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2010

CH₂O
(Formaldehyde)

NAU
Formaldehyde
Program



**Office of Regulatory Compliance,
Environmental, Health & Safety**

Box 4137

Flagstaff, Arizona 86011-4137

www.orc.nau.edu

EMERGENCY TELEPHONE NUMBERS

Local Emergency Dispatch for Fire, Personal Injury or Local Police

911 (Be aware of the building's requirements to dial "8" first to gain outside access)

University Police Department

3-3000 for on-campus incidents

Chemical Spill or Accident

Office of Regulatory Compliance (ORC)

Jim Biddle 220-1728

L.T. Green 220-1358

John McGregor 220-1388

After hours: call UPD 3-3000

OFFICE OF REGULATORY COMPLIANCE NON-EMERGENCY CONTACTS

Director/Manager of Chemical and Radiation Safety/Radiation Safety Officer/Chemical Hygiene Officer, John McGregor 3-7258

Biological Safety Officer, Barbara Fox Nellis 3-7268

Manager of Industrial Hygiene and Environmental Safety, Jim Biddle 3-6109

Hazardous Waste Coordinator, L.T. Green 3-1146, Fax Waste Pickup Requests 3-0050

Loss Prevention Program Coordinator, Sarah Ells 3-3961

ORC Website: www.orc.nau.edu

e-mail: regulatorycompliance@nau.edu

ORC Department Number: 928-523-7799

ORC Fax Number: 928-523-1607

P.O. Box 4137

Flagstaff, AZ 86011

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1.0 Introduction

The purpose of this program is to protect Northern Arizona University (NAU) employees and students from the hazards associated with formaldehyde and maintain formaldehyde exposures below the regulatory limits.

2.0 Scope

This program applies to all NAU employees and students who use formaldehyde, formalin or other formaldehyde-containing solutions.

3.0 Responsibilities

3.1 Office of Regulatory Compliance (ORC)

- program development and implementation at NAU;
- monitoring compliance with the OSHA Standard-29 CFR 1910.1048;
- providing general formaldehyde safety training;
- conducting exposure assessments and evaluating exposure control measures as necessary;
- providing or coordinating emergency response for chemical spills;
- investigating accidents; and
- maintaining employee exposure records.

3.2 Deans, Directors and Department Heads

Deans, Directors and Department Heads are responsible for ensuring departmental compliance with all the procedures outlined in this program.

3.3 Principal Investigators/Supervisors

- ensuring compliance with this program in their work area(s);
- developing site-specific [Standard Operating Procedures](#) (SOP) that address the specific safety measures to be implemented when using formaldehyde (see Appendix B);
- coordinating the provision of medical examinations, exposure monitoring and record keeping, as required;
- ensuring employees with potential exposure to formaldehyde receive the appropriate training before working with it;
- arranging for immediate emergency response, if necessary, for chemical spills, injuries and overexposures;
- maintaining a MSDS for the formaldehyde products used and all other hazardous chemicals in the work area; and
- notifying ORC when there is a change in equipment, processes or controls which may result in additional exposure to formaldehyde.

3.4 Employees/Students

- know the provisions of the NAU Formaldehyde Safety Program;
- report accidents, possible overexposures or unsafe conditions to their supervisor; and
- wear/utilize Personal Protective Equipment and engineering controls when recommended and provided.

4.0 Formaldehyde Hazard Data

Formaldehyde exposure has been associated with irritation to the human respiratory tract, cancers of the nose and lung, and loss of vision. Formaldehyde may affect the body through inhalation, skin/eye contact or accidental ingestion. Your senses of smell and eye irritation become less sensitive with time as you adapt to formaldehyde exposure; therefore, you cannot rely on formaldehyde's warning properties to alert you to the potential for overexposure. The dose, or amount of exposure, determines the type and degree of beneficial or adverse health effects.

4.1 Acute Health Effects

Acute Health Effects are symptoms that occur at very high concentrations of exposure.

