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SAF-376, FORMALDEHYDE PROGRAM

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1.0 Introduction

1.1 Purpose

The purpose of this program is to provide guidance in the protection of all employees from elevated exposure to formaldehyde as prescribed in the Occupational Safety and Health Administration's (OSHA's) Formaldehyde Standard 29 CFR 1910.1048.

1.2 Scope

This program is inclusive of Emory University employees, including faculty, staff, students, contractors, and other people who work with or in close proximity to regulated formaldehyde areas.

1.3 Definitions

Dermal Sensitization. The process of the skin becoming sensitive or hypersensitive to a compound.

Forced Expiratory Flow (FEF). The flow of air from the lungs during measurement of forced vital capacity.

Forced Expiratory Volume (FEV1). The maximum volume of air that can be expired from the lungs in a specific time interval when starting from maximum inspiration.

Forced Vital Capacity (FVC). The volume of air measured with subject exhaling with maximum speed and effort.

Pulmonary Function Test. Test that measure how well the lungs take in and release air and how well they move gases such as oxygen from the atmosphere into the body's circulation.

Respiratory Sensitization. The process of the lungs becoming sensitive or hypersensitive to a compound.

Sensitization. The process of one becoming sensitive or hypersensitive to a compound.

1.4 Responsibilities

Environmental Health and Safety Office (EHSO)

As the administrative department for the Formaldehyde Program, EHSO is responsible for:

- Development, implementation, and administration of the formaldehyde program.
- Conducting periodic formaldehyde monitoring in areas where exposure to formaldehyde is in excess of the 0.5 parts of formaldehyde per million parts of air (ppm) 8-hour action level or the 2.0 ppm 15-minute Short Term Exposure Limit (STEL) established by OSHA.
- Informing Employee Health Services (EHS) of employees who need to be included in the medical surveillance for formaldehyde and providing EHS with relevant documentation of exposure as described in Section 6.7 of this program.

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- Selection of appropriate respiratory and other personal protective equipment (PPE) necessary for work with formaldehyde.
- Development and implementation of inspection procedures to detect formaldehyde leaks.
- Development and implementation of emergency procedures in the event of an emergency.
- Development and implementation of the Formaldehyde Training Course.
- Establishment of regulated areas where formaldehyde concentrations are in excess of the OSHA Action Level or STEL.

Campus Services

Campus Services is responsible for performing preventive maintenance (PM) on all ventilation equipment.

Principle Investigators, Directors, Supervisors and Managers

The principal investigators, directors, supervisors, and managers have primary responsibility for the following:

- Management and enforcement of the Formaldehyde Program in their areas;
- Informing employees of the results of industrial hygiene monitoring within fifteen days of receipt of the results from EHSO; and
- Ensuring that all contractors, visitors, and students in their areas comply with the Formaldehyde Program requirements.

Employee Health Services

Employee Health Services (EHS) is responsible for conducting medical surveillance for employees included in Section 6.1 of this program.

Employees and Students

All employees and students are responsible for complying with the rules and guidelines set forth by this program.

Contractors

All contractors are responsible for complying with the rules and guidelines set forth by this program.

1.5 Training Requirements

- All employees working in areas where exposure to formaldehyde is in excess of 0.1 ppm are required to receive formaldehyde training.
- Formaldehyde training is conducted at the time of initial assignment, whenever a new exposure to formaldehyde is introduced into the work area, and annually thereafter.
- Formaldehyde training includes the following:
 - A discussion of the contents of the formaldehyde standard and the SDS;
 - The purpose and description of the medical surveillance program required by this program;
 - A description of the potential health hazards associated with exposure to formaldehyde;
 - A description of the signs and symptoms of exposure to formaldehyde;

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- Instructions to immediately report the development of any adverse signs and symptoms that the employee suspects are attributable to formaldehyde exposure.
- Description of operations in the work area where formaldehyde is present and an explanation of the safe work practices appropriate for limiting exposure to formaldehyde in each job;
- The purpose for, proper use of, and limitations of personal protective clothing and equipment;
- Instructions for the handling of spills, emergencies, and clean-up procedures;
- An explanation of the importance of engineering and work-practice controls for employee protection and any necessary instruction in the use of these controls; and
- A review of emergency response procedures including specific duties or assignments of each employee in the event of an emergency.

1.6 Recordkeeping Requirements

Records pertaining to formaldehyde will be retained as follows:

- Industrial hygiene exposure monitoring records will be retained by EHSO indefinitely.
- Where EHSO has determined that monitoring is not necessary, a record of the objective data used is retained by EHSO indefinitely.
- Medical surveillance records are retained by EHS indefinitely.
- Respiratory fit testing records are retained in EHSO's central file until replaced by a more recent record.
- Training records are retained in EHSO until replaced by a more recent record.

1.7 Program Evaluation

The written Formaldehyde Program is re-evaluated annually and revised as necessary.

