



**INTER-ORGANIZATION
MEMO**

File VC Training
TO: JEANNETTE
ATTENTION: Dan Stubler
FROM: NEWCOMERSTOWN
DATE: November 19, 1974
SUBJECT: TRAINING REQUIRED
BY OSHA

Per your request enclosed please find the guide for training as required by new OSHA standards.

C. J. Hefner/CA
Charles Hefner

CJH/ld

Enclosure

RECEIVED

DEC 16 1974

R. W. Laundrie

GENC 20719

THE GENERAL TIRE & RUBBER COMPANY
NEWCOMERSTOWN DIVISION
NEWCOMERSTOWN, OHIO

TRAINING REQUIRED BY 1910.93q(1)

1. The nature of the health hazard from chronic exposure to vinyl chloride:

There have been at least 13 angiosarcoma cases (angiosarcoma of the liver, a type of cancer that is invariably fatal) in the U.S. in recent years, all of them linked to vinyl chloride. While the total number of cases is small, it is now known that the disease works insidiously, slowly, during decades of exposure. It should be pointed out that these workers were exposed to very high concentrations of vinyl chloride.

The carcinogenicity of vinyl chloride for three animal species (rat, mouse, hamster) has been documented on the record by the studies of Maltoni and Bio-Test Laboratories. Moreover, Maltoni's investigations have demonstrated a dose-dependent relationship for induction of tumors (i.e., more tumors occur at higher exposure levels), including angiosarcoma of the liver, in rats. The investigations of Industrial Bio-Test Laboratories have demonstrated a similar relationship for both rats and mice. These investigators have induced angiosarcoma of the liver in rats and mice at exposure concentrations of 50 ppm, and in hamsters at higher concentrations of exposure. Additional tumors involving other organs, including the kidneys, lungs, and skin of exposed animals, were also observed in frequencies much in excess of control animals. The incidence of tumors in mice in the Industrial Bio-Test Laboratories investigations is particularly pertinent. Of 200 mice (100 males, 100 females) exposed to 50 ppm of vinyl chloride by inhalation for eleven months, 100 died. Sixty-four animals died without gross postmortem pathologic examination being performed. Of the 36 remaining animals for which a gross postmortem pathologic examination was performed, 13 (36%) were found with liver tumors (including angiosarcomas), 21 (58%) with lung tumors, 9 (25%) with skin tumors, and one with a kidney tumor.

According to the 1970 report by the Surgeon General's Ad-Hoc Committee on the Evaluation of Low Levels of Environmental Chemical Carcinogens, the finding of cancer in two or more animal species may be extrapolated to indicate a carcinogenic hazard to humans. Here, such a finding was made in three species that were exposed

to VC by inhalation--a route comparable to employee exposure. In addition, there were at least 13 confirmed cases of angiosarcoma of the liver among employees exposed to VC, a particularly significant number in view of the extreme rarity of this cancer in the U.S. adult male population.

The findings of angiosarcoma of the liver in both experimental animals and exposed employees is compelling evidence that exposure of humans to vinyl chloride induces this tumor. Industry spokesmen, at the hearing, conceded that VC is carcinogenic for humans. Accordingly, it is concluded that VC must be regarded as a human carcinogen, and the probable causal agent of angiosarcoma of the liver, and that exposure of employees to VC must be controlled.

Additional evidence of tumor induction in a variety of other organs, including lung, kidney, brain and skin, as well as non-malignant alterations, such as fibrosis and connective tissue deterioration, indicates additional oncogenic and toxicologic properties of vinyl chloride, which must be considered in establishing control regulations.

2. Operations which could result in exposure to vinyl chloride:

If any of our operations could result in excessive exposure to VCM, it would be the mixing operation (Banbury, Henschel and Mills). Tests to date by both the Company and OSHA indicate that VCM concentrations are below 1 ppm. We will continue to test for VCM and with improved ventilation we are confident that a level below .05 ppm TWA can be maintained.

3. Respiratory protective devices:

Respiratory protection is required if exposure to VCM exceeds 1 ppm averaged over any 8 hour period and a ceiling of 5 ppm averaged over any period not exceeding 15 minutes. However, until January 1, 1976, where exposures are not in excess of 25 ppm employees may decline to use the respirator, in which case the employer is not obligated to require its use. Even though we do not anticipate concentrations of VCM above the permissible level we have purchased two pressure demand breathing apparatus with auxiliary self-contained air supply. This type of breathing apparatus is the only one that presently meets the new standards principally because the air purifying respirators do not have indicators to signal the

expiration of the service life of the sorbent, therefore NIOSH has not yet approved their use.

