



# MIOSHA Fact Sheet

## General Industry Safety & Health Division

# 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 is a medical emergency.

### How does exposure to formaldehyde occur?

Inhalation is the main route for 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, MIOSHA Occupational 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 parts of air (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 work day. There is also a 15 minute short term exposure limit (STEL) exposure based on a TWA 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 more than either the PEL or the STEL. Post signs per Rule 8 and limit access 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.

- Provide full face **respiratory protection** in accordance with [Part 451, Respiratory Protection Standard](#) and according to Table 1 of 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 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.
- An **emergency eyewash and/or showers** must be provided if there is a possibility of skin contact with solutions >1% formaldehyde.
- Provide **information and training** in accordance with [Part 430. Hazard Communication](#), plus the following:
  - Institute a formaldehyde training program at worksites where exposures are at or greater than 0.1 ppm and upon initial assignment or new exposures to formaldehyde.
  - Explain the medical surveillance and removal program;
  - All training program materials and the standard must be readily available to all affected employees.
- **Medical surveillance** by a licensed physician and without employee cost 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 to 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; any objective data relied upon to meet the standard's requirements such as materials, operations, processes, etc.; employee medical surveillance or removal, employee medical complaints related to formaldehyde exposure, etc.

## Additional Information

Please visit the MIOSHA website at [www.michigan.gov/mioshapublications](http://www.michigan.gov/mioshapublications) where additional information may be available; or contact the Consultation, Education & Training Division at (517) 322-1809.

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