2.0 Procedures**2.1 Exposure Monitoring**

- EHSO is responsible for conducting periodic exposure monitoring for formaldehyde in areas identified as having exposures in excess of the OSHA limits (i.e. embalmers, necropsy).
- Employees are notified of monitoring results within fifteen days of receipt of the results.

2.2 Regulated Areas

- The entrances into areas identified as having exposures in excess of the OSHA Permissible Exposure Limit (PEL) of 0.75 ppm and STEL are considered regulated.
- The entrances and access ways to these areas have the following signage:

DANGER
FORMALDEHYDE
IRRITANT AND POTENTIAL CANCER HAZARD
AUTHORIZED PERSONNEL ONLY

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- Respiratory protection is required to be worn in areas identified as having formaldehyde exposures in excess of the OSHA PEL and STEL.
- Only the following types of respirators are permitted to be worn:
 - Full Face Respirator equipped with formaldehyde cartridges or canisters.
 - Powered Air-Purifying Respirators equipped with formaldehyde cartridges or canisters.
- Unless the formaldehyde cartridge has an end-of-service-life-indicator (ESLI) that shows when breakthrough occurs, the formaldehyde cartridge must be replaced after every three hours of use or at the end of the work shift, whichever comes first.
- In work areas where airborne formaldehyde concentration is up to 7.5 ppm, unless the formaldehyde canister has an ESLI that shows when breakthrough occurs, the canister must be replaced every four hours of use or at the end of the work shift, whichever comes first.
- Employees must comply with Emory's Respiratory Protection Program.

2.4 Personal Protective Equipment (PPE)

- The following PPE is required to be worn in areas having exposure to formaldehyde in excess of the OSHA AL or STEL:
 - Respirators as described in Section 2.3 of this program;
 - Disposable gown; and
 - Nitrile Gloves.
- The following PPE is required to be worn by members of the EHSO Spill Team during the cleanup of a formaldehyde spill:
 - Disposable coveralls; and
 - Nitrile Gloves

2.5 Hygiene Protection

- If employees' skin may become splashed with solutions containing one percent or greater formaldehyde, for example, because of equipment failure or improper work practices, quick drench showers are provided.
- If there is any possibility that an employee's eyes may be splashed with solutions containing 0.1 percent or greater formaldehyde, eyewash facilities are provided.

2.6 Inspections

- The supervisor is responsible for ensuring inspections are conducted in the areas identified as having exposure to formaldehyde in excess of the OSHA exposure limits. EHSO is responsible for validating the inspections annually.
- The purpose of inspections is to detect leaks and spills as well as to ensure proper storage of formaldehyde containing material.

2.7 Preventive Maintenance

Campus Services is responsible for conducting annual preventive maintenance on ventilation equipment in areas using formaldehyde.

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2.8 Formaldehyde Spills

- If a formaldehyde spill occurs employees are to:
 - Stop the spill, if possible;
 - Leave the work area;
 - Close the door behind them; and
 - Post a notice on the door stating that the area is closed off due to a formaldehyde spill.
- In the case of a formaldehyde spill:
 - Contact EHSO at 404-727-5922, during normal business hours;
 - Call 911 or 404-727-6111, if the spill occurs after business hours or during the weekend;
 - Report the name, size and location of the chemical that was spilled.
- EHSO is responsible for ensuring proper clean-up of the spill and monitoring the air to ensure that the formaldehyde levels in the area are at an acceptable level.
- EHSO will give the “all clear” that allows employees re-entry into the affected area.
- Formaldehyde-contaminated waste and debris resulting from leaks or spills are placed for disposal in sealed containers bearing a label warning of formaldehyde’s presence and the hazards associated with formaldehyde.

3.0 Medical Surveillance

- Medical surveillance is made available to:
 - All employees exposed to formaldehyde in excess of the OSHA AL or STEL;
 - Any employee who develops signs and symptoms of overexposure to formaldehyde; and
 - Any employee exposed to formaldehyde in emergencies.
- All medical procedures, including administration of medical disease questionnaires, are performed by or under the direction of a licensed physician and are provided without cost to the employee, without loss of pay, and at a reasonable place and time.
- The physician determines, based on the evaluation of the questionnaire, whether a medical examination is necessary for employees not required to wear respirators.
- Medical examinations are given to any employee who the physician feels, based on information in the medical disease questionnaire, may be at increased risk from exposure to formaldehyde and at the time of initial assignment and at least annually thereafter to all employees required to wear a respirator to reduce exposure to formaldehyde.
- Medical examinations include:
 - A physical examination with emphasis on evidence of irritation or sensitization of the skin, respiratory system, shortness of breath, or eyes.
 - Laboratory examinations for respirator wearers consisting of baseline and annual pulmonary function tests. As a minimum, these tests consist of forced vital capacity (FVC), forced expiratory volume in one

