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GUIDELINES FOR MOTOR CARRIERS OF GENERAL COMMODITIES

FOR COMPLIANCE WITH OSHA STANDARD ON VINYL CHLORIDE AND POLYVINYL CHLORIDE

(Published by Safety Department, American Trucking Assns, Inc. 6-1-75)

Motor carriers are now subject to OSHA standard 1910.93q which sets forth requirements for protecting employees safety and health when shipments of vinyl chloride and polyvinyl chloride are handled.

General information about the hazards, monitoring procedures and employee training is set forth in Appendix I. In response to the requirement for training carriers may want to issue a bulletin of a type similar to Appendix I, to their employees. The information is based upon a premise that the exposure level for vinyl chloride will be very low in motor carrier operations and thus only a minimum compliance program is required. If, after monitoring, a carrier determines that exposure levels are higher than expected it will be necessary to establish a more detailed program than the minimum.

Every carrier handling VC and PVC should obtain a copy of the complete standard which is contained in Federal Register, Volume 39, No. 194 — Friday, October 4, 1974, or from OSHA.

The motor carrier should first read Appendix I for general information and should then read the following which gives more specific detail on a course of action.

ACTION PROGRAM

Manufacturers of vinyl chloride and polyvinyl chloride have indicated they will assist carriers in carrying out the monitoring requirements. Thus the first step toward compliance should be:

- a) Review past shipping documents to determine who the shippers are. On documents VC will be described as "Vinyl chloride" and classed as "Flammable compressed gas". Documents for polyvinyl chloride will describe the shipment as "Plastic Materials, N.O.I.". On some documents the words 'polyvinyl chloride' will be shown in addition to the shipping name.
- b) Check freight containers to determine who the shippers are. Vinyl chloride will be in cylinders bearing the label "Flammable compressed gas" and a label "Cancer-suspect agent". Polyvinyl chloride may be in bags, boxes and drums and will bear a label reading "... contains vinyl chloride. Vinyl chloride is a cancer-suspect agent".

Shippers should then be contacted to determine the general nature of materials being shipped, the general levels of hazard and the assistance that they will give the carrier to monitor shipments of VC and PVC.

In its contact with the shipper the carrier should ascertain:

1. The various types of PVC being shipped, frequency and size of VC and PVC shipments, general exposure levels for PVC.
2. If the shipper will provide special identification on shipping papers so that PVC shipments can be easily identified and not confused with other shipments of plastics.
3. If the shipper can assist with monitoring by providing technical people to do the monitoring, by providing personal monitoring units, by analyzing samples.
4. If the shipper can help establish a control program which will assure that exposure levels are below the "action level" of .5 ppm. And if the shipper will establish a procedure to notify the carrier of any process change that will necessitate additional monitoring of a particular type of commodity.

MONITORING

The second step of a motor carrier program in monitoring. Some information about monitoring is provided in the Appendix for employees but is presented herein in greater detail for management.

When monitoring exposure levels, air samples must be taken at the level of an employee's mouth and nose — his breathing area. Personal monitoring units clipped to his shirt serve this purpose. Samples of air at floor level should not be used because vinyl chlorides are heavier than air and tend to settle at floor level — well below the employee's breathing area.

There should be monitoring for each shipper and for each of his products that may have a different exposure level, as the exposure varies according to manufacturing processes. If a shipper changes his processes and exposure levels are increased there must be additional monitoring.

The exposure level also varies by time and temperature. Thus the monitoring should be after a vehicle has

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had time to ventilate. Exposure levels, if any, will be higher immediately after trailer doors are opened but the process of opening the doors and backing the trailer to the unloading platform will reduce levels. The carrier should monitor immediately after the trailer is moved to the platform, and again after it has been at the platform for 10 to 20 minutes to determine if the additional time lag reduces exposure levels significantly. If such is the case, the carrier should issue instructions to employees that VC and PVC shipments should not be handled until the trailer has been open for a specified period of time.

The exposure level varies by size of shipment. Truckloads will probably be handled by shipper and consignee and there is no responsibility on the carrier if his employees are not exposed. Monitoring of LTL should be for the largest shipments usually loaded and unloaded by carrier employees.

Monitoring of dock operations must be carried out if VC and PVC are to be kept on the freight platform.

