CHAPMAN UNIVERSITY | Enterprise Risk and Safety
Environmental Health and Safety

Methylene Chloride

Exposure Control Plan

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Section 1: Purpose

This Exposure Control Plan (ECP) is provided to protect potentially exposed person(s) from unreasonable risk due to occupational exposure to methylene chloride at Chapman University (University) Rinker Health Science Campus located at 9501 Jeronimo Road in the City of Irvine, California 92618 (Site). The ECP has been prepared in accordance with the Workplace Chemical Protection Program (WCPP) for compliance with the United States Environmental Protection Agency (EPA) Toxic Substances Control Act (TSCA) section 6, and Occupational Safety and Health Administration (OSHA), 40 Code of Federal Regulations (CFR) §751.109(e)(2)(i). This ECP is a key document to assist the University in implementing and ensuring compliance with the WCPP, thereby protecting our employees.

Section 2: Applicability

This ECP applies to all University employees, contractors and other potentially exposed persons who are exposed to methylene chloride.

Section 3: Definitions

- Conditions of Use: Circumstances, as determined by the EPA, under which a chemical substance is intended, known, or reasonably foreseen to be manufactured, processed, distributed in commerce, used, or disposed of. Thirteen (13) conditions of use require a WCPP, including laboratory use that applies to the University.
- Existing Chemical Exposure Limit (ECEL): An airborne concentration, calculated as an 8-hour time-weighted average. When implemented along with other WCPP measures, unreasonable risk under the conditions of use identified is no longer presented at the air concentration level of the ECEL. The ECEL for methylene chloride is 2 parts per million (ppm) calculated as an 8-hour time-weighted average (TWA).
- ECEL Action Level: An air concentration that indicates when certain compliance activities would need to be taken, and at which frequency, to prevent exceedances of the ECEL. The ECEL action level for methylene chloride is 1 ppm calculated as an 8-hour TWA.
- Environmental Protection Agency (EPA): The Environmental Protection Agency protects human health and safeguards the natural environment.
- EPA Short-Term Exposure Limit (STEL): an EPA regulatory limit on workplace exposure to an airborne concentration of a chemical substance, based on an exposure of 15 minutes. The EPA STEL for methylene chloride is 16 ppm.
- Methylene chloride (also called dichloromethane or DCM): A colorless liquid and a volatile chemical with a sweet odor. The solvent is used in a variety of consumer and commercial applications, including adhesives and sealants, automotive products, and paint and coating removers.
- Owner or operator: Any person who owns, leases, operates, controls, or supervises a workplace. The responsibility for the TSCA risk management requirement falls on the owner or operator. For instance, the University that owns, leases, operates, controls, or supervises the Rinker campus methylene chloride operation is responsible for TSCA risk management requirements for vendors/contractors such as cleaning services or laboratory fume hood maintenance, etc.
- Occupational Safety and Health Administration (OSHA): a federal agency within the U.S. Department of Labor responsible for ensuring safe and healthy working conditions for workers.

OSHA sets and enforces standards, provides training, outreach, education, and assistance to businesses to meet those standards.

- Potentially exposed person: Any person who may be exposed to a chemical substance or mixture in a workplace as a result of a condition of use of that chemical substance or mixture. The term includes workers, employees, independent contractors, employers, and all other persons in the work area where a chemical substance is present and who may be exposed to a chemical substance under the conditions of use for which a WCPP would apply.
- Regulated area: An area established by the regulated entity to demarcate areas where airborne concentrations of a specific chemical substance exceed, or there is a reasonable possibility they may exceed, the applicable ECEL or EPA STEL.
- Similar Exposure Group: a group of workers who are assumed to have a similar degree of exposure.
- Toxic Substances Control Act (TSCA): The Toxic Substances Control Act of 1976 provides EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides.
- Workplace Chemical Protection Program (WCPP): The WCPP is an occupational chemical protection program designed to address unreasonable risk from chemical exposures in the workplace. A WCPP program includes anyone in the workplace who has the potential for exposure to a chemical regulated under TSCA.

