Formaldehyde Exposure Control Plan

Policy

In order to ensure safety and compliance, all areas (laboratories, clinics) that use formaldehyde, formalin, formaldehyde solutions, formaldehyde gas or any material that releases formaldehyde is required to adhere to the WUSTL formaldehyde exposure control plan.

Purpose

To minimize formaldehyde exposures and comply with the Federal Occupational Safety and Health Administration (OSHA) Formaldehyde Standard 29 CFR 1910.1048 established action level (AL) 0.5 parts per million (ppm), permissible exposure limit (PEL) 0.75 ppm and/or short-term exposure limit (STEL) 2.0 ppm.

Responsibilities

*Environmental Health and Safety* is responsible for:

1. Implementing this program
2. Conducting exposure monitoring as required
3. Recommending engineering control methods
4. Updating the exposure control plan as necessary in accordance with OSHA.

*The Principal Investigator/Clinic Administrator or designated personnel* are responsible for:

1. Ensuring lab or clinic personnel working with formaldehyde gas, its solutions, and materials that release formaldehyde are trained in the hazards related to formaldehyde exposure; and
2. Ensuring personnel including students wear the proper personal protective equipment.

Note: Supervisor is responsible in non-research areas.
Definitions:

Laboratory scale: refers to work with substances in which the quantity used for reactions, transfers and other handling of substances are easily and safely handled.

OSHA Action Level (AL): an exposure to an airborne concentration of 0.50 parts per million (ppm) formaldehyde as an eight hour time weighted average (TWA).

OSHA Permissible Exposure Limit (PEL): an exposure to an airborne concentration of 0.75 parts per million (ppm) formaldehyde as an eight hour time weighted average (TWA).

OSHA Time Weighted Average (TWA): A TWA is the average exposure over a specified period of time, usually a nominal eight hours.

OSHA Short-Term Exposure Limit (STEL): A 15-minute TWA exposure that should not be exceeded at any time during a workday.

Exposure Monitoring:
Laboratories, clinics and other applicable areas (e.g. morgue), which use formaldehyde, must monitor employee and student exposure unless the employer can objectively document that the presence of airborne formaldehyde will not exceed the action level (AL) of 0.5 parts per million (ppm) or short-term exposure level (STEL) of 2.0 ppm under foreseeable conditions.

Exemption:

Historical formaldehyde sampling results in laboratories has consistently been well below the OSHA 0.5 “action level”. Therefore, the use of laboratory scale and formalin (≤10%) is exempt from the exposure monitoring requirement. The 10% formalin solution has a concentration of 4% formaldehyde and is primarily used in small quantities, which meet the OSHA definition of laboratory scale. Therefore, if (≤ 10%) formalin is utilized under acceptable engineering controls (i.e., fume hood), historical sampling and data supports the conclusion that this task is exempt from the exposure monitoring requirement.
Initial Monitoring:

Principal Investigators/Clinic Administrators or their designated personnel and supervisors are responsible for notifying Environmental Health and Safety when employee or student work activities may potentially exceed action levels. Environmental Health and Safety shall conduct initial exposure monitoring for employees who may be exposed at or above the “action level” of 0.5 parts per million (ppm) or at or above the STEL of 2.0 ppm.

Initial monitoring shall be repeated each time there is a change in production, equipment, personnel, or the control measures which may result in new or additional exposure to formaldehyde.

Periodic Monitoring:

Periodic monitoring shall be conducted for those employees and or students with initial monitoring results at or above the “action level” of 0.5 or the Short Term Exposure Limit (STEL) of 2.0 ppm. Monitoring shall be conducted at least every six months.

Termination of Monitoring:

Periodic monitoring can be discontinued if the results from two consecutive sampling periods show that the employee exposure is below the “0.5 ppm action level” and the “2.0 ppm short-term exposure limit”.