Inhalation. Formaldehyde is highly irritating to the upper respiratory tract and eyes. Severity of the symptoms depends upon the concentration in air coupled with the length of the exposure.

0.1 - 5 parts per million (ppm)	Eye irritation, tears Skin irritation Respiratory tract irritation
5 - 20 ppm	Burning of eyes and respiratory tract Tears Difficulty in breathing / coughing Chest tightening, pain
20 - 100 ppm (20 ppm immediately dangerous to life and health (IDLH))	Irregular heartbeat Severe lung irritation Pulmonary edema Death in severe cases

Skin Absorption. Formaldehyde is a severe skin irritant and sensitizer. Contact with formaldehyde causes white discoloration, drying, cracking and scaling. Prolonged and repeated contact can cause numbness or hardening of the skin. Previously exposed persons may react to future exposure with an allergic eczematous dermatitis or hives.

Eye Contact. Formaldehyde solutions splashed in the eyes can cause injuries ranging from transient discomfort to severe, permanent corneal clouding and loss of vision. The

severity of the effect depends on the concentration of formaldehyde and whether or not the eyes were flushed with water immediately after the accident.

Ingestion. 10% to 40% solutions of formaldehyde can cause severe irritation of the mouth, throat and stomach. Severe stomach pains will follow ingestion with possible loss of consciousness and death. Ingestion of dilute solutions (0.03%-0.04%) may cause discomfort in the stomach and throat.

4.2 Chronic Health Effects

Formaldehyde has the potential to cause various respiratory impairments, such as bronchitis and nasal cancer that may appear over a relatively long period of time after repeated and prolonged exposures above the OSHA permissible exposure limits (PEL). In humans, formaldehyde exposure has been associated with cancers of the lung, nasopharynx and oropharynx, and nasal passages. Some people have allegedly developed asthma or bronchitis following exposure to formaldehyde, apparently after a single exposure to a high concentration.

4.3 Physical Hazards

Formaldehyde poses a moderate fire and explosion hazard when exposed to heat or flame. The flash point for 37% formaldehyde is 185 degrees Fahrenheit with an explosion range of 7 to 73% by volume in air, and is classified as a III A combustible liquid in the OSHA regulations. Avoid contact with strong oxidizing agents, strong alkalies, isocyanates, anhydrides, and inorganic acids. Formaldehyde reacts with nitrogen dioxide, nitromethane, peroxyformic acid, perchloric acid and aniline to yield explosive compounds.

5.0 Permissible Exposure Limits

OSHA has issued several types of limits for employee exposures to trigger various regulator requirements.

Action Level. A limit defined as 0.5 part formaldehyde per million parts of air (0.5 ppm), calculated as an 8-hour time-weighted average. At or above this concentration, OSHA mandates that employers initiate certain required activities such as exposure monitoring and medical surveillance.

Permissible Exposure Limit (PEL). A limit defined as 0.75 parts formaldehyde per million parts of air (0.75 ppm), calculated as an 8-hour time-weighted average. At concentrations at or above this limit, OSHA requires employers to provide protective equipment such as respirators, establish administrative controls, to study and install engineering controls (if feasible), establish regulated areas, and perform other OSHA-required procedures and duties.

Short Term Exposure Limit (STEL). A limit defined as 2 parts formaldehyde per million parts of air (2 ppm), averaged over any one 15-minute period. If this STEL limit is exceeded, the OSHA mandates which must be followed by an employer are identical to those required above for exceedance of the OSHA PEL. .

6.0 Employee Exposure Assessments

Whenever formaldehyde is used in a work area, ORC will conduct air monitoring to determine employee exposures. Measurements of employee exposures will be representative of a full shift or STEL and will be taken for each job classification in each work area.

Call 523-6109 to arrange for an ORC industrial hygienist to utilize special sampling equipment to collect representative air samples for laboratory analysis of the formaldehyde. If employee exposures are found to be at or above the action level, ORC will repeat air monitoring every six (6) months. If exposures are above the STEL, air monitoring will be conducted at least once per year. Monitoring will continue until exposures can be reduced below these levels by engineering or administrative controls.

