



**UNIVERSITY OF
SOUTH FLORIDA**

Exposure Control Plan for Use of Dichloromethane

Exposure Control Plan for:

Facility/Site Address:

Environmental Health and Safety
4202 E. Fowler Ave, OPM 100
Tampa, FL 33620
(813) 974-4036
www.usf.edu/eh&s

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Purpose

Dichloromethane (CAS # 75-09-2), also known as DCM or methylene chloride (MC), poses significant health hazards. It is classified as a Category 1B carcinogen, meaning it can cause cancer. Acute exposure can lead to drowsiness, dizziness, and respiratory irritation. Chronic exposure can result in neurotoxicity, affecting the central nervous system. Prolonged exposure can cause liver and kidney damage. It can cause serious skin and eye irritation.

DCM users at the University of South Florida (USF) must develop and enforce a space-specific Exposure Control Plan (ECP). This document must be filled out in its entirety by the PI, supervisor, or delegated representative and returned to EH&S (ehs-labsafety@usf.edu) for review. This document must be made available to all employees who are or have the potential to be exposed to DCM. Contact EH&S with any questions or for assistance with filling out the ECP.

Section 1: Scope

This ECP and the activities it specifies will be enforced by:

This ECP is valid for the following space(s).

Campus:

Department:

Building:

Room(s)/Lab(s):

Section 2: Exposure Limits, Monitoring, and The Hierarchy Of Controls

Exposure Limits

Employees must not be exposed to airborne concentrations of DCM that exceed the EPA limits. These limits are:

- A short-term exposure limit (STEL) of 16 ppm averaged over a 15-minute period
- An existing chemical exposure limit (ECEL) of 2 ppm averaged over an 8-hour workday

Initial Exposure Monitoring

Initial exposure monitoring **must** be conducted for all uses of DCM. Exposure monitoring quantifies employee exposure to DCM while they perform their job duties and is representative of the anticipated worst-case exposure scenario.

Ongoing Exposure Monitoring

Depending on the results of initial exposure monitoring, additional ongoing exposure monitoring may be required at regular intervals according to the table below.

Table 1: Exposure Monitoring Intervals

	Action Level 8-hour TWA of 1 ppm	ECEL 8-hour TWA of 2 ppm	15 min TWA STEL	Monitoring must occur:
If exposure monitoring results show that exposure is:	<	<	<=	ECEL & STEL monitoring every 5 years
	<	<	>	ECEL monitoring every 5 years; STEL monitoring every 3 months
	>=	<=	<=	ECEL monitoring every 6 months
	>=	<=	>	ECEL periodic monitoring every 6 months; STEL monitoring every 3 months
	>=	>	(Does not factor)	ECEL and STEL monitoring every 3 months

Employees must be notified of all monitoring results, in writing, either individually or posting the results at an accessible location, within 15 working days.

Hierarchy of Controls

Additionally, an assessment and prescription of appropriate work controls must also be performed for each job task/activity involving the use of DCM. This assessment **must** follow the principles of the hierarchy of controls, where the most effective controls are used first, followed by the next most effective controls, and so on. The reason(s) for not using the most effective controls must be documented in each case.

More information about the Hierarchy of Controls can be found [here](#). Contact EH&S if you need assistance with applying the Hierarchy of Controls.

Section 3: Exposure Monitoring and Control Assessment Results

Exposure Monitoring was last conducted on _____ by _____

Hazard Control Assessment was last conducted on _____ by _____

The job activities/tasks that were included during exposure monitoring are noted in [Appendix 1](#), along with the work controls that were prescribed for safe work.

NOTE: Any job activity or task that involves DCM use that is not listed, or that has substantially changed since the last date of assessment, or for which the prescribed control(s) can no longer be used, **must not** be performed until new exposure monitoring and assessment is completed.

Local Exhaust Ventilation

Local exhaust ventilation (LEV) will be a primary method of engineering control for most DCM applications. LEV may include equipment such as enclosed fume hoods or open snorkel hoods. If such equipment is used, appropriate maintenance and testing **must** be performed to ensure that it maintains functionality and adequately controls the airborne DCM hazard.

EH&S conducts annual face velocity verification on all enclosed hoods used for DCM, and Facilities/Maintenance and/or Contractor makes repairs or adjustments as necessary. Other maintenance and testing may be required per the manufacturer or industry best practice, and the responsibility for completing such tasks falls to the lab/space/user of DCM and must be outlined below.

Does this lab or space use LEV as a control for DCM exposure? Yes No

The PI, Manager, Supervisor (or designee) responsible for this ECP (noted at the top of this document) will ensure:

- That any concerns with local exhaust ventilation equipment are promptly reported and fixed by following these procedures:
- That any manufacturer-recommended/required maintenance or testing is performed at the proper intervals, and that any industry best practices for the equipment are followed. These tasks, if applicable, are listed and tracked in [Table 2](#) below.

