

**Dichloromethane Elution**  
**Standard Operating Procedures**  
 Department of \_\_\_\_\_

**1. Scope**

This Standard Operating Procedure (SOP) applies to the use of dichloromethane for volatile organic compound elution in the Department of \_\_\_\_\_.

**2. Hazards**

Dichloromethane is a regulated carcinogen in California. Employees with chronic exposures to dichloromethane have an increased risk of developing cancer, adverse effects on the heart, central nervous system and liver, and skin or eye irritation. High exposures may cause immediate feelings of dizziness, nausea, or vertigo. Exposure may occur through inhalation, by absorption through the skin, or through contact with the skin or eyes.

**3. Protocol/Procedure *(Must be customized to your needs)***

1. Ensure appropriate [Personal Protective Equipment \(PPE\)](#) is available for use.
2. Put on the appropriate PPE.
3. Remove the 4 liter (L) dichloromethane bottle from the cabinet under the chemical fume hood.
4. Transfer 500 mL from a 4 L bottle in a chemical fume hood to make a working supply. Replace the dichloromethane bottle under the fume hood.
5. Pipet 200 µL of dichloromethane from the working supply into autosampler vials in a chemical fume hood. Collect pipet tips as [hazardous waste](#).
6. Use crimp seals with septa cap to close each vial.
7. Label vial rack or freezer box with “vials contain dichloromethane.” Abbreviations or color coding can be used if agreed upon by the laboratory and posted.
8. Labeled vials might be stored up to two weeks in a -20°C freezer until a sufficient number has been accumulated for analysis by gas chromatograph.
9. Decontaminate work space or chemical fume hood with 70-75% ethanol.
10. Dispose of gloves. Wash hands and arms with soap and water once finished.
11. Remove PPE with clean gloves as needed.

**4. Engineering Controls**

- ✓ All operations involving dichloromethane and dilutions should be carried out in a certified chemical fume hood to keep airborne level below recommended exposure limits.
  - Chemical fume hoods must have a face velocity of 100 cubic feet per minute averaged over the face of the hood and must be certified annually.
- ✓ Laboratory rooms must be at negative pressure with respect to the corridors and external environment. The laboratory/room door must be kept closed at all times.

**5. Personal Protective Equipment (PPE)**

The level of skin and eye protection should be selected based on the potential for splashing and other forms of exposure. Small use quantities would be defined as use of less than 1 L of dichloromethane and use in a chemical fume hood. Large use quantities include use over 1 L dichloromethane and may or may not occur in a chemical fume hood. The chart below can be used as a checklist when reviewing this SOP.

Type of PPE	Small Quantities (<1 L) & use in a laboratory fume hood	Large Quantities (>1 L) or any use outside of a laboratory fume hood
Eye/Face Protection <sup>1</sup>	<input type="checkbox"/> Safety glasses with side shields	<input type="checkbox"/> Chemical splash goggles and face shield
Foot Protection	<input type="checkbox"/> Closed toe shoes	<input type="checkbox"/> Closed toe shoes
Body Protection <sup>2</sup>	<input type="checkbox"/> Laboratory coat	<input type="checkbox"/> Laboratory coat impervious to chemicals or <input type="checkbox"/> Laboratory coat with chemical resistant apron and non-porous sleeves
Hand Protection	<input type="checkbox"/> Nitrile chemical resistant gloves	<input type="checkbox"/> Nitrile chemical resistant gloves & additional hand protection as needed. <sup>3</sup>

<sup>1</sup> Eye protection must be ANSI compliant

<sup>2</sup> Laboratory coats must be appropriately sized for the individual and be buttoned to their full length. Laboratory coat sleeves must be of a sufficient length to prevent skin exposure while wearing gloves.

<sup>3</sup> Additional hand protection depends on the potential contact or submersion time, consult vendor compatibility guidelines: <http://www.showabestglove.com/site/default.aspx> or [http://www.ansellpro.com/download/Ansell\\_8thEditionChemicalResistanceGuide.pdf](http://www.ansellpro.com/download/Ansell_8thEditionChemicalResistanceGuide.pdf)

If procedures or processes present additional risks, additional PPE may be required. It is the responsibility of the PI to ensure that any additional PPE requirements are identified and communicated to research staff. Contact EH&S for consultation.

