

**MEDICAL
DEPARTMENT
HAZARD
DATA SHEETS**



Industrial Hygiene Section

RSV 0019897

Monsanto**MEDICAL DEPARTMENT**

This data sheet was written and revised August, 1968.
Please destroy all previous copies.

VINYL CHLORIDE (VCM)**A. General****1. Characteristics**

Vinyl chloride is a colorless, flammable gas with an explosive range of 4% to 22% by volume in air.

2. Fire Precautions

No smoking or open lights should be allowed in vinyl chloride areas, and electrical equipment should be explosion-proof. Non-sparking tools should be used. Vinyl chloride fires can be extinguished with carbon dioxide or dry chemical extinguishers.

3. Protective Equipment

In atmospheres containing less than 2% concentration of VCM and no less than 16% oxygen, organic vapor canister type gas masks, approved by the U. S. Bureau of Mines, may be used. In unknown concentrations, air-supplied or contained respiratory protection must be worn.

B. Toxicity and Hazards

The maximum allowable concentration of vinyl chloride in air, for an 8-hour day, is 500 ppm (2).

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- Vinyl chloride can cause unconsciousness, and its use as an anesthetic has been suggested. It is not a dangerous poison and is less harmful than carbon tetrachloride. It causes the respiration to vary from an initial rapid, jerky type, to a slow, shallow type. Five tenths of one percent vinyl chloride, by volume in air, may be inhaled for several hours without disturbances of a serious nature. This material does not possess properties to warn off toxic concentrations. However, in high enough concentrations, it can produce dizziness and disorientation before any of its more harmful effects set in (3).

C. Effects

1. Acute

Inhalation of concentrated vapors produces irritation of the mucous membranes of the eyes and respiratory tract, with sniffing, sneezing, and coughing. This frequently is followed by a feeling of suffocation, with the respiration at first, irregular, and later rapid and shallow. A preliminary stage of excitation may occur, followed by loss of reflexes and sensory functions, with final muscle flabbiness and loss of consciousness. If the individual is removed from exposure, an immediate recovery from unconsciousness may take place.

In fatal cases, if death does not occur during or immediately following unconsciousness, the individual may live from 3 to 12 days, ultimately succumbing to the later developing injury to liver and kidneys. This later effect is not as likely in the case of VCM as it is in the case of carbon tetrachloride or trichloroethane. The symptoms associated with these delayed effects are usually referable to the gastrointestinal tract - loss of appetite, nausea, vomiting. Jaundice, indicating liver damage, is also a frequent finding (3).

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2. Chronic

No chronic effects have been noted in the case of VCM.

3. Psychogenic Effects

It is a frequent experience that individuals who have had gastrointestinal symptoms, such as nausea and vomiting, following intoxication by a chlorinated solvent may, even months after the initial incident, have a prompt recurrence of nausea on re-exposure insufficient in degree or duration for the nausea to be of other than psychogenic origin. Other individuals are adversely affected by the sweetish characteristic odor of chlorinated solvents and the resulting persistent loss of appetite and nausea may require their removal from exposure (3).

D. First Aid

1. Inhalation

A person showing signs of vapor poisoning should be removed promptly from the contaminated area. In case breathing has stopped, effective artificial respiration should be started immediately. If oxygen inhalation apparatus is available, oxygen should be administered only if one familiar with the operation of the apparatus is present; preferably on the advice of a physician. If the patient is conscious, hot tea or coffee may be given as a stimulant.

ADRENALIN SHOULD NEVER BE GIVEN TO A PERSON
SUFFERING FROM CHLORINATED HYDROCARBON POISONING.

Call a physician at once.

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2. Eye Contacts

If liquid VCM has entered the eyes, they should be promptly washed with copious amounts of water for at least 15 minutes. It is advisable to irrigate the eyes gently with water at room temperature in order to minimize additional pain or discomfort. VCM vapor can produce injury to the eyes if the exposure is intense or prolonged to higher concentrations. Eyes should be irrigated for vapor in the same manner as for liquid. Medical attention should be obtained in all these contacts with the eyes.

E. References

1. Y. Henderson and H. W. Haggard, Noxious Gases, 2nd Edition, Am. Chem. Soc. Monograph No. 35, Reinhold Pub. Corp., New York, 1943, page 201 - 202, 208 - 209.
2. American Conference of Governmental Industrial Hygienists, "Threshold Limit Values for 1967", 1967, page 14.
3. Frank A. Patty, Industrial Hygiene and Toxicology, Vol. II, Interscience Pub. Corp., New York, 1949, pp. 777 - 785.

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