Results of the monitoring are obtained through use of an analyzer. The samples taken are processed through the analyzer and the results are averaged over a time period to determine the exposure level for a 15 minute period, and for an eight hour period. If the exposure level is at or below the "action level" of .5 parts per million for eight hours the carrier is allowed to conduct a minimum program. If the level is at or below one part per million (but above .5) the carrier must conduct a more extensive program, including medical surveillance of employees. If the level is above one part per million, or 5 parts per million in 15 minutes, the carrier must establish administrative and engineering controls to reduce exposure levels. If levels cannot be reduced sufficiently through administrative and engineering controls, the carrier must provide respirators to employees that are exposed to the higher levels.

TRAINING

Information on training requirements is provided in Appendix I. Each carrier must determine if it wants to issue employee training information similar to that in Appendix I, or if its exposure levels necessitate more extensive training.

RECORDS AND REPORTS

The fourth step for a motor carrier program is to establish a system of records and reports. In addition to required items the motor carrier should keep a record of every effort it has made toward compliance with OSHA requirements. Thus documents relating to shipper contacts, review of shipping records, etc. will indicate to an OSHA inspector that the carrier is making a good faith effort to comply, even though its compliance program might not be in full force.

The basic record keeping requirement is that there must be a record of monitoring and measuring. If there is

medical surveillance records must be kept, and if regulated areas are established there must be records of persons authorized in the regulated areas. It does not appear likely that motor carriers will have an exposure level above the "action level" of .5 ppm and, if such is the case, regulated areas and medical surveillance will not be required.

Monitoring and measuring records must be kept for 30 years and state: date of monitoring, concentrations determined, identification of instruments and methods used. They must also include any additional information necessary to determine individual employee exposures where such exposures are determined by means other than individual monitoring.

Monitoring and measuring records must be open for examination and copying by employees or their designated representatives. Former employees may examine and copy records of their own exposure.

A written report must be made to an employee within ten days after his exposure to levels above the permissible limit, without regard to use of a respirator. Such a report must tell the exposure level and steps being taken to reduce exposure to allowable limits.

Reports are required concerning establishment of regulated areas but this does not appear to be applicable to motor carriers because of low exposure levels.

ADDITIONAL REQUIREMENTS

If a motor carrier has exposure levels above the "action level" he must engage in monitoring at least every quarter. Monthly monitoring is required despite use of respirators, if exposure levels are above permissible limits.

Regulated areas are required if concentrations are above permissible limits and only authorized persons can have access to such areas. Daily rosters must be kept of persons who enter such areas.

Engineering and work practice controls are required to bring exposure levels within permissible limits of one ppm in an eight hour day, or 5 ppm in a 15 minute period. If such controls do not bring levels to permissible limits they must be used and supplemented by use of prescribed respiratory equipment. Written plans for such controls must be developed and available to OSHA representatives.

OSHA has provisions for "hazardous operations" and "emergencies" but these are designed for manufacturing operations and do not seem applicable to truck operations, except possibly for bulk transportation of vinyl chloride. These provisions do not contemplate the handling of PVC in powder, pellet or liquid form.

"Hazardous operations" are those where a release of vinyl chloride liquid or gas might be expected as a consequence of the operation or of accident which would result in exposure in excess of limits.

An "emergency" is defined as an occurrence which is likely to, or does result in a massive release of VC. It does

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It does not seem possible that a general freight carrier can have such a release because of the small quantities of VC handled and the integrity of the VC containers.

Carriers should obtain copies of the complete standard for a full understanding of what is required, and so that they can determine its applicability to their operations.

D.O.T. JURISDICTION

The Department of Transportation exercises jurisdiction over vinyl chloride gas and thus it does not appear to ATA that OSHA has jurisdiction. Informally, OSHA has claimed that D.O.T. is exercising jurisdiction only over the

flammability and compressed gas hazards and that it (OSHA) has jurisdiction over the carcinogenic (cancer) hazard. The ATA position is that D.O.T. is exercising jurisdiction over the commodity and protects employees from hazards of flammability, compressed gas and carcinogens because of its rules, including those governing type and strength of containers. Until this difference is resolved by the agencies themselves or in a test case, the motor carrier handling vinyl chloride must determine for himself what course to follow.

