Tufts University

Methylene Chloride Exposure Plan
29 CFR 1910.1052

Tufts University
Department of Environmental Health and Safety

Purpose

The Occupational Safety and Health Administration's (OSHA) Methylene Chloride Standard, 29 CFR §1910.1052, became effective on April 10, 1997. The intent of the Methylene Chloride Standard is to protect employees against harmful exposures to methylene chloride through inhalation, skin contact, or eye contact. The rule making effort is based on studies that indicate that exposure to methylene chloride may have adverse effects on the heart, central nervous system and liver and employees exposed to methylene chloride may be at an increased risk of developing cancer.

Methylene chloride, also known as dichloromethane, is a colorless, volatile, nonflammable liquid with a penetrating, ether-like odor. The potential for methylene chloride exposure is greatest in laboratories using the chemical as a solvent and extracting agent.

Responsibilities

Department administrators and laboratory supervisors have the primary responsibility for ensuring that their personnel are trained appropriately and that departmental activities are compliant. Ultimately, each employee is responsible for being knowledgeable about the hazardous materials they work with and complying with applicable institutional, local, State, and Federal regulations.

Tufts University Environmental Health and Safety will assist personnel to protect employees as well achieve regulatory compliance with the OSHA requirements by:

Environmental Health and Safety Responsibilities

- Identifying locations where exposure to methylene chloride is possible.
- Evaluating the process(es) in which methylene chloride is used.
- Evaluating the airborne concentration of methylene chloride in areas at higher risk for over-exposure.
- Educating employees about the risks of over-exposure, and safe handling and use of methylene chloride.

Exposure Control

Regulatory Limits

OSHA sets Permissible Exposure Limits (PEL) for many chemicals. A PEL is the greatest concentration of a chemical in air to which exposure may occur over an 8-hour workday. The current PEL for methylene chloride is 25 parts methylene chloride per million parts air (ppm). Since this is an 8-hour average, short-term exposures above the PEL are permitted as long as the average exposure over an 8-hour period does not exceed the PEL. However, OSHA has set a Short Time Exposure Limit (STEL) for methylene chloride that cannot be exceeded.

The STEL is the greatest concentration of methylene chloride in air to which exposure may occur for a fifteen-minute period. The current STEL is 125 ppm.

Monitoring Exposures

Tufts Environmental Health & Safety (EH&S) will conduct representative initial and periodic monitoring for each job classification where a potential for methylene chloride exposure may exist. Initial monitoring will consist of identifying those employees who may be exposed at or above the action level or STEL. This monitoring process will be repeated each time there is a change in production, equipment, process, personnel, or control measures which may result in new or additional exposure to methylene chloride.

The frequency in which monitoring will occur is summarized in the following table.

Table 1

Results	Frequency
Below the action level (12.5 ppm) twice within 7 days	May discontinue monitoring.
Below the action level (12.5 ppm) and at or below the STEL (125 ppm)	No 8-hour time weighted average (TWA) or STEL monitoring required.
Above the STEL (125 ppm)	Monitor STEL exposures every 3 months.
At or above the action level (12.5 ppm), at or below the PEL (25 ppm), and at or below the STEL (125 ppm)	Monitor 8-hour TWA exposures every 6 months.
At or above the action level (12.5 ppm), at or below the PEL (25 ppm), and at or above the STEL	Monitor 8-hour TWA exposures every 6 months and monitor STEL exposures every 3 months.
Above the PEL (25 ppm) and at or below the STEL (125 ppm)	Monitor 8-hour TWA exposures every 3 months.
Above the PEL (25 ppm) and above the STEL (125 ppm)	Monitor 8-hour TWA exposures and STEL every 3 months.

Communication of Hazards to the Employee

Information and Training

The laboratory supervisor will conduct training for Tufts employees who are assigned to workplaces where there is a potential of exposure to methylene chloride, prior to or at the time of initial assignment, and whenever a new exposure to methylene chloride is introduced into the work area. The training will be repeated as necessary to ensure that each employee exposed above the action level or the STEL maintains the requisite understanding of the principles of safe use and handling of methylene chloride in the workplace.

The training program will be conducted in a manner that the employee is able to understand and will include:

- Requirements of OSHA's Methylene Chloride Standard and information available in its appendices, as well as how to access or obtain a copy of it in the workplace; and
- Information on the quantity, location, manner of use, release, and storage of methylene chloride and the specific operations in the workplace that could result in exposure to methylene chloride. Training should emphasize where exposures may be above the PEL or STEL, if an employee's exposure to airborne concentrations of methylene chloride exceeds or can reasonably be expected to exceed the action level.

Appendix A

Definitions

Action Level: Concentration of airborne methylene chloride of 12.5 parts per million (ppm) calculated as an eight (8)-hour time-weighted average (TWA).

Methylene chloride: An organic compound with chemical formula, CH(2)Cl(2). Its Chemical Abstracts Service Registry Number is 75-09-2. Its molecular weight is 84.9 g/mole.

Initial Monitoring: Identification of all employees who may be exposed at or above the action level or at or above the STEL and accurately determination of the methylene chloride exposure of each employee so identified. Initial monitoring shall be repeated each time there is a change in production, equipment, process, personnel, or control measures which may result in new or additional exposures to methylene chloride.

Methods of Compliance: Engineering and work practices implemented to reduce and maintain employee exposures to methylene chloride at or below the TWA and the STEL.

Physician or other licensed health care professional: An individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the health care services required by paragraph (j) of this section.

PPM: Parts per million.

Permissible Exposure Limit (PEL): The allowable exposure that an employee can be exposed to over an 8-hour Time-Weighted Average (TWA). For methylene chloride, the limit is 25 parts per million (ppm).

Short Term Exposure Limit (STEL): A limit of 125 ppm of methylene chloride, averaged over a 15-minute period.

Time-weighted average (TWA): The average exposure to methylene chloride an individual receives for a full eight-hour day