Air monitoring will be conducted promptly in a work area if employees are experiencing signs or symptoms of formaldehyde exposure. Air monitoring will be repeated in an area each time there is a change in equipment, processes or controls which may result in additional exposure to formaldehyde. ORC must be notified at 523-6109 to conduct this monitoring.

7.0 Methods of Reducing Employee Exposure to Formaldehyde

7.1 Substitution

When possible, substitution of a less hazardous chemical or process will be used to reduce or eliminate formaldehyde use and exposures.

7.2 Engineering Controls

When possible, chemical fume hoods and/or local exhaust ventilation will be used to reduce exposures to formaldehyde. Local exhaust is used to capture and exhaust formaldehyde vapors, preventing the accumulation of high exposures in the employee's breathing zone.

7.3 Administrative Controls

If engineering controls cannot be implemented, alteration of work practices will be used to reduce exposures to formaldehyde. This could include limiting the amount of time employees spend working in high exposure areas such as by rotating personnel between various job duties.

7.4 Personal Protective Equipment

Prevent direct contact with the eyes or skin with liquids containing 1% or more formaldehyde, by the use of protective garments and equipment which are resistant to formaldehyde (Neoprene, Nitrile, rubber and PVC have all been rated as “excellent” for resistance to formalin solutions). The type of Personal Protective Equipment necessary will vary depending on the concentration, amount used and the potential for splashing and may include goggles, face shield, gloves, gowns, lab coats, aprons and arm sleeves. ORC can provide your area with guidance on the appropriate PPE for your area.

Respirators. If employee exposures are found to exceed the PEL or STEL, respirators will be provided until feasible engineering or administrative controls can be implemented. Respirator use and type will be determined by ORC, based on air monitoring results. If respirator use is necessary, employees must be medically cleared by Fronske Medical Center to wear a respirator and fit-tested and trained by ORC personnel before using a respirator.

In areas where the formaldehyde concentration is unknown full body protective clothing and Self-Contained Breathing Apparatus (SCBA) are required. This concentration may be encountered during a large quantity spill of formaldehyde in a confined or small enclosed area. **Currently, no NAU laboratory/clinical personnel are trained to handle this type of situation. Call campus emergency number 3-3000 in these situations.**

If respirators are used to control exposure, all components of NAU’s Respiratory Protection Program apply. This program has several conditions that have to be met to ensure employee protection. Respirators must be inspected by employees prior to each use and must be stored in a clean and sanitary manner. Respirators should be inspected by supervisors each month to ensure they are being used, stored and cleaned properly.

7.5 Hygiene

To prevent the accidental ingestion of formaldehyde, eating, drinking and smoking are prohibited in areas where formaldehyde is used. In addition, employees must wash their hands after using formaldehyde.

If employees are required to change from work clothing into protective clothing, change rooms will be provided. Protective clothing contaminated with formaldehyde must not be taken home by employees.

7.6 Emergency Eyewash and Shower

If there is a possibility that employees’ skin may be splashed by formaldehyde-containing solutions, an emergency shower or drench hose will be provided in the work area. If there is a possibility that employees’ eyes may be splashed by formaldehyde-containing solutions, a plumbed eyewash station will be provided in the work area.

Employees must be instructed on the proper use of the eyewash and emergency showers. If an employee's eyes or skin are splashed by formaldehyde-containing solutions, the employee must flush them immediately and continue for 15 minutes. The employee should then seek medical attention.