D.O.T. does not regulate polyvinyl chloride and thus it appears that OSHA has jurisdiction to promulgate these rules.

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APPENDIX I

OSHA RULES COVER TRANSPORTATION OF VINYL CHLORIDE AND POLYVINYL CHLORIDE

To help assure the safety and health of employees, the Occupational Safety and Health Administration has established rules that govern the handling, including transportation, of vinyl chloride (VC) and polyvinyl chloride (PVC).

The rules were designed primarily for workers in plants and factories where VC and PVC are made and where employees may have exposure to high levels of VC gas or liquid. Thousands of workers had contact with the vinyl chloride gases during processing since the 1940's. It was found that a few workers having worked in processing for an average of 19 years developed a rare form of liver cancer.

Exposure of transportation workers is not comparable to that of manufacturing employees because of differences in the nature of their work. Transportation workers have low exposure because they don't handle VC and PVC in the same form as manufacturing employees and because they handle it infrequently and for short periods of time. Their exposure is also lower because of protection offered by packaging and because new production methods for PVC have reduced the presence of substances that might cause cancer after long-time and high level exposure. The danger to trucking company employees is believed to be very low and almost nil. Nonetheless, OSHA has made the rules applicable to truck operations just as they did for the companies that manufacture these materials.

VINYL CHLORIDE

Shipments of vinyl chloride are classed as flammable compressed gases and move primarily in tank trucks and tank cars. They hardly ever move by van type vehicles but when they do they are in cylinders.

Vinyl chloride will be listed on shipping papers as "Vinyl Chloride" and classed on shipping papers as "Flammable Compressed Gas", in accordance with D.O.T. regulations. Cylinders will bear a "Flammable Compressed Gas" label required by D.O.T., and a label required by OSHA which reads "Cancer-Suspect Agent."

Exposure hazards for VC are nil in transportation because the cylinders must meet requirements of D.O.T. to prevent escape of gases and to protect against the main hazard of flammability.

POLYVINYL CHLORIDE

Polyvinyl chloride represents approximately 40 percent of all plastic materials moving by truck. Estimates are that more than 2 billion pounds move annually by motor carrier. PVC may be in the form of powder, pellets or liquid, thereby moving in bags, boxes and drums when it moves in van type vehicles.

Shipping papers will read "Plastic Materials, NOI", but not all plastics are PVC, and not all PVC shipments are subject to the OSHA regulations. Those that are subject to the regulations will have a label on containers which reads "Polyvinyl chloride (or trade name) contains vinyl chloride. Vinyl chloride is a cancer-suspect agent".

Exposure hazards for PVC are usually very low. Employees should be aware that PVC itself is not hazardous and thus there is no danger from accidentally coming in contact with the material. The exposure hazard is due to the possibility that some of the vinyl chloride gas may be trapped in the material, and may be released into the atmosphere.

SUMMARY OF THE OSHA REQUIREMENTS

The basic rule is that an employee cannot be exposed to a ratio of more than one part of vinyl chloride concentration to one million parts of air over an eight hour period, or more than 5 parts per million (ppm) over any continuous 15 minute period. The exposure is on a time weighted basis and so, for example, an employee exposed to 4 parts per million for a one hour period is not in excess of the limit of one part per million for an eight hour day. The time weighted average (twa) for such an employee, for eight hours, would be .5 parts per million.

OSHA provides that employers can establish a minimum program of activity if employees are not exposed above an "action level" of .5 parts per million (twa) for an eight hour day. The minimum program requirements for a trucking company are:

1. Monitor exposure levels to determine if there is any exposure above the action level of .5 ppm
2. Provide training for employees engaged in the handling of vinyl chlorides and polyvinyl chlorides.
3. Maintain records.

MONITORING

Employers are required to monitor and measure exposure levels for shipments of vinyl chloride and

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polyvinyl chloride, and employees or their designated representatives are to be afforded a reasonable opportunity to observe the process of monitoring and measuring.

Monitoring will be for the various types of shipments handled by the employer, as the exposure level varies according to differences in manufacturing processes. If a shipper changes his processes and exposure levels are increased there must be additional monitoring.

