
Information and recommendations for patients

- Patients whose clothing or skin is contaminated with liquid formic acid can cause secondary contamination of rescue and medical personnel by direct contact or through evaporation of formic acid. Patients exposed only to formic acid vapor do not pose a significant risk of secondary contamination.
 - Formic acid is rapidly corrosive to all tissues. Eye contact may cause severe burns and loss of vision. Contact with the skin may cause severe burns which may be delayed in onset. Formic acid vapor is irritating to the skin, eyes, nose, throat and respiratory tract, causing irritation, coughing, chest pain and dyspnea. Swelling of the throat and accumulation of fluid in the lungs (shortness of breath, cyanosis, expectoration, cough) may occur.
 - There is no antidote to be administered to counteract the effects of formic acid. Treatment consists of supportive measures.
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1. Substance information

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

Synonyms: formic acid, hydrogen carboxylic acid, methanoic acid. At room temperature formic acid is a colorless, fuming liquid with a pungent, penetrating odor. Formic acid is used in the dyeing and finishing of textiles and paper, treatment of leather, electroplating and brewing, silvering glass, as a feed additive, and as an intermediate in the chemical industry.

What immediate health effects can result from exposure to formic acid?

Most exposures to formic acid occur by direct contact of the skin and the eyes with liquid formic acid. Contact with the skin and the eyes causes severe burns which may be delayed in onset, with tearing and lacrimation of the eyes, nose irritation, sore throat and coughing. Extended exposure can cause severe breathing difficulty, which may lead to chemical pneumonia and death.

Are any future health effects likely to occur?

A single small exposure from which a person recovers quickly is not likely to cause delayed or long-term effects. Some people who have had serious exposures have developed permanent breathing difficulty and a tendency to develop lung infections easily.

Follow-up instructions

Keep this page and take it with you to your next appointment. Follow only the instructions checked below.

- () Call your doctor or the Emergency Department if you develop any unusual signs or symptoms within the next 24 hours, especially:
 - coughing or wheezing
 - difficulty breathing or shortness of breath
 - increased pain or a discharge from exposed skin or eyes
 - chest pain or tightness
- () No follow-up appointment is necessary unless you develop any of the symptoms listed above.
- () Call for an appointment with Dr. _____ in the practice of _____
When you call for your appointment, please say that you were treated in the Emergency Department at _____ Hospital by _____
and were advised to be seen again in _____ days.
- () Return to the Emergency Department/ _____ Clinic on _____
(date) at _____ am/pm for a follow-up examination.
- () Do not perform vigorous physical activities for 1 to 2 days.
- () You may resume everyday activities including driving and operating machinery.
- () Do not return to work for _____ days.
- () You may return to work on a limited basis. See instructions below.
- () Avoid exposure to cigarette smoke for 72 hours; smoke may worsen the condition of your lungs.
- () Avoid drinking alcoholic beverages; alcohol may worsen your clinical conditions.
- () Avoid taking the following medications: _____

- () You may continue taking the following medication(s) that your doctor(s) prescribed for you: _____

- () Other instructions: _____

Signature of patient _____ Date _____
Signature of physician _____ Date _____

References

Berufsgenossenschaft der chemischen Industrie, Hrsg. Reizende Stoffe/Ätzende Stoffe. Heidelberg: Jedermann-Verlag, 2006. (Merkblätter für gefährliche Arbeitsstoffe; M 004.)

Buttgereit F, Dimmeler S, Neugebauer E, Burmester GR. Wirkungsmechanismen der hochdosierten Glucocorticoidtherapie. Dtsch Med Wschr 1996; 121: 248-252.

Diller WF. Anmerkungen zum Unglück in Bhopal. Dtsch Med Wschr 1985; 110: 1749-1751.

Ellenhorn MJ, Schonwald S, Ordog G, Wasserberger J. Ellenhorn's Medical Toxicology: Diagnosis and Treatment of Human Poisoning. 2nd ed. Baltimore: Williams & Wilkins, 1997: 1086-1089.

National Library of Medicine's Toxnet system, Hazardous Substances Data Bank (HSDB), Formic acid, HSN#: 1646, 2005

National Institute for Occupational Safety and Health (NIOSH), Formic acid, RTECS#: LQ 4900000, 2009.

World Health Organization (WHO), Formic Acid. International Chemical Safety Cards, Geneva, ICSC# 0485, 1997.

American Conference of Governmental Industrial Hygienists (ACGIH), Documentation of the threshold limit values (TLV), 7.Ed, Formic Acid, 2001

National Institutes of Health (NIH), Bethesda, Haz-Map Occupational Exposure to Hazardous Agents, Formic Acid; 2012

RightAnswer.com. Inc. Knowledge Solutions. Micromedex Meditext Documents – Formic Acid, 2012.

Foncerrada G et al, Safety of Nebulized Epinephrine in Smoke Inhalation Injury, J Burn Care Res 2017;38:396–402

Walker PGF et al, Diagnosis and management of inhalation injury: an updated review, Critical Care (2015) 19:351

Olasveengen TM, Semeraro F, et. Al: European Resuscitation Council Guidelines 2021: Basic Life Support. Resuscitation 2021, 161: 98-114