

 Research Safety	Policy Methylene Chloride Handling in Research Laboratories	Effective Date: 02/18/2025
		Revision Date: 2025-0212

TABLE OF CONTENTS

1. Purpose
2. Scope
3. Responsibilities
4. Definitions
5. Procedures
 - A. Methylene Chloride Handling
 - I. Authorization
 - II. Handling Procedures
 - III. Hygiene Facilities
 - IV. Regulated Areas
 - B. Personnel Exposure
 - C. Exposure Control Plan
 - D. Training
 - E. Medical Surveillance
 - F. Recordkeeping
6. Disciplinary Action for Non-compliance
7. Related Policies
8. Review and Revision

 Research Safety	Policy	Effective Date: 02/18/2025
	Methylene Chloride Handling in Research Laboratories	Revision Date: 2025-0212

1.0 PURPOSE

This policy is intended to identify the requirements for handling methylene chloride in accordance with the U.S. EPA Toxic Substances Control Act (TSCA) and the Occupational Safety and Health Administration regulatory requirements.

2.0 SCOPE

This policy covers employees, students and visitors in University of Kentucky's laboratories with continued storage and handling of methylene chloride.

3.0 RESPONSIBILITIES

EHS Department of Occupational Health and Safety is responsible for

- Performance and reporting of exposure monitoring
- Facility and laboratory ventilation verification
- Assisting users in evaluating control measures to reduce exposures
- Performance of the annual evaluation of chemical fume hood performance and other engineering controls
- Performance of implementing a required Respiratory Protection Plan Fit Testing
- Maintenance of records supporting the industrial hygiene program (e.g., exposure assessment records, respiratory protection records)

EHS Environmental Quality Management Department is responsible for

- Ensuring all applicable regulations regarding proper disposal of methylene chloride are followed

EHS Department of Research Safety/Chemical Safety Officer is responsible for:

- Annual evaluation of the performance of the chemical hygiene plan and Methylene Chloride Exposure Control Plan and revision if required
- Coordination of personal exposure monitoring to characterize the exposure of potentially exposed persons
- Assisting laboratories with development of Standard Operating Procedures with Methylene Chloride

Executive Leadership is responsible for:

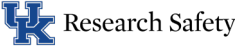
- Allocation of organizational resources to ensure compliance with this policy
- Ensuring compliance with this policy

Academic Department Chairs are responsible for:

- Allocation of departmental resources to ensure compliance with this policy
- Ensuring compliance with this policy by personnel under their oversight

Principal Investigator or the Laboratory Supervisor (or designated laboratory Chemical Hygiene Officer) is responsible for:

- Maintaining an accurate inventory of hazardous chemicals in the work areas under their oversight
- Ensuring individuals in areas under their oversight comply with institutional policies including the Chemical Hygiene Plan and Methylene Chloride Exposure Control Plan

	Policy Methylene Chloride Handling in Research Laboratories	Effective Date: 02/18/2025
		Revision Date: 2025-0212

- Preparation of Standard Operating Procedures for the handling of methylene chloride
- Providing personnel under their oversight complete safety training, including an annual review of the Methylene Chloride Exposure Control Plan

Employees, students and visitors are responsible for:

- Complying with institutional policies, plans and procedures
- Completion of all required safety training
- Reporting unsafe conditions to their supervisor, the lab designated chemical hygiene officer, or the UK Department of Occupational Health and Safety.

4.0 DEFINITIONS

AL - Action Level: The concentration of a substance triggering safety actions such as medical surveillance or exposure monitoring.

CHP - Chemical Hygiene Plan: A safety protocol outlining procedures to protect employees from chemical hazards in the workplace.

DCM - Dichloromethane: A volatile solvent widely used in laboratories, also known as methylene chloride.

ECEL - Existing Chemical Exposure Limit: The EPA 8-hour time-weighted average (TWA) limit of exposure below which potentially exposed persons are believed to be protected from unreasonable risk associated with the handling of this material.

ECP - Exposure Control Plan: A document outlining the procedures and controls to limit exposure to hazardous substances.

EPA - Environmental Protection Agency: The U.S. federal agency responsible for regulating chemicals and protecting environmental and public health.