The monitoring procedure consists of taking air samples at the level of an employee's mouth and nose — his breathing area. Personal monitoring units are clipped to a person's shirt for this purpose. Samples of air at floor levels are not used because vinyl chlorides are heavier than air and tend to settle at floor level — well below the employee's breathing area. Monitoring should be of locations where there may be exposure such as vehicle interiors and on freight platforms.

Truckloads, loaded by shipper and unloaded by consignee, need not be monitored because there is no exposure to trucking company employees. Monitoring of LTL should be for the larger shipments usually loaded and unloaded by carrier employees as exposure level varies according to size of shipment.

Exposure level, if any, also varies by time and temperature. Additionally, air flow is a factor in reducing levels as the vehicle moves down streets and highways and as the vehicle is backed to the loading platform. Monitoring after the vehicle is at the platform will determine levels, if any, to which employees will be exposed. As a result of monitoring employers may determine that shipments should not be handled until the vehicle has been allowed to ventilate for a period of time.

After air samples have been taken they will be processed through an analyzer to determine exposure levels. If the levels are at or below the "action level" of .5 parts per million for eight hours the carrier is allowed to conduct a minimum program. If the level is at or below one part per million (two) but above .5, the carrier must conduct an extensive program which includes medical surveillance of employees. If the level is above one part per million, or 5 parts per million in 15 minutes, the carrier must establish administrative and engineering controls to reduce exposure levels. If levels cannot be sufficiently reduced through administrative and engineering controls, the carrier must provide respirators to employees that are exposed to higher levels.

TRAINING

OSHA requires that each employee engaged in VC or PVC operations be provided training in a program relating hazards and precautions for safe use of vinyl chloride. Training is necessary for those who load and unload and for their supervisors.

The items of training required by OSHA are listed below and are followed by employee information designed to meet the training requirements.

1. OSHA REQUIRES: explain nature of the health hazard for chronic exposure to vinyl chloride including specifically the carcinogenic hazard.

Explanation for employees: Vinyl chloride in compressed gas cylinders is extremely flammable and is under pressure. It also presents a risk of cancer to employees who inhale the gas. Trucking industry employees do not handle vinyl chloride frequently and so they do not have the risk of chronic exposure. (The few workers in processing who suffered cancer had a daily exposure for an average of 19 years) In fact, there is no exposure to transportation workers unless a cylinder leaks.

Polyvinyl chloride shipments may release a very low amount of vinyl chloride gas. Again, trucking industry employees do not have the risk of chronic exposure, nor are they exposed to high levels of gas and so the nature of health hazard is almost non-existent.

2. OSHA REQUIRES: explain the specific nature of operations which could result in exposure to vinyl chloride in excess of permissible limit and necessary protective steps.

Explanation for employees: In routine operations it is not expected that there will be a possibility of exposure in excess of permissible limits. However, in case of a leak from cylinders the exposure may reach the permissible limit or slightly above in a confined area. Employees should leave an area if there is a leaking cylinder. The exposure levels of polyvinyl chloride are not likely to reach the permissible limit under routine conditions or if a container is leaking.

3. OSHA REQUIRES: explain the purpose for, proper use and limitations of protective devices.

Explanation for employees: Protective devices are designed to protect the employee from breathing air mixed with vinyl chloride above the permissible limit. In general, protective devices will not be provided to trucking employees because exposure levels do not exceed the permissible limit. If an employee is issued a protective device, or required to use such a device there will be explanation of proper use and limitations.

4. OSHA REQUIRES: explain the fire hazard and acute toxicity of vinyl chloride and necessary protective steps.

Explanation for employees: Vinyl chloride gas may act as an anesthetic when the exposure level is very high — at about 3,600 parts per million or higher. The vapor is harmful so employees should evacuate an area if they determine that a vinyl chloride cylinder is leaking. The gas is more dangerous because of its

flammability characteristics. It is extremely flammable and may be ignited by heat, sparks or open flame. If a cylinder is leaking employees should shut off leaking valves if it can be done quickly and with a minimum of exposure. Otherwise they should notify supervisors and evacuate the area.

5. OSHA REQUIRES: explain the purpose for and a description of the monitoring program.

Explanation for employees: The purpose of the monitoring program is to determine the level of employee exposure to vinyl chlorides so that a program to protect the employee safety and health can be instituted as needed. A description of the monitoring program is included in the monitoring section of this information bulletin.

