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| **Formaldehyde Exposure Control Plan** | | | | | | |
| **Purpose** | The primary goal of the Children’s Minnesota Laboratory’s Formaldehyde Exposure Plan is to protect laboratory employees exposed to formaldehyde and to maintain formaldehyde exposure levels below the Occupational Safety and Health Administration (OSHA) Formaldehyde Standard levels. | | | | | |
| **Scope** | This policy applies to laboratory staff involved with activities where exposure to formaldehyde is possible. | | | | | |
| **Employee Exposure Limits** | OSHA established a maximum allowable Permissible Exposure Limit (PEL) to an airborne concentration of formaldehyde as follows:   * 8 hour TWA (time weighted average) = 0.75 ppm (parts per million) * 15-minute STEL (short term exposure limit) = 2.0 ppm * Action Level (measured over 8 hours) = 0.5 ppm | | | | | |
| **Responsibilities** | Laboratory Leadership   1. Maintain the laboratory’s Formaldehyde Exposure Control Plan. 2. Identify job descriptions and tasks where the exposure to formaldehyde has the potential to exceed the OSHA action level or the short term exposure limit. 3. Ensure monitoring is conducted when the exposure to formaldehyde has the potential to exceed the OSHA action level or the short term exposure limit. 4. Recommend engineering controls, safe work practices and/or personal protective equipment (PPE) to reduce employee exposure to formaldehyde below PEL or STEL. 5. Ensure laboratory employees that may have exposure to formaldehyde > 0.1 ppm   receive training (initial and annual).   1. Ensure laboratory employees are provided with required PPE. 2. Enforce the use of PPE, engineering controls, and safe work practices designed to minimize formaldehyde exposures. 3. Notify employees of their exposure monitoring results within 15 days of receiving the results. 4. Ensure laboratory employees receive medical consultation when their formaldehyde exposure reaches or exceeds AL, PEL and/or STEL (at no cost to the employee). 5. Ensure laboratory employees are provided with respiratory protection if formaldehyde exposure exceeds regulatory limits and engineering controls are not feasible. 6. Notify the hospital Safety department to conduct monitoring whenever there is a change in production, equipment, personnel or control measures which may result in new or additional formaldehyde exposure.   Laboratory employees   1. Use PPE, engineering controls, and adhere to safe work practices as instructed. 2. Notify laboratory management of unusual conditions or changes in work practices which may result in new or additional formaldehyde exposure. 3. Participate in formaldehyde training if formaldehyde concentrations are > 0.1 ppm (initial and annual). 4. Report all accidents and potential formaldehyde exposures immediately. | | | | | |
| **Procedure** | Compliance  If a laboratory employee’s exposure is at or above the action level (0.50 ppm) or STEL (2.00 ppm), laboratory management shall take the appropriate action, including:   1. Suspend the use of formaldehyde in the affected area. 2. Assess the work practices of the affected employee. 3. Develop a written plan describing corrective actions being taken to reduce exposure below the action level or STEL. 4. Provide a copy of the plan to the affected employee. 5. Ask employee to seek medical evaluation at Employee Health Service (EHS) or a healthcare provider. 6. Institute engineering controls; may need to work with Facilities to evaluate feasibility. 7. If corrective measures do not maintain exposure below the action level or STEL, the affected employee shall be supplied with an appropriate respirator. | | | | | |
|  | Monitoring   1. Identify job descriptions and tasks where the exposure to formaldehyde has the potential to exceed the OSHA action level or the short term exposure limit. 2. Ensure monitoring is conducted when the exposure to formaldehyde has the potential to exceed the OSHA action level or the short term exposure limit. 3. Monitor whenever there is a change in production, equipment, personnel or control measures which may result in new or additional formaldehyde exposure. 4. Monitor when an employee reports signs or symptoms of respiratory or dermal conditions associated with formaldehyde exposure. 5. Monitoring will include 8-hour and/or 15 minute air samples. 6. If, after implementing engineering controls, exposure is at or above the action level or STEL, follow-up monitoring shall be conducted :    1. Semiannually, if employee’s previous exposure was at or above the action level (0.50ppm);    2. Annually, if employee’s previous exposure was at or above the STEL (2.00 ppm). 7. Monitoring shall be terminated if results from two consecutive sampling periods taken at least 7 days apart show that employee exposure is below the action level and the STEL. | | | | | |
|  | Notification of Monitoring Results   1. Formaldehyde exposure monitoring results will be provided to the tested individual within 15 working days after receiving the results. 2. Individuals will be informed of monitoring results either electronically or in person. 3. Results may also be posted in the appropriate department. | | | | | |
|  | Regulated Areas   1. Regulated areas shall be established in any area where the concentration of formaldehyde exceeds either the PEL or the STEL. All entrances and accesses to the regulated area shall be posted with signs bearing the following information:   **DANGER**  **FORMALDEHYDE**  **MAY CAUSE CANCER**  **CAUSES SKIN, EYE, AND RESPIRATORY IRRITATION**  **AUTHORIZED PESONNEL ONLY**   1. Access to regulated areas is limited to persons who have been trained to recognize the hazards of formaldehyde. | | | | | |