IDLH - Immediately Dangerous to Life or Health: Exposure levels that pose immediate threats to life or health, requiring immediate action.

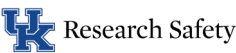
NIOSH - National Institute for Occupational Safety and Health: U.S. federal agency responsible for research and recommendations on workplace health and safety.

NIOSH 1005 - NIOSH analytical method for detecting methylene chloride in workplace air samples.

OSHA - Occupational Safety and Health Administration: U.S. agency that regulates workplace safety and health standards.

PPE - Personal Protective Equipment: Equipment worn to minimize exposure to hazards, such as gloves, goggles, and respirators.

Similar Exposure Group (SEG): A group of workers exposed to the same level of a hazardous substance due to similar work processes.

	Policy Methylene Chloride Handling in Research Laboratories	Effective Date: 02/18/2025
		Revision Date: 2025-0212

STEL - Short-Term Exposure Limit: The maximum exposure limit for a hazardous substance over a 15-minute period.

TSCA - Toxic Substances Control Act: U.S. law regulating the use and handling of chemicals to protect health and the environment.

TWA - Time-Weighted Average: The average exposure to a chemical over an 8-hour workday or 40-hour workweek.

WCPP - Workplace Chemical Protection Program: A safety program ensuring compliance with chemical handling regulations in the workplace.

5.0 PROCEDURES

A. Methylene Chloride Handling

I. Authorization

Individuals seeking to handle methylene chloride must be authorized by the laboratory's designated Chemical Hygiene Officer (CHO) to do so. This individual is so named in the laboratory's specific Chemical Hygiene Plan. Unless otherwise noted in the laboratory specific CHP, by default this responsibility is designated to the Principal Investigator of the lab.

For intended use of this chemical, notification to the Department of Research Safety is required. The laboratory's designated CHO shall submit the lab's documented Standard Operating Procedures (SOP) for all procedures using methylene chloride to the Department of Research Safety by emailing labsafety@uky.edu.

The University Chemical Safety Officer will require that the individual(s) seeking authorization have considered the availability of suitable alternatives and will facilitate the arrangements for required exposure monitoring. Significant changes to the volume of methylene chloride being handled, personnel handling the chemical, or a change in the exposure controls or equipment being utilized require notification to the Department of Research Safety by emailing labsafety@uky.edu.

II. Handling Procedures

Individuals handling methylene chloride must comply with the requirements of the chemical hygiene plan, standard operating procedure(s) (SOP) and exposure control plan. This includes the use of prescribed engineering controls, work practices and PPE.

III. Hygiene Facilities

Areas where methylene chloride is handled will be equipped with a handwashing sink stocked with soap and paper towels. Work areas where a quantity of methylene chloride is handled that may constitute a splash risk that may soak through a lab coat resulting in dermal contact will also be equipped with an emergency shower. Emergency eyewash

 Research Safety	Policy	Effective Date: 02/18/2025
	Methylene Chloride Handling in Research Laboratories	Revision Date: 2025-0212

and shower facilities will be maintained in accordance with the institutional procedure for emergency eyewash stations.

IV. Regulated Areas

Regulated areas will be demarcated to identify the presence of a regulated area. Eating, drinking, and the application of cosmetics is prohibited in regulated areas. Access to regulated areas will be restricted only to individuals that have been trained and authorized to enter. Individuals within a regulated area when there is the potential to be exposed to a methylene chloride concentration that exceeds the ECEL or EPA STEL will wear a supplied air respirator. Individuals authorized to enter regulated areas will participate in a medical surveillance program by completing the methylene chloride medical surveillance questionnaire at least annually and submitting it for review to the health care provider identified by the institution.

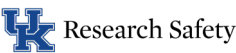
B. Personnel Exposure

Methylene chloride exposure will be maintained below the ECEL of 2 ppm and the EPA STEL of 16 ppm. If exposures cannot be maintained below this level through the use of engineering controls, such as local exhaust ventilation, individuals will be provided and required to wear respirators in accordance with the institutional Respiratory Protection Program.

