

Vinyl Chloride: Questions and Answers

Almost everything you always wanted to know about OSHA's vinyl chloride standard but were afraid to ask

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"In the average year approximately 150 people are struck by lightning. Last year 32 cases of vinyl chloride-related cancer were discovered. In view of these numbers, should not workers be required to carry a lightning rod?"

Not every question OSHA gets asked about its vinyl chloride (VC) standard is as frivolous as this one from an anonymous user of polyvinyl chloride (PVC) resin. In fact, now that an appeals court has ruled the standard is effective April 1, 1975, hundreds of legitimate questions—the ones that get down to the nitty-gritty of how to comply in each plant—are rolling in. Here we offer OSHA's replies to some of the most frequently asked questions.

For more general information on the VC standard, check *JOSH SAFETY & HEALTH*, January 1975. If you have further questions, write to: OSHA Regional Programs, Division of Occupational Health Programming, Room 760, 1726 M St. NW, Washington, D.C. 20210.

Q. We know that the standard requires an initial monitoring program to tell if an employee is exposed above the action level of 0.5 ppm. Do we have to monitor VC exposures for every single employee?

A. Each employee must be personally monitored, but your monitoring must take into account all employees—whether they wear respirators or not—and must give a valid determination of employee exposures.

You might select representative employees for personal monitoring according to these criteria: the number of employees per shift, their duties, work areas and operations, and work location in time. Each employee's VC exposure must be determined even though he may not be personally monitored.

Q. How can I determine the initial monitoring program?

A. When a process is already in operation, monitoring must be accomplished and regulated areas established by April 1, 1975. We recommend that new processes be monitored within one week after start-up and regulated areas established as soon as possible after the monitoring results are available.

Q. We use PVC but extensive monitoring has shown that VC concentrations are below the permissible limit—one part in a time-weighted average and one ppm as a ceiling. Do we have to establish a "regulated area" if concentrations are below the "action level" of 0.5 ppm?

A. The standard sets two conditions, both of which must be met before a regulated area is required:
1) VC is PVC manufactured, reacted, packaged, repackaged, stored, handled, or used.
2) VC concentrations are in excess of the permissible exposure limit.

If concentrations, then, are below either the permissible limit or the action level, you do not have to set up a regulated area.

Q. Does every employee in our plant who has VC have to be given training? What about the employees exposed below the action level?

A. There are no exceptions to the training requirement. Regardless of how low the monitoring results are, each employee "engaged in VC or PVC operations" must be given training in the hazards related to VC and the proper precautions for using it. This might include maintenance, laboratory, and supervisory personnel as well as production workers.

Q. Occasionally our company uses what we consider temporary employees. These people would be exposed above the action level for no more than one week a year. Must we provide training for these employees?

film, sometimes cutting it with a hot wire. According to the OSHA standard, what should our company be doing to protect me?

A. Meat packaging films are considered a "fabricated product" under the OSHA standard since mass melting does not occur when they are cut with the hot wire. Consequently, the packaging operation you describe is not covered by the VC standard.

NIOSH has conducted research into the possible release of VC during PVC packaging operations and, using instruments sensitive to approximately one ppm, has not detected any VC. However, NIOSH has determined that when heated, PVC film decomposes into hydrogen chloride and carbonaceous gases. The hydrogen chloride gas, which becomes hydrochloric acid on contact with the mucous membranes of the eyes, throat, and nasal passages, can be irritating at concentrations above the OSHA standard of five ppm for hydrogen chloride. So far NIOSH has found no health hazards from exposure to other PVC decomposition products, though the investigation is continuing.

Q. The standard says that it applies to the transportation of VC or PVC "except to the extent that the Department of Transportation (DOT) may regulate the hazards." Are the placards DOT requires for tank trucks carrying VC monomer enough to fulfill the labeling requirements of the standard? If not, what is meant by the requirement that labeling be "legible?" Is a tank truck on the road considered a "regulated area?" If the driver does not help in loading or unloading, is he covered by any of the provisions of the standard?

A. There need not be duplication of DOT markings that cover such hazards as flammability. However, markings not required by DOT, such as "cancer-suspect agent," must be part of the container label. In other words, when placarding specified by DOT is not sufficient to meet requirements outlined in the OSHA standard, additional labeling will be required.

For working purposes, we define "legible" as the same size lettering as other emergency or warning instructions on the side of the container or vehicle.

A tank truck carrying VC would be considered a regulated area only if it were expected (based on measurements or other known facts) that VC concentrations would exceed one ppm as an eight-hour time-weighted average or five ppm as a ceiling. It appears unlikely that a truck on the road would be in this situation.

Whether the truck driver is covered depends on the amount of VC he is exposed to. If the exposure is below the action level of 0.5 ppm—as seems likely—only the training and labeling provisions of the standard would apply.

Q. We are expecting shipments of PVC resin after the

standard goes into effect. The resin is shipped in sealed containers 20 and 40 feet long. How will the standard affect our operation?

A. The OSHA standard does not prohibit importing VC or PVC, but each employer is responsible for knowing the working conditions of his employees and controlling conditions to meet the standard's requirements.

Our information on VC exposure levels in handling packaged resins is limited. Concentrations above the exposure limit have been measured in warehouses where PVC resin is stored. Freshly opened containers, particularly air-tight ones, may release significant amounts of VC to the air. For instance, concentrations in trucks loaded with bagged PVC resin have been measured at 200 to 600 ppm.

It appears that, at the very least, you must do initial monitoring of employee exposures. If the eight-hour time-weighted average is below 0.5 ppm and 15-minute exposures below five ppm, then your duties are reduced basically to labeling containers and training employees.

Q. The standard says that no employee can be exposed to VC concentrations above five ppm over a 15-minute period. What about those employees who decide not to wear a respirator for the standard's first year?

A. Before April 1, 1976, the ceiling exposure limit of five ppm over 15 minutes does not apply to the employees who have elected not to wear respirators. They may be exposed to as much as 25 ppm over any 15-minute period.

Q. The emergency provisions of the standard go into effect when you have a "massive release" of VC. Exactly how much VC does it take to trigger these provisions?

A. We define a "massive release" as any operation or place where the VC concentration is greater than 100 ppm. For example, a broken pipe in a PVC plant might cause a massive release.

Q. The standard says that no employees may have direct contact with VC. What do you mean by "direct contact?"

A. Skin contact with liquid VC.

Q. The standard requires us to keep a daily roster of authorized persons who enter a regulated area. What information should we include on the roster?

A. The daily roster should consist of legible signatures, dates, times, and social security numbers of authorized persons. Legible names or initials of authorized persons may be used as long as they are legible. The roster must be kept for 30 days.