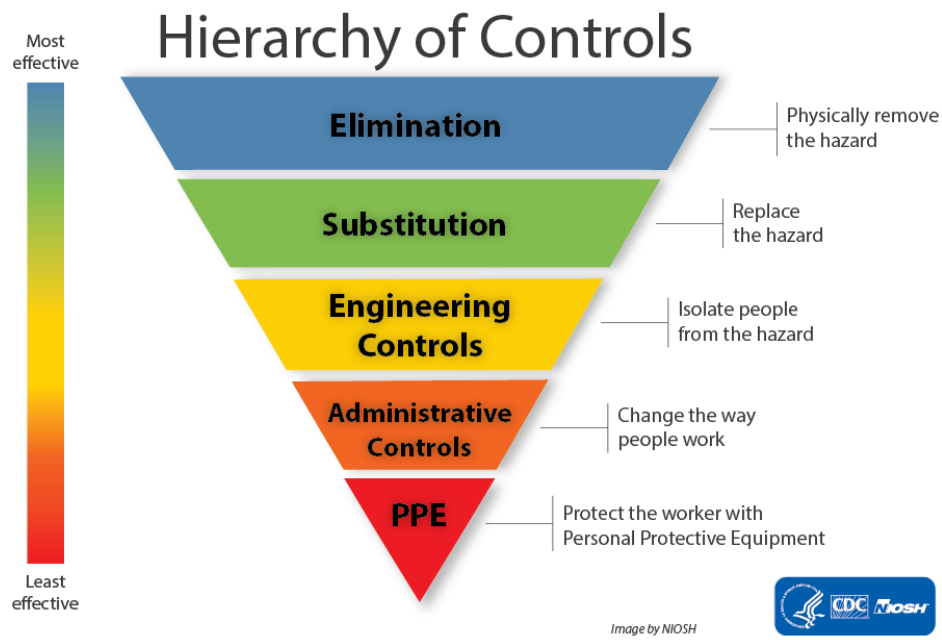
Section 4: Responsibilities

- Environmental Health and Safety (EH&S) is responsible for the implementation of the ECP.
- EH&S will maintain, review, and update the ECP at least every five (5) years, and whenever necessary to include new or modified tasks and procedures.
- University employees, contractor(s) and/pr potentially exposed employees must comply with the procedures and work practices outlined in this ECP.
- Each respective department or college will maintain and provide all necessary personal protective equipment (PPE), engineering controls, and other controls as required by the standard and will ensure that adequate supplies of the aforementioned equipment are available in the appropriate sizes.
- EH&S will be responsible for ensuring that all medical actions required are performed and that appropriate employee health and OSHA records are maintained.
- EH&S and PIs will be responsible for training, documentation of training, and making the written ECP available to employees, EPA and OSHA representatives.

Section 5: Hierarchy of Controls/Exposure Controls

Controlling exposures to hazards in the workplace is vital to protecting workers. The hierarchy of controls is a key component of the WCPP and a way of determining which actions will best control exposures. The hierarchy of controls has five (5) levels of actions to reduce or remove hazards. The preferred order of action based on general effectiveness is presented in Figure 1.

Figure 1: Hierarchy of Controls



Section 5.1: Identification of Possible Exposure Controls

Despite strong encouragement for the following Elimination and Substitution controls to be implemented, the Principal Investigator(s) specified in Section 2 retain ultimate decision-making authority to continue the use of methylene chloride based on academic needs.

- Elimination Controls are the most effective way to control a hazard by:
  - Removing methylene chloride as a laboratory chemical.
  - Changing the work process to stop using methylene chloride.

- Substitution Controls recommendations include:
  - Using a safer alternative to methylene chloride.
  - Before considering a substitute, compare the potential risks of the substitute to those of methylene chloride.
  - The review should consider how the substitute will combine with all other agents in the workplace.
  - EPA recommends careful review of the available information on potential substitutes.

Section 5.2: Application, Implementation and Maintenance of Exposure Controls

The following Engineering Controls, Administrative Controls and Personal Protective Equipment are to be applied, implemented and maintained accordingly.

Section 5.2.1: Engineering Controls

Engineering controls, including the laboratory hoods, are provided by the University as source control to protect University employees and/or contractor(s) from unreasonable risk due to exposure to methylene chloride.