Employee Notification:

Environmental Health and Safety shall notify the employee of the results within 15 business days of receiving the results of exposure monitoring. Notification shall be in writing. If the employee’s exposure is over either permissible exposure limit (PEL), STEL or AL, Environmental Health and Safety shall work with the department to develop and implement a written plan to reduce employee exposure and give written notice to the employee. The written notice shall contain a description of the corrective action being taken to decrease the exposure.
Recordkeeping:

Employee exposure monitoring results shall be maintained by Environmental Health and Safety. The records shall include: the date of the measurement; the operation being monitored; the methods of sampling and analysis and evidence of their accuracy and precision; the number, durations, time, and results of samples taken; types of protective devices worn; and the names, job classifications, employee and/or student identification. Recordkeeping shall be in accordance with OSHA recordkeeping requirements.

Where Environmental Health and Safety has determined that no monitoring is required under this policy, a record of the objective data relied upon to support the determination that no employee is exposed to formaldehyde at or above the action level shall be maintained.

Regulated Areas:

Regulated areas shall be established where the concentration of airborne formaldehyde exceeds the OSHA 0.5 ppm “action level” or the 2.0 ppm “short-term exposure level”. Signs shall be posted at all entrances and access with the following information:

DANGER
FORMALDEHYDE
IRRITANT AND POTENTIAL CANCER HAZARD
AUTHORIZED PERSONNEL ONLY

Access to the regulated area shall be limited to authorized persons who have been trained to recognize the hazards of formaldehyde.

Methods of Compliance:

Engineering Controls (e.g. fume hood) and work practice controls shall be instituted to maintain employee exposure to formaldehyde below the OSHA “action level” of 0.5 ppm.
Respiratory Protection Usage:

Respiratory protection is not a substitute for engineering controls. WUSTL EH&S will provide guidance if engineering controls are not sufficient to reduce formaldehyde exposures below OSHA exposure limits. (See also the Environmental Health and Safety Respiratory Protection Program.)

Personal Protective Equipment:

It is the responsibility of the Department of the employee to provide personal protective equipment (e.g. gloves, eye/face protection, lab coats) to the employee at no cost. The Principal Investigator/Clinic Administrator, lab manager or supervisor is responsible for ensuring the employee wears personal protective equipment provided to them. The type of protective clothing and equipment used shall be selected based on the type of hazard and conditions.

Emergency Showers and Eyewashes:

Emergency showers and eye washes shall be readily accessible for employees if there is a possibility that the eyes or skin may be splashed with formaldehyde solutions.

Medical Surveillance:

A medical surveillance program shall be implemented for all employees exposed to formaldehyde at concentrations at or above the OSHA “action level” of 0.5 ppm. In addition, medical surveillance shall also be made available to any employee who develops signs and symptoms of overexposure to formaldehyde and for all employees exposed to formaldehyde in an emergency. Medical surveillance consists of medical and physical examinations performed by licensed physician.

Signs & Symptoms of formaldehyde exposure include the following:

- Eye, Nose, Throat irritation
- Headaches
- Skin rashes
Hazard Communication:

All employees who, under reasonably foreseeable conditions of use, could be exposed to concentrations of formaldehyde reaching or exceeding 0.1 ppm shall have the hazards associated with formaldehyde exposure communicated to them by their supervisor.

Labels:

Hazard warning labels shall be affixed to all formaldehyde containers with mixtures or solutions equal to or greater than 1%. The warning label should include the following information:

- Name of Chemical
- % Concentration
- Hazardous Class (e.g. flammable, Toxic)

Training:
Training shall be provided to all employees who have the potential to be exposed to formaldehyde at or above 0.1 ppm. The training shall include, at a minimum, a description of the medical surveillance program, an explanation of the Safety Data Sheet for formaldehyde, a description of the potential health effects associated with exposure to formaldehyde, instructions for handling spills and emergencies, an explanation in the purpose for, proper use of, and limitations of personal protective equipment. The Principal Investigator/Clinic Administrator (or delegate) is responsible for ensuring employees are trained at the time of initial assignment and whenever a new exposure to formaldehyde is introduced to the workplace. The training shall be included in the lab- or clinic-specific training outline in the EH&S Blue Book and must be reviewed at least annually. Completion of the training must be documented in the Blue Book. EH&S can provide training support as needed.

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