8.0 Signage and Labeling

8.1 Regulated Areas

Areas where the airborne levels of formaldehyde are found to exceed the PEL and/or STEL will be regulated areas. Access to these areas will be limited to persons trained to recognize the hazards of formaldehyde. All entrances and access ways will be posted with signs bearing the following information:

DANGER
Formaldehyde
Irritant and Potential Cancer Hazard
Authorized Personnel Only

8.2 Container Labels

The OSHA hazard communication regulations require that all containers must be labeled with the name of the product and the most significant hazards(s) associated with the contents. Because OSHA has designated formaldehyde as a carcinogen, when a chemical product containing greater than 0.1% formaldehyde is transferred into a container other than the original, it must be labeled with the following information:

Small Containers:

CAUTION
Contains Formaldehyde
Potential Cancer Hazard

Large Containers:

CAUTION
Contains Formaldehyde
Toxic by inhalation and if swallowed.
Potential Cancer Hazard
May cause respiratory sensitization.
Irritating to eyes, skin and respiratory system.

*ORC will provide these labels upon request.

When labeling containers using ORC labeling policy, use the following hazard ratings: **Health-3, Flammability-2, Reactivity-0, and Personal Protective Equipment.**

9.0 Standard Operating Procedures

Work with formaldehyde requires a written Standard Operating Procedure (SOP) that addresses the following:

- the hazards of formaldehyde
- what containment devices (i.e., chemical fume hoods, glove boxes) will be used when working with formaldehyde
- what Personal Protective Equipment is required
- designated storage and use areas
- how to dispose of waste formaldehyde solutions
- decontamination and spill clean-up procedures

An NAU Formaldehyde template is provided in Appendix B of this program. Certain applications may require the development of additional, site-specific formaldehyde SOP.

10.0 Employee Information and Training

Every employee working with formaldehyde must receive training regarding the hazards of formaldehyde. A training module will be provided to supervisors with employees working with formaldehyde. Supervisors should review this information with employees annually. It will cover the following:

- requirements of the Standard;
- explanation of NAU's Formaldehyde Safety Program;
- contents of the Material Safety Data Sheet for formaldehyde;
- description of the medical surveillance program;
- description of the health hazards associated with exposure;
- signs and symptoms of exposure;
- instructions to report any signs or symptoms that may be attributable to formaldehyde exposure;
- description of the operations in the work area where formaldehyde is present;
- work practices to reduce exposure, including engineering and administrative controls and Personal Protective Equipment required; and
- instructions for handling spills and emergency procedures.

This training must be conducted whenever a new hazard is introduced into the work area, when the employee transfers to another job and whenever the employee demonstrates behavior that indicates a lack of understanding of the basic rules for the safe handling of chemicals.

Supervisors are responsible for ensuring that employees with potential exposure to formaldehyde receive the appropriate training before working with it. All training must be documented by the individual presenting the training session and a copy of the training records will be submitted to ORC.

11.0 Medical Surveillance

Employees found to have exposures that exceed the action level or the STEL will be included in a medical surveillance program. These employees will fill out a medical

questionnaire form annually and receive a physical examination if Fronske personnel determine it is necessary based on a review of the employee's responses on the questionnaire.

Employees exposed to formaldehyde will be provided with the opportunity to receive medical attention under the following circumstances:

- whenever an employee has developed signs or symptoms associated with exposure to formaldehyde; and/or
- when an employee is involved in a spill, leak or other occurrence resulting in a possible overexposure to formaldehyde.

NAU employees and employees may obtain free medical consultation regarding concerns about formaldehyde exposures by contacting the [Fronske Health Center](#).

It is the intent of NAU to provide a work environment which does not compromise the reproductive health of any employee or student, regardless of gender, or the health of a fetus. Counseling on reproductive health matters may be obtained by contacting Fronske Health Center.

Employees that are required to wear respirators, as determined by ORC, must be medically cleared by Fronske to use a respirator.

Medical Removal. Employees experiencing significant irritation of the eyes, upper airways or skin, respiratory sensitization or dermal sensitization attributed to formaldehyde exposure will be seen by Fronske. If Fronske personnel determine that the symptoms may be the result of a possible overexposure, ORC will evaluate the work area to determine if the symptoms are the result of an over-exposure. If exposures are in excess of the OSHA PEL or STEL, ORC industrial hygienists will determine which further administration and/or engineering control measures are necessary. If the employee's symptoms have not subsided within a two-week period and Fronske personnel has determined that the employee was sensitized, restrictions or transfer from the work area may be recommended.

