

GRACE

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TO: MCA Vinylidene Chloride
Workpractices Subcommittee

DATE: July 8, 1977

FROM: W. Ronald Hoopes

CC: J. T. Seawell/MCA
Zeb Bell/PPG

SUBJECT: Health and Safety Work
Practice Guidelines for
Vinylidene Chloride

W. V. Andresen/Am. Cyanamid

As of July 1, 1977 I have received two replies regarding modifications to the existing "Work Practice Guidelines". In that I have heard from no other participating members, I assume they approve of the Guidelines as they stand.

I have attached letters from B. F. Goodrich and Tennessee Eastman stating their suggested modifications. I have also attached a copy of the Guidelines which incorporates the Goodrich suggestion. I would like you to review the Tennessee Eastman letter and comment to me by August 1. Please remember that we have avoided making this document a "How To" manual.

W

W. R. Hoopes

WRH/nlm

Attachments

RECEIVED

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Environmental Affairs

SL 088406

HEALTH AND SAFETY WORK PRACTICE GUIDELINES
FOR VINYLIDENE CHLORIDE

A. Scope and Application

The Guidelines are designed mainly to protect the employee from exposure to airborne concentrations of vinylidene chloride (VDC) monomer above the permissible level.

The Guidelines apply to manufacture, storage, and handling of VDC monomer, and its reaction and polymerization. These Guidelines also apply to further processing of these polymers when VDC monomer may be present in the workplace environment. The Guidelines do not apply to the handling, use or further processing of fabricated articles, e.g., thermoforming of sheet, heat-sealing of films including polyvinylidene chloride (PVDC) coated films, etc.

B. Definitions

1. "Determination" means the evaluation of employee exposure to VDC vapor in air. This will include a review of the operation to identify the sources and amount of VDC vapor liberation to the workplace, type and efficiency of control measures, e.g., isolation, ventilation, and possibly sampling in the breathing zone of the operator with highest potential exposure.
2. "Emergency" means any sudden and unexpected occurrence which results in the release of VDC in quantities which will create an acute health hazard, explosive concentrations, fire hazard, etc.
3. "Fabricated articles" means products (such as films, coated products, fibers, sheeting and molded articles) made wholly or partly from PVDC.
4. "Hazardous operation" means any operation, procedure, or activity other than an emergency where a release of either VDC liquid or vapor is expected as a consequence of the operation or because of an accident in the operation, which would result in an employee exposure in excess of the permissible exposure limit.

C. Permissible Exposure Limit

1. No employee may be exposed to VDC at concentrations greater than 10 ppm averaged over an 8-hour period, and*
2. No employee may be exposed to VDC at concentrations greater than 20 ppm averaged for any 15-minute period.*

D. Determination

1. An initial determination shall be made and documented in each operation to ascertain if there is any employee exposed in excess of the permissible exposure limit.
2. A determination shall be repeated at least annually.
3. Whenever there has been a production, process or control change which may result in an increase in the workplace VDC monomer concentration or the employer has any other reason to suspect that any employee may be exposed in excess of the permissible exposure limit, a determination of employee exposure under paragraph (D) (1) of this guide shall be performed.
4. A method for the analysis of airborne VDC is attached.

E. Control Methods

Employee exposures to VDC shall be controlled to or below the permissible exposure limit provided in paragraph (C) of this guide by engineering, work practice, and personal protective controls as follows:

1. Practical engineering and work practice controls shall be used to reduce VDC exposure.
2. Wherever practical engineering and work practice controls are not sufficient to reduce exposures to or below the permissible exposure limit, they shall nonetheless be used to reduce exposures to the lowest practicable level, and

*Values as established by the American Conference of Governmental Industrial Hygienists, Cincinnati, OH--subject to change.

shall be supplemented by respiratory protection in accordance with paragraph (F) of this guide.

3. Written plans for such a program shall be developed and shall be updated as required.

F. Respiratory Protection

Where respiratory protection is required:

1. The employer shall provide a NIOSH/MESA-approved respirator or another tested respirator that has been shown to be effective against the anticipated exposure concentration of VDC vapor. The employer shall require that the employee properly use such a respirator.
2. A program meeting the minimum requirements of OSHA 29 CFR 1910.134 shall be established and maintained. This shall include respiratory selection for each job classification, fit testing, maintenance, inspection and employee training.
3. A continuous monitoring and alarm system is recommended where concentrations of VDC could reasonably exceed the allowable concentrations for the devices in use.

G. Hazardous Operations

1. Employees engaged in hazardous operations shall be provided and required to wear and use respiratory protection in accordance with paragraphs (C) and (F) of this guide.
2. Protective garments shall be selected and used based on the operation and its possible exposure conditions.

H. Emergency Situations

A written emergency procedure shall be developed for each facility manufacturing, storing or handling VDC monomer. The emergency procedure shall at least include:

1. Evacuation procedures.
2. Fire fighting procedures.
3. Protective clothing and equipment requirements.
4. Respiratory protection requirements.
5. Containment and Clean Up procedures.

I. Training

Each employee shall be provided training in a program relating to the hazards of VDC and precautions for its safe use.

The program shall include:

1. The nature of the health hazard from acute and chronic exposure to VDC and the necessary protective measures.
2. The specific nature of operations which could result in exposure to VDC in excess of the permissible exposure limit and necessary protective steps.
3. The purpose for, proper use, and limitations of respiratory protective devices.
4. The hazard from flammability, peroxide formation and self polymerization of VDC, and the necessary protective steps.
5. The purpose for, and a description of, the determination and monitoring program.
6. The purpose for, and a description of, the medical surveillance program.
7. Written emergency procedures.
8. Specific information to aid the employee in recognition of conditions which may result in the release of VDC.

J. Medical Surveillance

Based on animal data there is evidence that VDC by inhalation or ingestion has caused pathological changes in the liver and kidneys. MCA-administered studies currently underway have shown no increase in tumor formation in animals. We are not aware of any chronic disease in humans related to VDC exposure.

Based on this information general medical surveillance of employees exposed to VDC with particular attention to the liver and kidney should be provided.

At the time of initial consideration for placement in an area where exposure to VDC is possible the following should be obtained:

1. Medical history with particular attention to alcohol intake, liver disease, exposure to potential hepatotoxic agents including drugs, chemicals and blood transfusions.
2. General physical examination.
3. Laboratory investigation should include tests to evaluate liver and kidney function. As a minimum these should include serum levels of total bilirubin, alkaline phosphatase, serum glutamic oxalacetic transaminase (SGOT), serum glutamic pyruvic transaminase (SGPT), and gamma glutamyl transpeptidase and also complete urinalysis and blood urea nitrogen.

Medical reevaluation should be performed annually with particular attention paid to liver and kidney function.

If any of the liver or kidney function tests are found to be abnormal, a repeat test is recommended and if the repeat tests confirm the abnormality the employee should be removed from VDC exposure until further investigation is carried out. However the extent of further evaluation should be left to the discretion of the examining physician.

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K. Signs and Labels

1. Areas containing hazardous operations or where an emergency currently exists shall be posted with legible signs alerting personnel to the potential hazards involved.
2. Containers of VDC monomer and PVDC waste contaminated with VDC shall be legibly labeled to alert personnel to the potential hazards involved.

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