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| **A picture containing text, clipart  Description automatically generatedA picture containing text, clipart  Description automatically generatedDuke OESO Guidelines for Safe Use of**  Icon  Description automatically generatedIcon  Description automatically generated**DichloroMethane**  **DCM, Methylene chloride | CAS #: 75-09-2** | | | |
| **Hazards** | **Potential Hazards** | * Dichloromethane (DCM)/Methylene chloride exposure can cause **central nervous system, liver, and cardiovascular effects**. It is a suspected **carcinogen**. * **Exposure** through the **skin,** **inhalation** of vapors or aerosols, or by ingestion or injection. * The OSHA Permissible Exposure Limit **is 25 ppm in air** (8 hr average), **125 ppm (15 min)**. * DCM is a very volatile liquid that **penetrates readily through standard nitrile gloves and skin**. **A needle-stick containing DCM could quickly lead to necrosis** [see [incident report](https://pubs.acs.org/doi/full/10.1021/acscentsci.0c00100)]. * Consult SDS and [Lab Chemical Safety Summary for DCM](https://pubchem.ncbi.nlm.nih.gov/compound/Dichloromethane#datasheet=LCSS) for additional info on hazards. | |
| **Hazard Controls** | **Selection & Purchase** | * Purchase the **smallest containers** at the **lowest concentration** practical. * Purchase in **shatter-resistant containers** if available (such as PVC-coated glass). * Purchase **gloves** not quickly penetrated by the liquid for cleaning up small spills (see PPE). | |
| **Storage & Transport** | * **Transport DCM in secondary containment**, preferably in a polyethylene **bottle carrier**. * Keep container in cool, well-ventilated area. Store **below eye level** but **not on the floor**. * **Avoid accidental heating**. Keep container tightly closed and sealed until ready for use. * **03-439, 03-439AStore** away from moisture, strong oxidizers, strong caustics, plastics, rubber,  nitric acid, and chemically active metals, such as aluminum,  magnesium powder, sodium, potassium, and lithium.  **Reaction with azides can form explosive compounds** [see [report](https://pubchem.ncbi.nlm.nih.gov/compound/Dichloromethane#section=CSL-Reaction-Information)]**.** | |
| **Engineering Controls** | * **Work with open containers of DCM only in a chemical fume hood**. * Dilute solutions, small quantities (**≤ 50 mL**), and closed containers of DCM may be handled on the bench top. Brief (< 1 min) transfers between closed containers may occur on the bench up to 300 mL. Keep containers closed when possible. * Work on a chemically-resistant lab benchtop **(no bench pads)**. * An **eyewash** and **drench hose** are required. (Safety shower for ≥ 4 L containers.) | Chemical Fume Hood Flow Diagram |
| **Work Practice Controls** | * **Designate an area** for working with dichloromethane, and label it as such. * **Avoid using needles or sharps** when working with DCM when possible. * **Once work is complete, wipe down work area with ethanol, then with soap and water.** * Plan work to **avoid contact with gloves**. *Change gloves immediately if contaminated.* * **Change gloves at least every 2 hours** and **wash hands** at time of glove change. | |
| **Personal Protective Equipment (PPE)** | * lab coat2Wear **closed-toed shoes** and **clothing covering the legs.**   **x2**   * **Minimum PPE:** * Buttoned lab coat * Chemical safety glasses * **Two pairs of 4 mil NITRILE** gloves*\** * **Note that dichloromethane readily penetrates nitrile gloves in < 10 minutes***\****!** Nitrile gloves should only be used when working with small amounts (≤ 300 mL). Change gloves immediately if splashed! * **Risk of splash/working with ≥ 300 mL:** add splash goggles, face shield,  [North Silver Shield chemically resistant apron](https://www.northernsafety.com/Product/16752/Honeywell-North-Silver-Shield-36-x-45-Chemical-Resistant-Apron) & [sleeves](https://www.northernsafety.com/Product/16751/Honeywell-North-Silver-Shield-20-Chemical-Resistant-Sleeves-Pair), * **North Silver Shield® Gloves, Silver, 29" Long, Size 8For expected glove contact, or handling ≥ 300 mL: wear  1 pair of** [Silver Shield gloves](https://sps.honeywell.com/us/en/products/safety/hand-protection/gloves/silvershield-ssg29) (8 hr protection*\**) **underneath  1 pair of nitrile gloves**. *Do NOT use nitrile gloves on their own  when contact with DCM is expected due to quick breakthrough.*   **Use Silver Shield gloves for spills or if contact is expected.**   * **Wash hands** at time of glove change.   *\*Check the glove manufacturer’s glove guide or SDS for glove breakthrough time.* | |
| **Other** | **Emergencies** | * See [Emergency Response webpage](https://www.safety.duke.edu/emergency), Flip Chart, and/or lab-specific chemical hygiene plan. * **Injection or laceration with DCM-contaminated sharps requires immediate medical help.** (Also report to EOHW – see below.)Color change at the site can indicate necrosis. Do not assume that you can take care of the injury alone; the support of co-workers could be vital. * **For eye/skin exposure**, flush with water for at least 15 min, then seek medical attention. * If there is **respiratory irritation** with exposure, remove all persons from contaminated area and contact the OESO spill team by calling **911** from a campus phone  or **Duke Police at 919-684-2444** from any phone to request assistance. * North Silver Shield® Gloves, Silver, 29" Long, Size 8Contact Employee Occupational Health and Wellness (EOHW) at **919-684-8115** to report an exposure and obtain medical advice.  