12.0 Spills

Laboratory personnel can clean up the vast majority of chemical spills that occur in the lab. **The individual(s) who caused the spill is (are) responsible for prompt and proper clean-up.** It is the responsibility of the supervisor and/or chemical safety officer to have spill control clean-up materials and personal protective equipment, which are appropriate for the chemicals being handled, readily available. Supervisors are also responsible for ensuring that spills are cleaned up as soon as possible. The types and quantities of hazardous chemical substances used on the NAU campus require preplanning in order for accidental chemical releases to be handled in a safe manner. Two categories of chemical spills and response procedures are identified for this purpose.

Minor spills – Minor spills can be cleaned up with absorbent material. The appropriate Personal Protective Equipment, such as safety glasses and formaldehyde resistant gloves, must be used to prevent skin contact with the formaldehyde. The spill clean-up materials must be double-bagged, tightly closed, labeled and picked up by ORC for disposal. If you experience any eye or upper respiratory irritation while cleaning up the spill, stop immediately and call ORC for assistance.

Major spills - Employees should not attempt to clean up large quantity (>4 Liters) spills of formaldehyde, particularly in confined or restricted spaces, unless training has been received, appropriate spill clean-up materials, and personal protective equipment are readily available. In the event of a large spill for which you are not properly trained or prepared, evacuate the area and call NAU ORC (220-1728 or 699-8877); if no answer dial 3-3000 at NAU PD dispatch. If an area contains large quantities of formaldehyde, procedures to be followed in the case of a large spill or an emergency must be included as part the Standard Operating Procedures for formaldehyde in that area.

13.0 Disposal

All chemical waste must be disposed of according to [NAU's Hazardous Waste Management Rules](#). Formaldehyde-containing wastes should be placed in a labeled waste container in a flammable storage cabinet. Call ORC for pickup of waste materials and surplus chemicals.

14.0 Storage

Ideally, formaldehyde should be stored in a well-ventilated cabinet in an unbreakable, chemically resistant secondary container to contain spills. The storage area should exhibit a sign warning of the presence and hazards of formaldehyde. Formaldehyde should not be stored with inorganic acids, caustics, strong alkalis, isocyanates, anhydrides or oxidizing agents. Refer to [NAU's Chemical Storage Requirements](#).

APPENDIX A: OSHA Formaldehyde Standard



UNITED STATES DEPARTMENT OF LABOR

OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION

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Regulations (Standards - 29 CFR)
Formaldehyde. - 1910.1048

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 - Part Title: Occupational Safety and Health Standards
 - Subpart: Z
 - Subpart Title: Toxic and Hazardous Substances
 - Standard Number: [1910.1048](#)
 - Title: Formaldehyde.
-
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-

1910.1048(a)

Scope and application. This standard applies to all occupational exposures to formaldehyde, i.e. from formaldehyde gas, its solutions, and materials that release formaldehyde.

1910.1048(b)

Definitions. For purposes of this standard, the following definitions shall apply:

"Action level" means a concentration of 0.5 part formaldehyde per million parts of air (0.5 ppm) calculated as an eight (8)-hour time-weighted average (TWA) concentration.

"Assistant Secretary" means the Assistant Secretary of Labor for the Occupational Safety and Health Administration, U.S. Department of Labor, or designee.

"Authorized Person" means any person required by work duties to be present in regulated areas, or authorized to do so by the employer, by this section, or by the OSH Act of 1970.

"Director" means the Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

"Emergency" is any occurrence, such as but not limited to equipment failure, rupture of containers, or failure of control equipment that results in an uncontrolled release of a significant amount of formaldehyde.

"Employee exposure" means the exposure to airborne formaldehyde which would occur without corrections for protection provided by any respirator that is in use.