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- second (FEV1), and forced expiratory flow (FEF).
- Any other test which the examining physician deems necessary to complete the written opinion.
- Counseling of employees having medical conditions that would be directly or indirectly aggravated by exposure to formaldehyde on the increased risk of impairment of their health.
- Examinations for employees exposed in an emergency.
 - Medical examinations are made available as soon as possible to all employees who have been exposed to formaldehyde in an emergency.
 - Examinations include a medical and work history with emphasis on any evidence of upper or lower respiratory problems, allergic conditions, skin reaction or hypersensitivity, and any evidence of eye, nose, or throat irritation.
 - Other examinations consist of those elements considered appropriate by the examining physician.
- Information provided to the physician
 - EHSO is responsible for providing the following information to EHS:
 - A copy of the Formaldehyde Standard and Appendix A, C, D and E of the Formaldehyde Standard;
 - A description of the affected employee's job duties as they relate to the employee's exposure to formaldehyde;
 - The representative exposure level for the employee's job assignment;
 - Information concerning any personal protective equipment and respiratory protection used or to be used by the employee; and
 - In the event of a non-routine examination because of an emergency, the physician is provided with a description of how the emergency occurred and the exposure the victim may have received.
- Physician's written opinion.
 - For each examination required under this standard, a written opinion from the physician is obtained. This written opinion contains the results of the medical examination except that it does not reveal specific findings or diagnoses unrelated to occupational exposure to formaldehyde. The written opinion includes:
 - The physician's opinion as to whether the employee has any medical condition that would place the employee at an increased risk of material impairment of health from exposure to formaldehyde.
 - Any recommended limitations on the employee's exposure or change in the use of PPE or respirator.
 - EHS is responsible for providing a copy of the physician's written opinion to the affected employee within fifteen (15) days of receipt.
- Medical Removal
 - The provisions of this section apply when an employee reports significant irritation of the mucosa of the eyes or of the upper airways, respiratory sensitization, dermal irritation, or dermal sensitization attributed to workplace formaldehyde exposure.

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- Medical removal provisions do not apply in the case of dermal irritation or dermal sensitization when the product suspected of causing the dermal condition contains less than 0.05 percent formaldehyde.
- If the Emory physician determines that a medical examination is not necessary, there is a two week evaluation and remediation period to permit EHSO to ascertain whether the signs or symptoms subside untreated or with the use of creams, gloves, first aid treatment or personal protective equipment.
- The employee will be referred immediately to a physician prior to the expiration of the two week period if the signs or symptoms worsen.
- If the signs and symptoms have not subsided or been remedied by the end of the two week period, or earlier if signs or symptoms warrant, the employee will be examined by an Emory physician.
- The physician will presume, absent contrary evidence, that observed dermal irritation or dermal sensitization are not attributable to formaldehyde when products to which the affected employee is exposed contains less than 0.1 percent formaldehyde.
- Medical examination will be conducted in compliance with Section 6.5 of this program.
- If the physician finds that the employee's condition from exposure to formaldehyde in the workplace warrants restrictions or removal, the employee will be removed and transferred to work having no or significantly less exposure to formaldehyde.
- When an employee is removed pursuant to paragraph 6.7.3.8, he/she will be transferred to a comparable work area for which the employee is qualified or can be trained in a short period (up to six months) where formaldehyde exposure is less than the formaldehyde action level.
- The removed employee will retain his/her current earnings, seniority, and other benefits until:
 - The employee is determined to be unable to return to workplace formaldehyde exposure;
 - The employee is determined to be able to return to the original job status; or
 - A period of six months, whichever comes first.
 - NOTE: Earnings, seniority, and benefits are not altered during the two-week evaluation period.
- A follow-up medical examination will be provided within six months after the employee has been removed.
- The purpose of the follow-up examination is to determine if the employee can return to the original job status, or if the removal is permanent.
- Multiple Physician Review:
 - The Medical Review Program will meet the requirements of the OSHA Formaldehyde Standard.

4.0 Hazard Communication

- Communications of the hazards associated with formaldehyde in the workplace are governed by Section 4.0 of this program.

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- The following are subject to the hazard communication requirements of this section:
 - Formaldehyde gas;
 - All mixtures or solutions composed of greater than 0.1 percent formaldehyde; and
 - Materials capable of releasing formaldehyde into the air, under reasonable foreseeable conditions of use, at concentrations reaching or exceeding 0.1 ppm.
- Hazard warning labels must be affixed to all formaldehyde containers as indicated in Section 4.0 that enter Emory University campus.
- At a minimum labels will:
 - Identify that the product contains formaldehyde;
 - Include the word “Danger”;
 - Contain a Pictogram – Carcinogen;
 - Indicate dermal and respiratory system hazard;
 - List the name and address of the manufacturer; and
 - Include the word “Carcinogen”
- All damaged labels will be replaced.
- Secondary formaldehyde containers are labeled formaldehyde, formalin, or paraformaldehyde.
- Safety Data Sheets can be accessed from SDS Online, located on the EHSO website.

5.0 References

- OSHA FORMALDEHYDE STANDARD - 1910.1048
- Emory University Formaldehyde Training
- Emory University Respiratory Protection Program

6.0 List of Associated Documents

- Formaldehyde Fact Sheet
- Formaldehyde Questionnaire