6. OSHA REQUIRES: explain the purpose for and description of the medical surveillance program

Explanation for employees: The purpose of the medical surveillance program is to determine if there are any adverse effects developing in employees exposed to levels above the action level. The medical surveillance program will be described to employees if exposure levels for motor carriers employees is above .5 parts per million in which case a medical surveillance program will be instituted.

7. OSHA REQUIRES: explain emergency procedures.

Explanation for employees: It is not anticipated that there will be any opportunity for the type of massive release that will result in a need for emergency action. However, in the event of a leaking cylinder of vinyl

chloride the employee should evacuate the area to protect himself. If he feels that he can shut off a leaking valve or source of ignition without exposure to danger he should do so quickly.

8. OSHA REQUIRES: provide specific information to aid employees in recognition of conditions which may result in release of vinyl chloride.

Explanation to employees: The condition which will result in release of vinyl chloride is a leaking container. Employees should not handle containers which appear defective — they should notify their supervisor for instructions. Employees should use care in handling containers. Avoid use of equipment which is likely to damage containers, do not handle containers roughly or drop them, do not store cylinders near heat or open flame. In general, follow good freight handling practices.

9. OSHA REQUIRES: a review of this standard at the employee's first training and indoctrination program and annually thereafter.

Explanation for employees: Your employer will provide a review to comply with the OSHA requirement.

RECORDS

The employer is required to maintain records of monitoring, and if a medical surveillance program is necessary appropriate records must be maintained. Employees or their representatives must be granted access to examine and copy records of required monitoring and measuring.

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PEERLESS TRANSPORT CORP.

2700 SMALLMAN STREET :: PITTSBURGH PA. 15222

Phone (412) 391-8300

July 29, 1975

Union Carbide Corporation
River Road
Bound Brook, New Jersey 08805

RE: Polyvinal Chloride

ATTENTION: Mr. W. N. Sanservino

Dear Mr. Sanservino:

Thank you for your letter of July 3, 1975. We have reviewed our records for 1974-75, and find several shipments of the material in question.

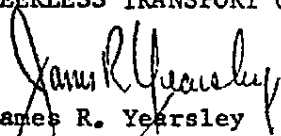
We would appreciate it if you would advise us of several items.....

- 1...Are your shipments below the 5 ppm. If they are will you have a procedure to advise us if the level is above 5 ppm.
- 2...Are you providing the special notification or identification on each piece of a shipment.

If the above is followed we feel that the exposure for our employees is almost non-existent except in the case of a leaking cylinder or rupture of a container.

Very truly yours

PEERLESS TRANSPORT CORP.


James R. Yearsley
Director of Safety

JRY:jf

cc: M. Pollock

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McLean Trucking Company

TELEPHONE
AREA 9:9
724-6341

EXECUTIVE OFFICE, 617 WAUGHTOWN STREET

WINSTON-SALEM, NORTH CAROLINA

27107

MAILING ADDRESS
P. O. BOX 213
ZIP CODE 27102

September 10, 1975

Union Carbide Corp.
270 Park Avenue
New York, N. Y. 10017

Gentlemen:

Motor carriers are subject to OSHA standard 1910.93q which sets forth requirements for protecting employees safety and health when shipments of vinyl chloride and polyvinyl chloride are handled. In order for us to comply -- we need to have the following information:

1. The various types of PVC being shipped, frequency and size of VC and PVC shipments, general exposure levels for PVC.
2. Will you provide special identification on shipping papers so that PVC shipments can be easily identified and not confused with other shipments of plastics?
3. Will you assist with monitoring by providing technical people to do the monitoring, by providing personal monitoring units and by analyzing samples?
4. Can you establish a control program which will assure that exposure levels are below the "action level" of .5PPM? Will you establish a procedure to notify us of any process changes that will necessitate additional monitoring of a particular type of commodity?
5. Do you ship PVC in bags, boxes or drums?
6. Do you ship trailer loads? Will your company and the consignees handle the loading and unloading of trailer loads so our employees will not be exposed?

We will appreciate an early reply and look forward to handling your products safely and without incident.

Sincerely,

McLEAN TRUCKING COMPANY

H. T. Walton

H. T. Walton

Director, Department of Safety

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