." EPA initially proposed a 90% reduction of emissions;



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final proposed regulations are expected in June.

Meeting Limits: An informal survey of PVC plant managers by one company indicates that 70% are averaging below 1 ppm. Some plants have levels as high as 3.5 ppm., while others report levels as low as 0.3 ppm.

David Kuhn, director of environmental and biomedical affairs for Conoco Chemicals, says background levels at his company's operations are mostly below 1 ppm., but in the process area they are usually above 1 ppm.

And an official at one company observes: "Even if you are averaging 1 ppm., the individual worker may be exposed to higher levels during the day."

The OSHA standard establishes a maximum permissible employee exposure limit to vinyl chloride monomer of 1 ppm. for an eight-hour, time-weighted average and a 5-ppm. ceiling for a 15-minute period. Plants are required to use engineering controls to reduce the level as much as possible, and workers must resort to respirators when necessary. Until Apr. 1, respirators were optional at levels above 25 ppm. Now respirators must be worn to keep the daily exposure below a 1-ppm. average.

No Breathing Room: "At the moment, there is no way to meet the final standard without extensive use of respirators," says John Barr, technical manager of Air Products' Chemicals Division manufacturing department.

Only respirators connected to air supply lines have been approved by the National Institute for Occupational Safety and Health. A Carbide official calls them "instruments of torture." Maintenance and construction workers find them particularly difficult to live with.

And Carbide points out that workers must communicate with each other and often must use the phone, but "with those things on it is impossible."

Ray Abramowitz, technical director of Hooker's Ruco Division, agrees that respirators slow work, but he maintains they are not "debilitating." There is no question that workers dislike them, however. Abramowitz says that in one case work was done faster than usual because the workers were so anxious to get out of the respirators.

James Daniel, Robintech vice-president, reports his company's joint-venture plant (with Japan's Shinetsu) at Freeport, Tex., was given a "clean bill of health" by OSHA. There are no emissions above 1 ppm. and respirators are not needed.

But an engineer at another company

says: "You can average 1-2 ppm. most of the time, but you just can't guard against excursions, like valve leaks, to 10 ppm."

And while companies wait for NIOSH approval of respirators that won't require long air hoses, the outlook is not encouraging, at least this year. Only one substitute device has been submitted to the agency's Morgantown, W.Va., labs for testing.

Counting Cost: The engineering changes that have been required to minimize VCM exposure have not been cheap. Their effect on the cost of producing PVC is difficult to pinpoint because material and energy costs have risen during the period when the changes were made. But several firms have estimated the cost increases as higher than 10%. And reduction of plant capacity because of stripping time and monitoring can be 20% for dispersion resins (*CW*, May 7, 1975, p. 49).

There is also a shortage of pumps, seals and valves that can stop the "nitty gritty" leaks that spell the difference between 5-ppm. and 1-ppm. exposure.

And Hooker's Abramowitz notes that some of the money spent to meet OSHA ventilation standards may have been wasted in meeting EPA exposure standards. "We just didn't have time to think the whole thing through and do things in an orderly fashion," he says.

If activities to meet regulations have been frantic and costly for large companies, they have been more difficult for the smaller ones.

For example, Melvin Rosensaft, president of Great American Chemical (Fitchburg, Mass.), says his company "will meet the standard with some great help from the rest of the industry." Rosensaft notes that small companies can move faster sometimes, but he concedes that the problems, at times, seemed "insurmountable." His reply when asked about costs to meet the regulations: "Want me to get sick?"

Rosensaft says compliance with regulations has decreased plant capacity by more than 10%.

But compliance costs may not be as great as first anticipated. The Society of the Plastics Industry estimates the industry will spend \$200 million. And Goodrich, major producer, with over 1-million-ton/year capacity, originally forecast it would spend \$42 million for compliance by 1977. That has been revised downward 10-15% (*CW*, Dec. 10, 1975, p. 59).

Moreover, many producers, including Goodrich and Great American Chemical, are expanding capacity.

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