The exposure of each person potentially exposed to methylene chloride will be characterized based on personal monitoring samples results collected from individuals believed to represent the worst-case exposure scenario for each similar exposure group. Initial monitoring of exposures will be completed before May 5, 2025. Additional exposure assessment will be performed when individuals engage in new methylene chloride handling activities or at the interval described in Table 1 below.

Initial Monitoring Concentration	Periodic Monitoring Requirement
<ECEL action level & EPA STEL	At least every 5 years
≥ ECEL action level & ≤ ECEL/EPA STEL	Every 6 months
>ECEL /EPA STEL	Every 3 months

Table 1 Periodic Monitoring Frequency

	Policy Methylene Chloride Handling in Research Laboratories	Effective Date: 02/18/2025
		Revision Date: 2025-0212

C. Exposure Control Plan

An exposure control plan that communicates the details of the program to control methylene chloride to a level below the ECEL and EPA STEL will be prepared. This exposure control plan will be reviewed and updated at least every five years. Potentially exposed persons will be notified of the availability of this plan within 30 days of plan completion and at least annually thereafter.

The exposure control plan will be available to potentially exposed persons and will address the following requirements:

- Exposure controls to be used as well as those that are not permissible for use.
- Rationale for the exposure controls that have been selected as well as those that have not been selected.
- Actions necessary to implement the exposure controls.
- Management of regulated areas.
- Procedures for responding to changes.

D. Training

Individuals handling methylene chloride or granted access to regulated areas will complete the EHS-produced online Training for Methylene Chloride Users. This training content will address many of the requirements detailed in the Methylene Chloride Exposure Control Plan.

E. Medical Surveillance

Medical surveillance will be available for employees who may be exposed above the action level on 30 or more days per year or above the ECEL or EPA STEL on 10 or more days per year. Medical surveillance will include completion of a Questionnaire for Methylene Chloride Exposure and arranged for by the UK Occupational Health and Safety Department if necessary. Medical surveillance will be provided at no cost to personnel, without loss of pay and at a reasonable time and place. Medical surveillance procedures will be performed by a physician or other licensed health care professional. Initial and periodic medical surveillance will also be provided in accordance with the requirements of 29 CFR 1910.1052. When a medical determination recommends removal because the employee's exposure to Methylene Chloride may contribute to or aggravate the employee's existing cardiac, hepatic, neurological (including stroke), or skin disease, the employer must provide medical removal protection benefits as detailed in 29 CFR 1910.1052.

F. Recordkeeping

Records related to this policy will be maintained as follows.

- Exposure records will be maintained for at least 30 years and will be maintained by EHS Occupational Health & Safety.
- Medical surveillance records will be maintained for the duration of employment plus 30 years and will be maintained by the licensed healthcare provider engaged by the institution.
- Training records will be maintained for a minimum of three years from the date of training and will be maintained by the work area supervisor

6.0 DISCIPLINARY ACTION FOR NON-COMPLIANCE

Non-compliance with any part of this policy may result in federal, state, civil or criminal penalties.

 Research Safety	Policy Methylene Chloride Handling in Research Laboratories	Effective Date: 02/18/2025
		Revision Date: 2025-0212

7.0 RELATED POLICIES

- U.S. Occupational Safety and Health Administration Act of 1970 Clause 5(a)(1)
- 29 CFR 1910.1052 Methylene Chloride; Regulation Under the Toxic Substances Control Act
- 29 CFR 1910.1450 Occupational Exposure to Chemicals in Laboratories
- 29 CFR Part 1910.132 Personal Protective Equipment Standard
- 29 CFR 1910.134 Respiratory Protection Standard
- 29 CFR 1910.1200 Hazard Communication Standard
- University of Kentucky Administrative Regulation 6.3 & 6.9
- University of Kentucky Chemical Hygiene Plan, online document, 2024
- Globally Harmonized System of Classification and Labelling of Chemicals (GHS Rev. 9, 2021)

8.0 REVIEW AND REVISION

This policy shall be reviewed for effectiveness and revised as necessary.

This policy was reviewed and approved by the University of Kentucky Chemical Safety Committee on February 18, 2025.