- Methylene chloride transfers and general laboratory use must be performed within a laboratory hood.
- The users must use the laboratory hoods in accordance with the manufacturer's recommendations, including ensuring they turn on the laboratory hoods prior to use and maintain the hood sash at the recommended height when handling methylene chloride.
- The laboratory hoods are to be maintained by designated certified professionals/vendors on an annual basis or more frequently, as needed. EH&S is responsible for scheduling maintenance and repairs.

Section 5.2.2: Administrative Controls/Work Practices

Administrative controls are provided by the University, implemented and maintained as a joint effort by EHS and the PIs:

- Training
    - Training is conducted 1) prior to or at the time of initial assignment to a job involving potential exposure to methylene chloride, and 2) retrain annually or 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.
    - Training is provided through virtual training tools by EHS and in-person demonstration by PIs.
    - Training materials include, at a minimum:
        - Requirements and appendices under California OSHA (Cal/OSHA):
            - 8 California Code of Regulations (CCR) § 5202, Methylene Chloride Standard
            - 8 CCR §3380, PPE Standard
            - 8 CCR §5144, Respiratory Protection Standard
            - 8 CCR §5194, Hazard Communication Standard
            - 8 CCR §5191, Occupational Exposure to Hazardous Chemicals in Laboratories
        - Address at least the following hazards: Cancer, cardiac effects (including elevation of carboxyhemoglobin), central nervous system effects, liver effects, and skin and eye irritation.
        - Specify locations and quantity of methylene chloride being used and stored.
        - Safety data sheet(s) of methylene chloride being used and stored.
- Regulated Area
    - The following regulated area(s) at the Rinker and Main campus are marked with highly visible signage, and access is limited to authorized persons who are trained and wear the proper PPE.
    - Owners and operators must provide respiratory protection sufficient to reduce inhalation exposures to below the ECEL or EPA STEL to all potentially exposed persons in the regulated area either within 3 months after receipt of the results of any exposure monitoring OR within 15 months after the date of publication of the final rule, by August 1, 2025 (or February 8, 2027 per the EPA extension).

Work practices are established to reduce the duration, frequency, and intensity of methylene chloride exposure. The following practices are implemented and maintained as a joint effort by EHS, the PIs and students:

- Store methylene chloride in small and light container(s) that can fit under the laboratory hood, which allows for safe and easy chemical transfer by one person.
- Use a leak-tight pump when conducting chemical transfer from large container(s) to smaller container(s) to eliminate the need to transfer via free pouring.

Section 5.2.3: Personal Protective Equipment

- Personal protective equipment (PPE) should be used where feasible elimination, substitution, engineering, and administrative controls do not reduce exposures below the ECEL or EPA STEL. It should generally not be relied upon as the primary method to control hazards.
- PPE use should be accompanied by:
  - PPE program (including PPE selection and use training);
  - PPE inspection and replacement schedules; and
  - Effectiveness monitoring.
- PPE is provided to the employees at no cost to them and should be stored in a designated PPE storage location.
- A respirator usage log should be maintained by the PIs and/or lab managers to support exposure assessments and compliance tracking. An example is presented in Appendix A.
- The following appropriate PPE is used together with other exposure controls in place:
  - Dermal Protection
    - Chemically resistant gloves, including gloves made of polyethylene vinyl alcohol (PVA) and ethylene vinyl alcohol (EVA) that are resistant to methylene chloride.
    - Training should include glove selection (type, material), expected duration of glove effectiveness, actions to take when glove integrity is compromised, storage requirements, procedure for glove removal and disposal, and chemical hazards.
  - Respiratory Protection
    - If respiratory protection is needed, supplied-air respirators must be used for methylene chloride.
    - Respiratory protection measures are based on the measured concentration of methylene chloride from the initial monitoring, periodic monitoring, or other additional monitoring.
    - Table 2 below summarizes the requirements for respiratory protection.