## 6. Hazardous Waste Disposal Procedures

No waste streams containing dichloromethane shall be disposed of in sinks or regular trashcans. Contaminated pipet tips, eppendorf tubes, vials, and gloves should be discarded as hazardous waste according to UCR's Environmental Health & Safety: Waste Management guidelines ([www.ehs.ucr.edu/waste](http://www.ehs.ucr.edu/waste)).

Waste containers containing dichloromethane must be labeled with a properly completed UCR hazardous waste tag.

## 7. Special Handling and Storage Requirements

- ✓ Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition.
- ✓ Store in secondary containment to isolate from other chemical compounds. The exterior of the storage location and chemical fume hood should be labeled. Labels for all materials, mixtures or solutions composed of greater than 0.1 % dichloromethane are required. An example is: **Danger Contains Methylene Chloride Potential Cancer Hazard**. Contact EH&S for assistance

- ✓ Dichloromethane can be stored in the same cabinet as other regulated carcinogens
- ✓ Segregate the chemicals from incompatible materials, as described in the UCR Safety Manual and Chemical Hygiene Plan.

## 8. First Aid Procedures

- Inhalation:** Remove rapidly to clean air. Administer rescue breathing and call emergency services if necessary. *Notify supervisor immediately and EH&S at x25528.*
- Skin Exposure:** Minor skin contact requires washing with soap and water. Soaking or flushing contaminated areas of the skin with water for periods up to 15 minutes is required if a large area comes into contact with the chemical, or if prolonged contact occurs.
- Contaminated clothing may hold the chemicals in contact with the skin without being immediately noticed. Remove affected clothing and rinse body thoroughly in emergency shower for at least 15 minutes. Seek medical attention if needed. *Notify supervisor immediately and EH&S at x25528.*
- Eye Exposure:** In the event of eye contact, immediately rinse eyeball and inner surface of eyelid with water for 15 minutes in an eyewash station by forcibly holding the eye open. Seek medical attention. *Notify supervisor immediately and EH&S at x25528.*
- Ingestion:** DO NOT induce vomiting, give milk or water if conscious, and get medical attention immediately.

## 9. Chemical Spill Procedures

Help contaminated or injured persons. Evacuate the spill area. Avoid breathing vapors. Eliminate sources of ignition if the chemical is flammable. If possible, confine the spill to a small area using a spill kit or absorbent material. Keep others from entering contaminated area (e.g., use caution tape, barriers, etc.).

- **Small (<1 L)** – If you have training, you may assist in the clean-up effort. Use appropriate personal protective equipment and clean-up material for chemical spilled. Double bag spill waste in clear plastic bags and label it with a UCR Hazards Waste Label; indicating the materials that were spilled and the materials used to clean it up. Place it in the accumulation area for the lab and request a waste pick-up using the online tag program.
- **Large (>1 L)** – Dial **911** and EH&S at x25528 for assistance.

## **10. Safety Data Sheet Location**

*(Laboratory Safety Manual in CS 421)*

On-line Safety Data Sheets (SDS), formerly known as Material Safety Data Sheets, can be accessed through [www.ehs.ucr.edu/services/msds.html](http://www.ehs.ucr.edu/services/msds.html) and at: [www.dir.ca.gov/Title8/5202a.html](http://www.dir.ca.gov/Title8/5202a.html).

Everyone must review the safety data sheet before they use this SOP.

**Any deviation from this SOP requires approval from PI,**

# Acknowledgement

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## Standard Operating Procedure

**Title:** Dichloromethane

By my signature I acknowledge the contents, requirements, and responsibilities outlined in this Standard Operating Procedure (SOP):

Name	Identification*	Signature	Date
Supervisor / Principal Investigator:			

**\*Identification:** Enter your Student ID, Employee ID, UCR NetID, UCR Email.