| **Procedure** | Protective Equipment and Clothing   1. PPE guidelines:    1. Eyes – chemical safety goggles    2. Face – face shield/splash guard (when potential for splash is high)    3. Hands – nitrile gloves    4. Body – impermeable apron or lab coat or barrier gown (when potential for splash is high)    5. Respiratory – fume hood as appropriate 2. Eyewashes and safety showers are available for emergency use in the event of an eye or skin splash. 3. Do not reuse PPE and clothing that has become contaminated with formaldehyde before it is cleaned or laundered.    1. Storage of contaminated equipment and clothing shall be labeled as:   **DANGER**  **FORMALDEHYDE-CONTAMINATED (CLOTHING) EQUIPMENT**  **MAY CAUSE CANCER**  **CAUSES SKIN, EYE, AND RESPIRATORY IRRITATION**  **DO NOT BREATHE VAPOR**  **DO NOT GET ON SKIN**   * 1. Contact the Safety department for removal of contaminated equipment and clothing. | | | | | |
|  | Maintaining Workspace   1. Maintain workplaces that are clean and free from formaldehyde contaminated debris. 2. Check equipment regularly for leaks or spills. 3. Provisions to contain a spill, decontaminate the work area, and dispose of the waste are detailed in policy [SA 7.07 Formaldehyde Spill Cleanup](http://intranet.childrensmn.org/References/labsop/gen/safety/sa/sa-7.07-formaldehyde-spill-cleanup.pdf). | | | | | |
|  | Medical Surveillance   1. Employees exposed to formaldehyde at concentrations at or exceeding the action level or exceeding the STEL the will be referred to Employee Health Service for evaluation. 2. Employees who develop signs and symptoms of overexposure to formaldehyde and employees exposed to formaldehyde in emergencies will be referred to Employee Health Service for evaluation. | | | | | |
| **Communication** | Hazard Communication   1. Labels    1. Formaldehyde gas, and all mixtures or solutions composed of greater than 0.1 percent formaldehyde, and materials capable of releasing formaldehyde into the air at concentrations reaching or exceeding 0.1 ppm must be labeled with hazard warning labels.    2. The original manufacturer labels are sufficient and should not be removed.    3. Where original labels are not present, new labels must be applied to the containers indicating the product contains formaldehyde and include the hazard statement “May Cause Cancer.” 2. Hazards    1. Signal word – Danger    2. Combustible liquid    3. Toxic if swallowed, in contact with skin or if inhaled    4. Causes severe skin burns and eye damage    5. May cause an allergic skin reaction    6. Suspected of causing genetic defects    7. May cause cancer    8. Causes damage to organs  |  |  |  | | --- | --- | --- | | **Formaldehyde** | | | | Exposure routes | Symptoms | Target organs | | * Inhalation * Ingestion * Skin and/or eye contact | * Irritation of eyes, skin, nose, throat, respiratory system * Tearing * Coughing * Wheezing * Dermatitis * Potential occupational nasal carcinogen | * Eyes * Skin * Respiratory system |  1. Safety Data Sheets (SDS)    1. Located online on the Star Net page under the Emergency/Safety tab.    2. Formaldehyde SDS includes information on hazards, safe handling, storage and disposal. It also includes information on first aid and spill response. 2. Handling & Storage    1. Use a fume hood or exhaust canopy/vent when using formaldehyde.    2. Never mix formaldehyde and bleach together.    3. Store in a well-ventilated area away from incompatible substances (strong oxidizing agents).    4. Store below eye level.    5. Keep container tightly closed. | | | | | |
|  | Education and Training   1. Laboratory employees are given introductory and periodic chemical safety training through Children’s Minnesota online e-learning program. Formaldehyde safety is covered in these modules. 2. New laboratory employees are introduced to laboratory safety practices and procedures and the Chemical Hygiene Plan during initial lab orientation. This includes SDS location, accident and spill response, PPE, and safe work practices. | | | | | |
| **Records** | Record Keeping   1. The Safety department and the Human Resources department maintain formaldehyde exposure monitoring records.   These records include:   * 1. Date of measurement   2. Operation being monitored,   3. Method of sampling and analysis   4. Number, duration, time and results of samples taken   5. Types of protective device worn   6. Name, job classification, employee number, and exposure estimates  1. Records will be retained:    1. Exposure records and determinations shall be kept 30 years.    2. Medical records shall be kept for the duration of employment plus 30 years. | | | | | |
| **Supporting Documents** | [912.00 Hazardous Materials and Waste Management Plan](http://khan.childrensmn.org/manuals/policy/900/005312.pdf)  [989.00 Hazardous Drugs Medical Surveillance](http://khan.childrensmn.org/manuals/policy/900/128397.pdf)  [1067.00 Work Related Injury/Illness Reporting and Management](http://khan.childrensmn.org/manuals/policy/1000/004975.pdf)  [SA 6.03 Chemical Hygiene Plan](http://khan.childrensmn.org/manuals/lab/sop/gen/safety/sa/210292.pdf)  [SA 7.07 Formaldehyde Spills and Cleanup](http://khan.childrensmn.org/Manuals/Lab/SOP/Gen/Safety/SA/210378.pdf) | | | | | |
| **References** | 1. OSHA. Formaldehyde standard (29 CFR 1910.1048). 2. OSHA. Laboratory Safety Guidance. 2011. | | | | | |
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| **Historical Record** | **Version** | **Written/Revised by:** | | **Effective Date:** | **Summary of Revisions** | |
| 1.1 |  | | 11/1989 Mpls | Initial Version | |
|  | 1.2 |  | | 11/1989 Mpls |  | |
|  | 2 |  | | 06/1990 Stp |  | |
|  | 3 | Carol Cram | | 08/2001 |  | |
|  | 4 | Kerstin Halverson | | 12/15/03 |  | |
|  | 5 | Carol Buhl | | 07/13/15 | Reformatted to CMS.  Renumbered from 4.2.  Added Hazard Communication section.  Added Supporting Documents.  Updated References. | |
|  | 6 | Lab Safety Committee / Carol Buhl | | 05/25/17 | More clearly defined employee exposure limits.  Expanded PPE guidelines to specifically note protection for eyes, face, hands, body, and respiratory.  Updated Hazards section with GHS information. | |