For medical advice without exposure, call **919-684-3136**.   **For spill  clean up**   * **For spill clean-up, use** [**North Silver Shield**](https://www.northernsafety.com/Product/120-16750/North-by-Honeywell-Silver-Shield-4H-Chemical-Resistant-Gloves) **gloves, with an  additional pair of nitrile gloves on the outside.**  Do NOT use nitrile/lab gloves on their own due to quick breakthrough. * **Avoid inhaling vapors during spill clean-up.** DCM evaporates quickly. Spills ≤ 1 L inside of a chemical fume hood, or ≤ 100 mL outside of a chemical fume hood, can often be cleaned up with dry absorbents (such as spill pads or vermiculite) if the lab feels comfortable and prepared to do so. * For large spills, evacuate the lab and contact the OESO spill team by calling 911 from a campus phone or Duke Police at 919-684-2444 from any phone to request assistance. * After spill clean-up is complete, any surfaces contaminated with DCM should be wiped down with 70% ethanol, and then wiped down with soap and water. * For **solid or** **spill waste**, collect any absorbent materials in double plastic bags, and keep in secondary containment in a fume hood until it is collected by OESO. | |
| **Waste** | * DCM can dissolve some plastics; use a proper waste container for halogenated solvents. Halogenated waste containers can be obtained through the [Waste Pickup Request System](https://lsw.duhs.duke.edu/LabSafetyManagement). * Waste dichloromethane must be disposed of following your **laboratory-specific chemical hygiene plan** and meet the requirements of Duke University’s [Chemical Waste Policy](https://www.safety.duke.edu/files/Q-Chemwastemgt.pdf) and Laboratory Chemical Waste Management Practices (link [here](https://www.safety.duke.edu/environmental-programs/hazardous-waste/chemical-waste)). * For **solid or** **spill waste**, collect any absorbent materials in double plastic bags, and keep in secondary containment in a fume hood until it is collected by OESO. | |
| **Training** | Sign signature page in lab-specific chemical hygiene plan to indicate review. | |
| **Questions** | Contact OESO Laboratory Safety at 919-684-8822 or [labsafety@dm.duke.edu](about:blank). | |

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| A picture containing text, clipart  Description automatically generatedIcon  Description automatically generated | | **A picture containing text, clipart  Description automatically generatedLab-Specific Safety Information for**  **DichloroMethane**  ***Supplements the Guidelines for Safe Use of DCM*** | | | **Icon  Description automatically generated** | |
| **Lab** | **PI Name** | Click or tap here to enter PI Name | | | | |
| **Location** | Enter building(s) and room(s) where lab is located | | | | |
| **Lab-Specific Hazard Controls** | **Purchase**  **Details** | Maximum container size | Enter maximum container sized purchased | | | |
| Maximum concentration | Enter maximum concentration purchased | | | |
| Container type | Enter the container material | | | |
| Specific product information | Enter supplier name/product number or purity/grade to purchase | | | |
| **Storage** | Specific location | Enter specific storage location | **Not in a cold room!** | | |
| **Use Information** | Designated work area  (specific room(s) and area(s))  **LABEL WORK AREA** | Enter rooms and areas designated for use | | | **WORK IN FUME HOOD** |
| Maximum quantity | Enter maximum quantity to be used at a time | | | |
| Typical concentration used | Enter typical concentration used | | | |
| Required PPE | **For working with amounts ≤ 300 mL:**  Standard Lab Coat  Chemical Safety Glasses  **2 pairs** of 4 mil **Nitrile** gloves  **For working with amounts ≥ 300 mL:**  [Silver Shield gloves](https://sps.honeywell.com/us/en/products/safety/hand-protection/gloves/silvershield-ssg29) (inner glove)   4 mil Nitrile gloves (outer glove)  Chemical Splash Goggles  Face shield  [Silver Shield chemically-resistant sleeves](https://www.northernsafety.com/Product/16751/Honeywell-North-Silver-Shield-20-Chemical-Resistant-Sleeves-Pair)  [Silver Shield chemically impervious apron](https://www.northernsafety.com/Product/16752/Honeywell-North-Silver-Shield-36-x-45-Chemical-Resistant-Apron) | | | |
| PPE Storage Locations for spill clean-up or work area decontamination | [Silver Shield gloves](https://sps.honeywell.com/us/en/products/safety/hand-protection/gloves/silvershield-ssg29) (inner glove): Location of Silver Shield gloves  4 mil Nitrile gloves (as outer glove, or double-gloved for ≤300 mL):   Location of 4 mil Nitrile gloves  Chemical Splash Goggles: Location of splash goggles  Face shield: Location of face shield  [Silver Shield chemically-resistant sleeves](https://www.northernsafety.com/Product/16751/Honeywell-North-Silver-Shield-20-Chemical-Resistant-Sleeves-Pair): Location of sleeves  [Silver Shield chemically impervious apron](https://www.northernsafety.com/Product/16752/Honeywell-North-Silver-Shield-36-x-45-Chemical-Resistant-Apron): Location of apron | | | |
| Location of supplies for decontamination | 70% Ethanol: Enter location of ethanol  Soap: Enter location of soap  Paper Towels: Enter location of paper towels | | | |
| Location of supplies for small spill clean-up  (in addition to PPE above) | Location & Type of inert absorbent: Location of vermiculite, dry sand, or absorbent pads | | | |
| **Waste Disposal** | Chemical Waste Information | Enter location of waste container, type of container used. | | | |
| **Details of Process** | 1. Enter steps used in lab process(es) or experiment(s) | | | | |