

MIOSHA Fact Sheet

Formaldehyde



What is Formaldehyde?

Formaldehyde is a colorless gas with a very strong odor and is highly flammable. Formaldehyde or solutions of formaldehyde (called formalin) may be used as a bactericide, a fungicide, and a human tissue preservative. It is used as an intermediate in chemical and resin manufacturing, in pressed wood products, and in textile/fiber finishing. Formaldehyde gas can also be produced or released during a variety of chemical or physical processes, such as heating formaldehyde resins or putting pressed woods under high pressure or high temperatures.

How can exposure to formaldehyde affect me?

Formaldehyde is a potential human carcinogen, as well as a strong sensitizing agent which can cause asthma or other allergic reactions. Acute exposures to high concentrations can cause a buildup of fluid in the lungs (pulmonary edema) which may lead to is a medical emergency.

How does exposure to formaldehyde occur?

Inhalation is the main route for of occupational exposure to formaldehyde. Formaldehyde solutions are severe skin irritants and sensitizers. If splashed in the eyes, solutions can cause mild to severe injuries up to and including vision loss. Ingestion can also be a significant route of exposure if proper hygiene practices are not followed.

Is employee exposure to formaldehyde regulated?

Yes, General Industry and Construction Safety and Health Standard, [Part 306. Formaldehyde](#), regulates occupational exposures to formaldehyde. This standard covers employee exposures to formaldehyde in all employment situations including general industry and construction worksites. This standard includes the following employer requirements:

- Perform **initial air monitoring** to determine employee exposure. The action level (AL) is 0.5 parts per million (ppm) and the permissible exposure limit (PEL) is 0.75 ppm. Both of these exposure limits are based on an employee's time-weighted average (TWA) exposure for an eight-hour workday. There is also a 15-minute short term exposure limit (STEL) exposure of 2 ppm.
- Perform **periodic air monitoring**, at least every 6 months, when initial monitoring shows employee exposure at or above the action level, and at least once a year if results indicate exposures are above the STEL.
- Establish a **regulated area** when the exposure is above the PEL or the STEL. Post signs in the regulated area, and limit access only to authorized personnel (people who have to work or be present in the area). No food, cosmetics, gum, smoking, or drinking is allowed in a regulated area.
- Institute all **feasible engineering or work practice controls** to reduce employee exposure below the PEL. This can include local exhaust ventilation, job rotation, or other work practices.

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General Industry Safety & Health Division
530 W. Allegan Street • P.O. Box 30644 • Lansing, Michigan 48909-8144
www.michigan.gov/miosha • (517) 284-7750
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- Provide full face **respiratory protection** in accordance with General Industry and Construction Safety and Health Standard [Part 451, Respiratory Protection](#) Standard and the Formaldehyde Standard, whenever the PELs are exceeded and feasible controls cannot reduce exposures below the PELs. Maintenance operations and emergencies commonly require the use of respirators.
- Provide **personal protective clothing or equipment** based on the form of formaldehyde to be encountered, the conditions of use, and the hazard to be prevented. Protective clothing impervious to formaldehyde and goggles/face shields must be used if there is potential for skin or eye contact with liquids that contain >1% formaldehyde as appropriate to the work task.
- Ensure that **contaminated clothing and equipment** is removed at the workplace, properly stored, cleaned and replaced. Contaminated clothing and equipment must be labeled. Employees cannot take such contaminated items from the workplace. Inform any person who launders or cleans such clothing or equipment that formaldehyde is present.
- Implement good **personal hygiene practices** and provide for change rooms and washing facilities. Eating and drinking areas must be provided according to the standard. These areas must be located away from the formaldehyde exposure area.
- **Emergency eyewash and/or showers** must be provided when there is:
 - Any possibility that an employee's eyes may be splashed with solutions containing 0.1% or more formaldehyde. In this case, an employer shall provide acceptable facilities for flushing eyes within the immediate work area for emergency use.
 - The possibility of employee skin contact with solutions containing 1% or more formaldehyde exists. In this case, an employer shall provide conveniently located quick drench showers and assure that affected employees use these facilities immediately.
- Provide **information and training** in accordance with Occupational Health Standard [Part 430, Hazard Communication](#)
- **Where employee exposure (as defined in the Standard) is at or greater than 0.1 ppm, the employer shall institute a formaldehyde training program** in accordance with all the requirements of 1910.1048(n) Employee Information and Training. The training program shall be provided upon initial assignment or new exposure to formaldehyde and at least annually.
- **Medical surveillance** by a licensed physician and without cost to employee is required for all employees who are exposed to formaldehyde at or above the AL, or when the STEL is exceeded,
- Medical surveillance is also required for employees who exhibit signs and symptoms of possible over exposure or who are exposed during an emergency.
- **Records** must be kept of all air monitoring of any objective data relied upon to meet the standard's requirements such as materials, operations, processes, etc. of employee medical surveillance or removal of employee medical complaints related to formaldehyde exposure, etc.

Additional Information

Please visit the MIOSHA website at www.michigan.gov/mioshapublications where additional information may be available; or contact the Consultation Education and Training Division at 517-284-7720.