Table 1: Respiratory Protection Conditions and Requirements

Concentration Condition	Minimum Required Respirator Protection: Respirators Must Be NIOSH Approved®
At or below the ECEL and EPA STEL	No respirator required
Above ECEL (2 ppm) and less than or equal to 50 ppm (25 times the ECEL)	Any Supplied-Air Respirator (SAR) or airline respirator in a continuous-flow mode equipped with a loose-fitting facepiece or helmet/hood (assigned protection factor [APF] 25)
Above 50 ppm and less than or equal to 100 ppm (50 times the ECEL)	One of the following: • Any SAR or airline respirator in a demand mode equipped with a full facepiece (APF 50); or • Any Self-Contained Breathing Apparatus (SCBA) in demand-mode equipped with a full facepiece or helmet/hood (APF 50).
Unknown concentration or at any value above 100 ppm and up to 2,000 ppm (1,000 times the ECEL)	One of the following: • Any SAR or Airline Respirator in a continuous-flow mode equipped with a full facepiece or certified helmet/hood (APF 1,000); or • Any SAR or Airline Respirator in pressure-demand or other positive-pressure mode equipped with a full facepiece (APF 1,000); or • Any SCBA in a pressure-demand or other positive-pressure mode equipped with a full facepiece or certified helmet/hood (APF 10,000).

Table Notes: ECEL = Existing Chemical Exposure Limit = 2 ppm; EPA STEL = EPA Short-Term Exposure Limit = 16 ppm; ppm = parts per million; TWA = time-weighed average

Section 6: Hazardous Waste Disposal

Hazardous waste, including PPE contaminated with methylene chloride, should be placed in closable containers, constructed to contain all contents and prevent leakage, appropriately labeled, and closed prior to removal to prevent spillage or protrusion of contents during handling. Request hazardous waste pickup by emailing ehs@chapman.edu.

Section 7: Response to Changes and/or Emergency Spills

The PIs shall inform EHS of any planned changes to the usage of methylene chloride when known. EHS shall proceed with determining whether additional exposure monitoring is to be conducted.

For spills less than 200 mL, trained personnel are allowed to clean up the spill using an emergency spill kit with the appropriate PPE. For spills that are large and/or not manageable, the affected personnel should notify their supervisor(s) and EHS immediately.

Section 8: Initial and Periodic Exposure Monitoring

Initial exposure monitoring must be conducted within 30 days after the introduction of methylene chloride into the workplace and subsequent periodic monitoring to characterize exposures over time.

Periodic exposure monitoring frequency is based on the initial exposure monitoring results outlined in Table 3.

Table 2: Periodic Monitoring Requirements Based on Initial Exposure Monitoring Results

Air Concentration Condition	Periodic Monitoring Requirement
The initial exposure monitoring concentration is below the ECEL action level and at or below the EPA STEL. 17 (concentration < 1 ppm, 8-hr TWA; AND concentration ≤ 16 ppm, 15-min TWA)	ECEL and EPA STEL periodic monitoring at least once every 5 years.
The initial exposure monitoring concentration is below the ECEL action level and above the EPA STEL. (concentration < 1 ppm, 8-hr TWA; AND concentration > 16 ppm, 15-min TWA)	ECEL periodic monitoring at least once every 5 years AND EPA STEL periodic monitoring required every 3 months.
The initial exposure monitoring concentration is at or above the ECEL action level and at or below the ECEL; and at or below the EPA STEL. (1 ppm, 8-hr TWA ≤ concentration ≤ 2 ppm, 8-hr TWA; AND concentration ≤ 16 ppm, 15-min TWA)	ECEL monitoring every 6 months.
The initial exposure monitoring concentration is at or above the ECEL action level and at or below the ECEL; and above the EPA STEL. (1 ppm, 8-hr TWA ≤ concentration ≤ 2 ppm, 8-hr TWA; AND concentration > 16 ppm, 15-min TWA)	ECEL periodic monitoring every 6 months AND EPA STEL periodic monitoring every 3 months.
The initial exposure monitoring concentration is above the ECEL and below, at, or above the EPA STEL. (concentration > 2 ppm, 8-hr TWA, regardless of monitored concentration relative to 16 ppm, 15-min TWA)	ECEL periodic monitoring every 3 months AND EPA STEL periodic monitoring every 3 months.

Table Notes: ECEL = Existing Chemical Exposure Limit = 2 ppm; ECEL Action Level = 1 ppm; EPA STEL = EPA Short-Term Exposure Limit = 16 ppm; ppm = parts per million; TWA = time-weighed average

Frequency of period monitoring may be reduced based on the changes in conditions outlined in Table 4.