Table 2 LEV Maintenance Log

Task	Frequency	Performed By	Last Completed Date

Section 4: Regulated Areas

Defined and demarcated regulated areas for DCM use must be established wherever employee exposure to DCM exceeds, or could reasonably be expected to exceed, the EPA ECEL or the STEL (2 ppm or 16 ppm, respectively).

A regulated area can be a designated fume hood, lab bench, area of a room, or other defined location where access is restricted to those individuals who have appropriate PPE and who are properly trained to work safely with the hazard.

Did this lab or space receive exposure monitoring results indicating that employee exposures do, or could, exceed the EPA ECEL and/or STEL Yes No

Are one or more regulated areas required? Yes No

This lab or space's regulated area(s) (if applicable) are listed in [Table 3](#) below.

Table 3 Regulated Areas

Regulated Area Description	Demarcation Description	List Authorized Entrants

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Section 5: Training

All employees who are or who have the potential to be exposed to DCM must be appropriately trained to recognize hazards and understand general safety procedures associated with DCM use. The PI, Manager, Supervisor (or designee) responsible for this ECP (noted at the top of this document) will:

- Identify all personnel who need to take DCM training,
- Ensure that training is completed prior to initial exposure (or possible exposure) to DCM (or within 30 days following initial approval of this ECP), and
- Maintain documentation (such as roster) of training completion for identified personnel, and provide copies to EH&S upon request

A general training is available at:

<https://www.usf.edu/administrative-services/environmental-health-safety/training/course-descriptions.aspx#dcm>

This information must be supplemented with lab or space-specific information, including where employees may be exposed above the ECEL or STEL, and the necessary controls and PPE required to perform each task safely. This information can be found in [Appendix 1](#).

Section 6: Personal Protective Equipment

Appropriate personal protective equipment (PPE) must be used by all employees who handle DCM. Assessment must be completed for each use of DCM to determine appropriate PPE. The results of the assessment for this lab/studio/space is noted above in Section 3.

Gloves

Appropriate gloves **must** be used whenever employees handle DCM. Nitrile is not a suitable glove type; employees must be provided with gloves offering suitable protection such as silver shield or polyvinyl alcohol (PVA) gloves.

Respiratory Protection

Any employee who is or has the potential to be exposed above the ECEL/STEL level **after all other control options have been applied** (e.g., local exhaust ventilation, administrative or work rule controls, etc.) **must** use a supplied air respirator or self-contained breathing apparatus (SCBA). Any employee who uses this type of respiratory protection must also

undergo USF Respiratory Protection Training and be properly medically cleared and fit-tested for their respirator. The PI/Manager/Supervisor responsible for this ECP will ensure that all designated employees complete these tasks and receive appropriate for the use of any required respiratory protection. Contact EH&S for more information.

Section 7: Updates and Availability Of This Exposure Control Plan

This ECP must be updated at least every 5 years or whenever changes to the work environment or processes could affect employee exposure to DCM. Changes should be tracked in the table below. This ECP must be made available to all affected employees upon request.

[illegible]

Section 8: Signature Sheet

By signing and dating here the Principal Investigator/ or a designee certifies that this Exposure Control Plan for Dichloromethane is accurate and will be enforced in compliance with the USF Dichloromethane Workplace Chemical Protection Program (WCPP).

PI Signature

Printed Name

Date

I have read and understand the above Exposure Control Plan. I have received prior approval from my Supervisor to perform this procedure and have completed the required training.

[illegible]

Appendix 1 Hazard Control Assessment for Tasks Involving DCM

Note: Copy table as needed to record results for additional tasks involving DCM.

HAZARD CONTROL ASSESSMENT FOR TASKS INVOLVING DCM	
Job activity/task name :	
Description of job activity/task:	
The Action Level for this task was exceeded:	Yes No
The ECEL for this task was exceeded:	Yes No
The STEL for this task was exceeded:	Yes No
Ongoing monitoring for this task (as indicated by table in Section 2) is required:	Yes No If yes, frequency is: Every 5 years Every 6 months Every 3 months
Can this task be eliminated? If yes, no further information is needed. If not, explain why.	
Can a different, less hazardous chemical be used instead of DCM? If yes, provide chemical name. If not, explain why.	

Can engineering controls be used to control the hazard? (fume hoods, local exhaust ventilation, glove boxes) If yes, list. If not, explain why.

Can administrative controls be used to control the hazard? (training, posting signage and demarcation of hazardous areas, ensuring adequate rest breaks, or limiting access to areas with DCM). If yes, list. If not, explain why.

Can PPE be used to control the hazard?
If yes, list. If not, explain why.