

Chemical Emergency Medical Guideline

Information and recommendations for first responders and patients

Formic acid

CAS No.: 64-18-6

GHS symbols:



GHS05
Corrosive



GHS06
Acute toxicity

Signal word: Danger

Hazard statements:

- | | |
|------|--|
| H302 | Harmful if swallowed. |
| H314 | Causes severe skin burns and serious eye damage. |
| H331 | Toxic if inhaled. |

Overview

- A patient who is covered in liquid formic acid or whose clothing is covered in it may endanger other people through direct contact or through formic acid vapors. There is no danger from contact with patients who have only been exposed to formic acid vapors.
- Formic acid is highly corrosive to all tissues. Exposure to the eyes can cause severe burns and subsequent permanent damage to the eye. Skin contact can cause severe burns, which may occur with a delay. Vapors irritate the skin, eyes, nose, throat and respiratory tract, causing irritation, coughing, chest pain and breathing difficulties. Laryngeal spasm and fluid accumulation in the lungs (shortness of breath, blue discoloration of the skin and mucous membranes, sputum, coughing) may occur.
- 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

Formic acid (HCOOH), CAS 64-18-6

Synonyms: hydrocarbonic acid, methanic acid

At room temperature, formic acid is a clear, fuming liquid with a pungent, penetrating odor. Formic acid is used in the manufacture and dyeing of paper and textiles, in leather processing, in electroplating, in glass processing and as an intermediate product in the chemical industry.

2. Exposition

2.1. Inhalation

Inhalation is a possible route of exposure. The odor of formic acid and its irritating effects on the upper respiratory tract serve as a clear warning of dangerous concentrations.

2.2. Skin/eye contact

Exposure to formic acid occurs mainly through direct contact with the skin and eyes. Skin and eye contact leads to severe burns, which may also occur with a delay.

2.3. Ingestion

Ingestion of formic acid causes severe burns to the mucous membranes in the throat and esophagus, but this rarely occurs in the workplace.

3. Acute health effects

In most cases, formic acid poses a hazard skin or eye contact with the liquid. Skin and eye contact causes severe chemical burns, which may occur with a delay, accompanied by watery eyes, nasal irritation, throat irritation and coughing. Extensive exposure can cause severe breathing difficulties and ultimately lead to chemically induced lung damage and death.

Formic acid usually causes irritation of the eyes and mucous membranes, throat irritation and coughing. This can quickly lead to breathing difficulties with chest pain, shortness of breath, laryngospasm and fluid accumulation in the lungs (shortness of breath, cyanosis, sputum, coughing). The symptoms may increase over several hours. Exposure to formic acid can lead to respiratory failure. The irritant or corrosive effect of liquid or vapors is the main concern; systemic absorption is of secondary importance.

Direct exposure to liquid formic acid causes severe burns to the skin and mucous membranes, which can lead to scarring. Low vapor concentrations or mists can cause pain, redness, inflammation and blistering.

Liquid formic acid causes severe burns to the eyes and subsequent permanent damage. Low vapor concentrations and mists cause burning, redness, tearing and eyelid closure.

Swallowing formic acid causes severe burns to the mucous membranes in the throat and esophagus.

A single, short-term exposure, from which the affected person recovers quickly, does not normally result in delayed or lasting damage to health. Some people who have inhaled large amounts of formic acid have developed permanent respiratory problems and were subsequently more susceptible to infectious diseases of the lungs.

4. Measures

4.1. Self-protection for first aiders

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

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 yourself. 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 formic acid 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 with their own cleaning. If liquid formic acid has been exposed and clothing is contaminated, it must be removed immediately and securely wrapped.

If the eyes have been exposed to formic acid or if there is eye irritation, rinse with water or neutral saline solution for 15 minutes. Remove any contact lenses, if possible, without causing additional danger to the eye. Other important first aid measures must be continued during this time.

Rinse affected skin and hair with water for at least 15 minutes. Protect eyes while rinsing. Continue other important first aid measures during this time.

Do not induce vomiting after swallowing. The affected person should seek medical attention immediately.

4.4. Further measures

Anyone who may have been exposed to formic acid 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 or abnormalities in the affected skin areas or eyes
- Pain or tightness in the chest

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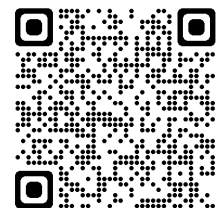
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Administrative Information

Document Type	Chemical Emergency Medical Guideline
Number of Version	DE.1.0.0
Initial Publication	01.01.2026
Next Revision	2029
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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 formic acid. 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.