Table 3: Periodic Monitoring Requirements Based on Changes in Conditions

Changes in Conditions	Changes to Periodic Monitoring Requirement
If 2 consecutive monitoring events have taken place at least 7 days apart that indicate that potential exposure has decreased from above the ECEL to at or below the ECEL, but at or above the ECEL action level.	Transition from ECEL periodic monitoring frequency from every 3 months to every 6 months.
If 2 consecutive monitoring events have taken place at least 7 days apart that indicate that potential exposure has decreased to below the ECEL action level and at or below the EPA STEL.	Transition from ECEL periodic monitoring frequency every 6 months to once every 5 years. The second consecutive monitoring event will delineate the new date from which the next 5-year periodic exposure monitoring must occur.
If the owner or operator engages in any of the conditions of use for which WCPP is finalized and is required to monitor either the ECEL or EPA STEL in a 3-month interval, but does not engage in any of those conditions of use for the entirety of the 3-month interval.	The owner or operator may forgo the upcoming periodic monitoring event. However, documentation of cessation of manufacture, processing, use, or disposal of methylene chloride must be maintained, and initial monitoring would be required when the owner or operator resumes or starts any of the conditions of use for which the WCPP is finalized.
If the owner or operator engages in any of the conditions of use for which WCPP is finalized and is required to monitor the ECEL in a 6-month interval, but does not engage in any of those conditions of use for the entirety of the 6-month interval.	The owner or operator may forgo the upcoming periodic monitoring event. However, documentation of cessation of manufacture, processing, use, or disposal of methylene chloride must be maintained, and initial monitoring would be required when the owner or operator resumes or starts any of the conditions of use for which the WCPP is finalized.

Table Notes: ECEL = Existing Chemical Exposure Limit = 2 ppm; ECEL Action Level = 1 ppm; EPA STEL = EPA Short-Term Exposure Limit = 16 ppm; ppm = parts per million; TWA = time-weighed average

Section 9: Notifications

The University shall inform potentially exposed persons of monitoring results within 15 working days after receipt of any exposure monitoring results. Results shall be shared individually in writing and include the following:

- The methylene chloride ECEL, action level, and EPA STEL and significance of each in plain language;
- Exposure monitoring results;
- Whether the airborne concentration of methylene chloride exceeds the ECEL action level, ECEL, or the EPA STEL;
- Description of actions taken to reduce exposure below the ECEL or EPA STEL, if exceeded;
- Explanation of any required respiratory protection provided;
- Quantity, location, and manner of methylene chloride use at the time of monitoring; and
- Identified releases of methylene chloride.

Section 10: Recordkeeping

Compliance records, including all monitoring events and training records, are retained for 5 years through an electronic method, and they are available upon request for inspection. Records may be kept in the most convenient form for the owner or operator (electronic or paper).

Section 11: Access to Documents

This ECP is accessible to potentially exposed persons through the EHS webpage at chapman.edu/ehs.

The exposure monitoring records and dermal and respiratory program implementation are accessible to potentially exposed persons by emailing ehs@chapman.edu.

Section 12: Proposed Extension Dates

On May 27, 2025, the EPA proposed the extension of compliance dates for non-federal laboratories by 18 months, to align with the dates allowed for federal laboratories and their contractors. The original and proposed extended compliance dates are summarized in Table 5.

Table 4: Original and Extended Compliance Dates

Compliance Requirements	Original Dates	Proposed Extended Dates
Initial Monitoring	May 5, 2025	November 9, 2026
Regulated Areas and Compliance with ECEL	August 1, 2025	February 8, 2027
Methods of Compliance and Exposure Control Plan Development and Implementation	October 30, 2025	May 10, 2027

Section 13: References

U.S. Environmental Protection Agency. (2024). A Guide to Complying with the 2024 Methylene Chloride Regulation under the Toxic Substances Control Act (TSCA). https://www.epa.gov/system/files/documents/2024-07/mecl-compliance-guide.pdf

EPA Proposes Temporary Relief to Ensure Lab Compliance with Methylene Chloride Regulations under TSCA | US EPA. (2025, May 20). US EPA. https://www.epa.gov/chemicals-under-tsca/epa-proposes-temporary-relief-ensure-lab-compliance-methylene-chloride

Appendix A

Respirator Usage Log

Respirator(s) Used: ____

Name	First Use Date	First Use Time	End Use Time	Any Issues with Respirator?