BASF Chemical Emergency Medical Guidelines

Formaldehyde (HCHO) D 1

Information and recommendations for patients

- **Patients exposed only to formaldehyde gas or vapor do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with an aqueous solution of formaldehyde can secondarily contaminate rescue and medical personnel by direct contact or through evaporation of formaldehyde.**
- **Formaldehyde vapor is irritating when it comes in contact with eyes, skin, and upper respiratory tract causing eye irritation, coughing, chest pain and dyspnea. Swelling of the throat and signs of 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 formaldehyde. Treatment consists of supportive measures.**

Substance information

Formaldehyde (HCHO), CAS 50-00-0
Synonyms: formalin, formic aldehyde, methanal, methylene oxide.
Formaldehyde is, at room temperature, a nearly colorless gas with a sharp or pungent odor. Because the pure gas trends to polymerize, it is usually used an aqueous solution of 30–50 % formaldehyde, containing up to 15 % methanol as a stabilizer. Formaldehyde is widely used in the manufacture of plastics, resins, and urea-formaldehyde foam insulation. Formaldehyde containing resins are found in construction materials (plywood, particle board, and fiberboard) and are used in the processing of paper and the production of carpets, paints, and furniture.

What immediate health effects can result from exposure to formaldehyde?

Most exposures to formaldehyde occur from breathing the gas or vapor or splashes of the aqueous solution. Exposure to small amounts usually causes eye, nose, and throat irritation with tearing and lacrimation of the eyes, sore throat and coughing. Extended exposure can cause severe breathing difficulty, which may lead to chemical pneumonia and death. Ingestion of smaller amounts of the aqueous solution may cause dry and sore throat, chest pain, and vomiting. Greater amounts may lead to burns, cyanosis, 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 persons who have had serious exposures have developed permanent breathing difficulty and tend to develop lung infections easily. After ingestion, pain upon swallowing may occur. Allergic skin reactions may develop.

D 2

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. Formaldehyd / Paraformaldehyd, Heidelberg: Jedermann-Verlag, 1991. (Merkblätter für gefährliche Arbeitsstoffe; M 010.)

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

Deutsche Forschungsgemeinschaft, Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area, ed. Occupational Toxicants Critical Data Evaluation for MAK Values and Classification of Carcinogens. vol 3. Weinheim: VCH Verlag, 1992.

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: 1214-1217.

Goldfrank LR, Flomenbaum NE, Lewin NA, Weisman RS, Howland MA, Hoffman RS. Toxicologic Emergencies. 6th ed. Norwalk: Appleton & Lange, 1998: 1053-1054, 1362, 1365-1366, 1526, 1742.

Micromedex, Inc.: Tomes CPS™ Medical Management: Formaldehyde, 1996.

Pandey CK, Agarwal A, Baronia A, Singh N. Toxicity of ingested formalin and its management. Human & Experimental Toxicology 2000; 19: 360-366.

U.S. Department of Health & Human Services - Agency for Toxic Substances and Disease Registry, ed. Formaldehyde. Atlanta, 1994. (Managing Hazardous Materials Incidents; vol III.)

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