"Formaldehyde" means the chemical substance, HCHO, Chemical Abstracts Service Registry No. 50-00-0.

1910.1048(c)

Permissible Exposure Limit (PEL) -

1910.1048(c)(1)

TWA: The employer shall assure that no employee is exposed to an airborne concentration of formaldehyde which exceeds 0.75 parts formaldehyde per million parts of air (0.75 ppm) as an 8-hour TWA.

1910.1048(c)(2)

Short Term Exposure Limit (STEL): The employer shall assure that no employee is exposed to an airborne concentration of formaldehyde which exceeds two parts formaldehyde per million parts of air (2 ppm) as a 15-minute STEL.

1910.1048(d)

Exposure monitoring -

1910.1048(d)(1)

General.

1910.1048(d)(1)(i)

Each employer who has a workplace covered by this standard shall monitor employees to determine their exposure to formaldehyde.

1910.1048(d)(1)(ii)

Exception. Where the employer documents, using objective data, that the presence of formaldehyde or formaldehyde-releasing products in the workplace cannot result in airborne concentrations of formaldehyde that would cause any employee to be exposed at or above the action level or the STEL under foreseeable conditions of use, the employer will not be required to measure employee exposure to formaldehyde.

1910.1048(d)(1)(iii)

When an employee's exposure is determined from representative sampling, the measurements used shall be representative of the employee's full shift or short-term exposure to formaldehyde, as appropriate.

1910.1048(d)(1)(iv)

Representative samples for each job classification in each work area shall be taken for each shift unless the employer can document with objective data that exposure levels for a given job classification are equivalent for different work shifts.

1910.1048(d)(2)

Initial monitoring. The employer shall identify all employees who may be exposed at or above the action level or at or above the STEL and accurately determine the exposure of each employee so identified.

1910.1048(d)(2)(i)

Unless the employer chooses to measure the exposure of each employee potentially exposed

to formaldehyde, the employer shall develop a representative sampling strategy and measure sufficient exposures within each job classification for each workshift to correctly characterize and not underestimate the exposure of any employee within each exposure group.

1910.1048(d)(2)(ii)

The initial monitoring process shall be repeated each time there is a change in production, equipment, process, personnel, or control measures which may result in new or additional exposure to formaldehyde.

1910.1048(d)(2)(iii)

If the employer receives reports of signs or symptoms of respiratory or dermal conditions associated with formaldehyde exposure, the employer shall promptly monitor the affected employee's exposure.

1910.1048(d)(3)

Periodic monitoring.

1910.1048(d)(3)(i)

The employer shall periodically measure and accurately determine exposure to formaldehyde for employees shown by the initial monitoring to be exposed at or above the action level or at or above the STEL.

1910.1048(d)(3)(ii)

If the last monitoring results reveal employee exposure at or above the action level, the employer shall repeat monitoring of the employees at least every 6 months.

1910.1048(d)(3)(iii)

If the last monitoring results reveal employee exposure at or above the STEL, the employer shall repeat monitoring of the employees at least once a year under worst conditions.

1910.1048(d)(4)

Termination of monitoring. The employer may discontinue periodic monitoring for employees 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. The results must be statistically representative and consistent with the employer's knowledge of the job and work operation.

1910.1048(d)(5)

Accuracy of monitoring. Monitoring shall be accurate, at the 95 percent confidence level, to within plus or minus 25 percent for airborne concentrations of formaldehyde at the TWA and the STEL and to within plus or minus 35 percent for airborne concentrations of formaldehyde at the action level.

1910.1048(d)(6)

Employee notification of monitoring results. The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to employees. If employee exposure is above the PEL, affected employees shall be provided with a description of the corrective actions being taken by the employer to decrease exposure.

1910.1048(d)(7)

Observation of monitoring.

1910.1048(d)(7)(i)

The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to formaldehyde required by

this standard.

1910.1048(d)(7)(ii)

When observation of the monitoring of employee exposure to formaldehyde requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the clothing and equipment to the observer, require the observer to use such clothing and equipment, and assure that the observer complies with all other applicable safety and health procedures.