Each employee that could conceivably be exposed to VCM above the permissible level will be instructed in the use and limitations of the pressure demand breathing apparatus.

4. Fire hazard and acute toxicity of vinyl chloride:

Vinyl chloride, as a liquid or compressed gas, is highly flammable and toxic. However, we do not utilize vinyl chloride as a liquid or compressed gas at the Newcomerstown plant.

5. The monitoring program:

A program of initial monitoring and measurement shall be undertaken to determine if there is any employee exposed in excess of the action level (.05 ppm). If it is determined that any employee exposure is above the action level but below the permissible level (1 ppm), the monitoring procedure shall be repeated not less than quarterly. If any employee exposure is above the permissible level (1 ppm TWA for 8 hours or 5 ppm for 15 minutes) the monitoring procedure shall be repeated at least monthly.

Monitoring may be discontinued when at least two consecutive monitoring determinations made not less than 5 working days apart show exposures at or below the action level (.05 ppm).

Whenever there has been a production, process or control change which could result in an increase in the release of vinyl chloride, or the employer has any other reason to suspect that any employee may be exposed in excess of the action level (.05 ppm), a determination of employee exposure will be made.

6. Medical surveillance program:

A program of medical surveillance shall be instituted for each employee exposed, without regard to the use of respirators, to vinyl chloride in excess of the action level. The program shall provide each such employee with an opportunity for examinations and tests in accordance with this paragraph. All medical examinations and procedures shall be performed by or under the supervision of a licensed physician, and shall be provided without cost to the employee.

- (A) At the time of initial assignment, or upon institution of medical surveillance;
 - (i) A general physical examination shall be performed with specific attention to detecting enlargement of liver, spleen or kidneys, or dysfunction in these organs, and for abnormalities in skin, connective tissues and the pulmonary system.
 - (ii) A medical history shall be taken, including the following topics:
 - (1) Alcohol intake
 - (2) Past history of hepatitis
 - (3) Work history and past exposure to potential hepatotoxic agents, including drugs and chemicals
 - (4) Past history of blood transfusions
 - (5) Past history of hospitalizations
 - (iii) A serum specimen shall be obtained and determinations made of:
 - (1) Total bilirubin
 - (2) Alkaline phosphatase
 - (3) Serum glutamic oxalacetic transaminase (SGOT)
 - (4) Serum glutamic pyruvic transaminase (SGPT)
 - (5) Gamma glutamyl transpeptidase
- (B) Examinations provided in accordance with this paragraph shall be performed at least:
 - (i) Every 6 months for each employee who has been employed in vinyl chloride or polyvinyl chloride manufacturing for 10 years or longer
 - (ii) Annually for all other employees
- (C) Each employee exposed to an emergency shall be afforded appropriate medical surveillance.
- (D) A statement of each employee's suitability for continued exposure to vinyl chloride including use of protective equipment and respirators, shall be obtained from the examining physician promptly after any examination. A copy of the physician's statement shall be provided each employee.
- (E) If any employee's health would be materially impaired by continued exposure, such employee shall be withdrawn from possible contact with vinyl chloride.
- (F) Laboratory analyses for all biological specimens included in medical examinations shall be performed in laboratories licensed under 42 CFR Part 74.
- (G) If the examining physician determines that alternative medical examinations to those required by paragraph 6A of this section will provide at least equal assurance of detecting medical conditions pertinent to the exposure to vinyl chloride, the employer may accept such alternative

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examinations as meeting the requirements of paragraph 6A of this section, if the employer obtains a statement from the examining physician setting forth the alternative examinations and the rationale for substitution. This statement shall be available upon request for examination and copying to authorized representatives of the Assistant Secretary and the Director.

7. Specific information to aid the employee in recognition of conditions which may result in the release of vinyl chloride:

Release of VCM above the permissible level could be experienced with a loss of ventilation at either of the Banbury stations, Henschel mixers or mills. Also, a major spill of bagged PVC stored within the plant could possibly result in a concentration of VCM above the permissible level for a short period of time.

8. Review of standard:

Utilize R. W. Laundrie memo of October 7, 1974 as a guide in reviewing the standard (see attached).

C. J. Hefner
Industrial Relations Manager

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GENC 20724