Chemical Emergency Medical Guideline

Information and recommendations for first responders and patients

Epichlorohydrin

CAS No.: 106-89-8

GHS symbols:

GHS05
Corrosive

GHS06
Acute toxicity

GHS08
Health hazard

Signal word: Danger

Hazard statements:

H314	Causes severe skin burns and serious eye damage.
H317	May cause allergic skin reactions.
H350	May cause cancer.
H361	May damage fertility or the unborn child.
H301+H311+H331	Toxic if swallowed, in contact with skin or if inhaled.

Overview

- There is no danger from contact with patients who have only been exposed to epichlorohydrin vapors. However, a patient who is wet with liquid epichlorohydrin or whose clothing is wet with liquid epichlorohydrin may endanger other people through direct contact or through evaporating epichlorohydrin.
- Epichlorohydrin can cause irritation to the eyes, skin and respiratory tract. Signs of fluid accumulation in the lungs (shortness of breath, blue-red discoloration of the skin and mucous membranes, sputum, coughing) may occur more than 12 hours after exposure. Skin reactions may also be delayed and heal very slowly.
- Epichlorohydrin can also be absorbed by the body through inhalation or skin contact, causing headaches, nausea, vomiting, abdominal pain, and lung, liver and kidney damage.
- There is no known specific antidote. Treatment depends on the extent of exposure and the symptoms.

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1. Information about the substance

Epichlorohydrin: (C_3H_5ClO), CAS 106-89-8
Epichlorohydrin is a colorless liquid that is flammable at room temperature (boiling point 116°C) with an odor like chloroform. Nevertheless, epichlorohydrin can pose a hazard even at concentrations below the perception threshold. The vapors are heavier than air and can form an explosive mixture with air; exposure may therefore be greater in poorly ventilated, low-lying or enclosed spaces. Epichlorohydrin is slightly soluble in water. It is used in the manufacture of epoxy and phenoxy resins, glycerin, surface-active substances, medicines, insecticides, coatings, adhesives, solvents and other chemicals. It is also used as a solvent in the rubber and paper industry.

2. Exposition

2.1. Inhalation

Inhalation is a major route of exposure to epichlorohydrin. The odor of epichlorohydrin does not provide adequate warning of dangerous exposure.

2.2. Skin/eye contact

Epichlorohydrin can be easily absorbed through the skin and eyes as a vapor or liquid; direct contact with epichlorohydrin vapors or concentrated solutions can cause severe chemical burns.

2.3. Ingestion

Accidental ingestion of epichlorohydrin is unlikely.

3. Acute health effects

In most cases, exposure to epichlorohydrin occurs through inhalation of the vapor. Even exposure to small amounts can cause irritation of the eyes, nose and throat. More severe effects can lead to pronounced breathing difficulties even 24 hours later. Higher concentrations can cause fluid accumulation in the lungs with shortness of breath, blue-red discoloration of the lips, skin and mucous membranes (cyanosis), sputum and coughing with a delay of more than 12 hours after exposure.

Skin contact with epichlorohydrin as a vapor or liquid can cause irritation with reddening of the skin, blistering, itching and pain. Skin reactions may also occur with a delay and heal very slowly. High concentrations of vapors or splashes of concentrated solutions can cause tearing and reddening of the eyes as well as damage to the cornea.

Both inhalation and skin contact can lead to epichlorohydrin being absorbed into the body, causing severe headaches, nausea, vomiting, abdominal pain, and lung, liver and kidney damage.

A single, short-term exposure to low concentrations of epichlorohydrin, from which the affected person recovers quickly, does not normally cause delayed or lasting damage to health. After more severe exposure, symptoms may still occur after 24 hours. In isolated cases, permanent breathing difficulties, repeated respiratory tract infections, liver or kidney damage have been reported. After prolonged exposure to high concentrations, carcinogenic effects cannot be ruled out.

4. Measures

4.1. Self-protection of first aiders

If there is a suspicion that the area the helper must enter contains epichlorohydrin, a self-contained breathing apparatus and a chemical protection suit must be worn. Contaminated equipment should not be used.
There is no danger from contact with patients who have only been exposed to epichlorohydrin vapors. A patient who is wet with liquid epichlorohydrin or whose clothing is wet with liquid epichlorohydrin may endanger other people through direct contact or through evaporating epichlorohydrin.

4.2. Rescue

Patients should be removed from the danger zone immediately. If they are unable to walk unaided, they should be removed from the danger zone quickly using appropriate means, taking care to protect themselves. The "A, B, C procedure" has absolute priority in this case.

A) Clear the airways (check for blockages caused by the tongue or foreign objects)
B) Ventilation (check the patient's breathing; if necessary, begin ventilation with adequate self-protection, e.g. breathing mask)
C) Circulation (begin resuscitation for any person who does not respond to verbal commands and is not breathing normally)

4.3. Cleaning

Patients who have only been exposed to epichlorohydrin vapors and show no signs of skin or eye irritation do not require any special cleaning measures, unlike all others.
If possible, patients should assist in their own cleaning. If liquid epichlorohydrin has been exposed and clothing is contaminated, it must be removed and securely wrapped.
Rinse affected skin and hair with water for at least 15 minutes. Protect eyes while rinsing. Continue other important first aid measures in the meantime.
If the eyes have been exposed to epichlorohydrin or if there is eye irritation, rinse with water or neutral saline solution for 15 minutes. Remove any contact lenses, if possible, without additional risk to the eye. Continue other important first aid measures during this time.

4.4. Further measures

Anyone who may have been exposed to epichlorohydrin should seek medical attention immediately.

4.5. Instructions for further rules of conduct

Consult your family doctor or the emergency department of the nearest hospital if any abnormalities or symptoms occur within the next 24 hours, in particular:

- Coughing, wheezing or whistling breath
- Difficulty breathing or shortness of breath
- Increased pain, itching or abnormalities in the affected skin areas or eyes
- Blistering of the skin
- Stomach pain, vomiting, diarrhea

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BASF has taken every possible care to ensure that the information presented in this document is accurate and up to date but does not claim that this document comprehensively covers all possible situations in this regard. This document is intended as an additional source of information for doctors in hospitals and is designed to assist in the assessment of the condition and treatment of patients exposed to epichlorohydrin. However, it does not replace the professional assessment of the respective situation by physicians in hospitals and must be interpreted in accordance with legal regulations and provisions as well as specific information available about the respective patients.