

Chemical Emergency Medical Guideline

Information and recommendations for first responders and patients

Phosgene

CAS No: 75-44-5

GHS symbols:



GHS05
Corrosive



GHS06
Acute toxicity

Signal word: Danger

Hazard statements:

- H314 Causes severe skin burns and serious eye damage.
H330 Fatal if inhaled.

Overview

- Before the first aider approaches a patient, who has been or is being exposed to phosgene, they must ensure that there is no danger to themselves from phosgene.
- There is no danger from contact with patients who have only been exposed to phosgene gas.
- A patient who is wet with liquid phosgene or phosgene-containing solvents, or whose clothing is contaminated, may endanger other people through direct contact or through phosgene gas emissions.
- Phosgene causes severe irritation of the lungs. Due to its delayed effect, symptoms may still occur 24 hours after exposure. Signs of fluid accumulation in the lungs (shortness of breath, blue-red discoloration of the skin and mucous membranes, sputum, coughing) usually only appear several hours after exposure.
- There is no known specific antidote. Treatment depends on the extent of exposure and the symptoms.

Table of Contents

1. Information about the substance3

2. Exposition3

2.1. Inhalation3

2.2. Skin/eye contact3

2.3. Ingestion3

3. Acute health effects3

4. Measures3

4.1. Self-protection of first responders3

4.2. Rescue3

4.3. Cleaning4

4.4. Further procedure and treatment4

4.5. Instructions for further rules of conduct4

5. References5

1. Information about the substance

Phosgene (COCl₂), CAS 75-44-5

Synonyms: carbonyl chloride, carbonyl dichloride, carbonic acid dichloride

Phosgene is a colorless, vaporizing liquid at temperatures below 8°C and a colorless, non-flammable gas at temperatures above 8°C. Phosgene is often used as a solution in organic solvents. In low concentrations, its odor is like that of green grain or freshly mown hay. In high concentrations, the odour can be pungent and suffocating. Phosgene reacts with water to form hydrochloric acid and carbon dioxide. Phosgene is an important starting material in the production of many chemicals such as isocyanates, polyurethanes, polycarbonates, dyes, pesticides and medicines.

2. Exposition

2.1. Inhalation

Inhalation is the main and most dangerous route of exposure to phosgene. Even low concentrations that cannot be detected can pose a hazard. The irritant effect can be mild and delayed, meaning that phosgene can have a long-term effect without being noticed. As phosgene is heavier than air, there is a risk of suffocation in poorly ventilated, low-lying or enclosed spaces.

2.2. Skin/eye contact

Phosgene gas also affects wet or damp skin and eyes.

2.3. Ingestion

Ingestion of phosgene is unlikely as it is a gas at room temperature.

3. Acute health effects

Persistent respiratory problems and increased susceptibility to infectious lung diseases have been reported in individuals who have inhaled large amounts of phosgene. Symptoms immediately following exposure to phosgene due to irritation of the upper respiratory tract may be mild (burning throat, coughing, feeling of pressure). However, severe lung damage (in particular, pronounced, life-threatening pulmonary oedema) can still occur 24 hours after exposure. Exposure to phosgene can lead to respiratory arrest and cardiovascular arrest. If the skin is wet or damp, contact with gaseous phosgene can cause skin irritation or redness. Contact with pressurized liquid phosgene can result in frostbite. High gas concentrations can cause redness and tear of the eyes, while contact with liquid phosgene can result in clouding of the surface of the eye and later in permanent damage to the eye.

4. Measures

4.1. Self-protection of first responders

If there is a suspicion that the area the helper must enter contains phosgene, 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 phosgene gas. A patient who is wet with liquid phosgene or phosgene-containing solvents, or whose clothing is wet with such substances, may endanger other persons through direct contact or through phosgene gas escaping from the patient's body.

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.

- 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 phosgene gas 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 decontamination. If liquid phosgene or phosgene-containing solvents have been exposed and clothing has been contaminated, it must be removed and securely wrapped. Ensure that affected skin and hair areas have been rinsed with water for at least 15 minutes. Continue other important emergency measures during this time. Protect eyes while rinsing. Ensure that eyes are rinsed with water or neutral saline solution for 15 minutes in the event of phosgene exposure. Remove any contact lenses, if possible, without causing additional danger to the eyes. Continue other important first aid measures during this time.

4.4. Further procedure and treatment

Anyone who may have been exposed to phosgene 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 immediately if any of the following symptoms occur within 24 hours:

- Coughing, wheezing or whistling breath
- Difficulty breathing or shortness of breath
- Increased pain or abnormalities in the affected skin areas or eyes
- Pain or tightness in the chest

5. References

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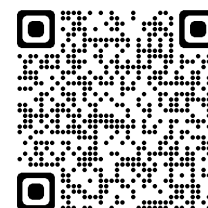
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