1910.1048(e)

Regulated areas.

1910.1048(e)(1)

The employer shall establish regulated areas where the concentration of airborne formaldehyde exceeds either the TWA or the STEL and post all entrances and accessways with signs bearing the following information:

DANGER
FORMALDEHYDE
IRRITANT AND POTENTIAL CANCER HAZARD
AUTHORIZED PERSONNEL ONLY

1910.1048(e)(2)

The employer shall limit access to regulated areas to authorized persons who have been trained to recognize the hazards of formaldehyde.

1910.1048(e)(3)

An employer at a multiemployer worksite who establishes a regulated area shall communicate the access restrictions and locations of these areas to other employers with work operations at that worksite.

1910.1048(f)

Methods of compliance -

1910.1048(f)(1)

Engineering controls and work practices. The employer shall institute engineering and work practice controls to reduce and maintain employee exposures to formaldehyde at or below the TWA and the STEL.

1910.1048(f)(2)

Exception. Whenever the employer has established that feasible engineering and work practice controls cannot reduce employee exposure to or below either of the PELs, the employer shall apply these controls to reduce employee exposures to the extent feasible and shall supplement them with respirators which satisfy this standard.

1910.1048(g)

Respiratory protection.

1910.1048(g)(1)

General. For employees who use respirators required by this section, the employer must provide each employee an appropriate respirator that complies with the requirements of this paragraph. Respirators must be used during:

1910.1048(g)(1)(i)

Periods necessary to install or implement feasible engineering and work-practice controls.

1910.1048(g)(1)(ii)

Work operations, such as maintenance and repair activities or vessel cleaning, for which the employer establishes that engineering and work-practice controls are not feasible.

1910.1048(g)(1)(iii)

Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the PELs.

1910.1048(g)(1)(iv)

Emergencies.

1910.1048(g)(2)

Respirator program.

1910.1048(g)(2)(i)

The employer must implement a respiratory protection program in accordance with § 1910.134(b) through (d) (except (d)(1)(iii), (d)(3)(iii)(b)(1), and (2)), and (f) through (m), which covers each employee required by this section to use a respirator.

1910.1048(g)(2)(ii)

When employees use air-purifying respirators with chemical cartridges or canisters that do not contain end-of-service-life indicators approved by the National Institute for Occupational Safety and Health, employers must replace these cartridges or canisters as specified by paragraphs (d)(3)(iii)(B)(1) and (B)(2) of 29 CFR 1910.134, or at the end of the workshift, whichever condition occurs first.

1910.1048(g)(2)(ii)(A)

Replace the cartridge after three (3) hours of use or at the end of the workshift, whichever occurs first, unless the cartridge contains a NIOSH-approved end-of-service-life indicator (ESLI) to show when breakthrough occurs.

1910.1048(g)(2)(ii)(B)

Unless the canister contains a NIOSH-approved ESLI to show when breakthrough occurs, replace canisters used in atmospheres up to 7.5 ppm (10xPEL) every four (4) hours and industrial-sized canisters used in atmospheres up to 75 ppm (100xPEL) every two (2) hours, or at the end of the workshift, whichever occurs first.

1910.1048(g)(3)

Respirator selection.

1910.1048(g)(3)(i)

Employers must:

1910.1048(g)(3)(i)(A)

Select, and provide to employees, the appropriate respirators specified in paragraph (d)(3)(i)(A) of 29 CFR 1910.134.

1910.1048(g)(3)(i)(B)

Equip each air-purifying, full facepiece respirator with a canister or cartridge approved for protection against formaldehyde.

1910.1048(g)(3)(i)(C)

For escape, provide employees with one of the following respirator options: A self-contained breathing apparatus operated in the demand or pressure-demand mode; or a full facepiece respirator having a chin-style, or a front-or back-mounted industrial-size, canister or cartridge approved for protection against formaldehyde.

1910.1048(g)(3)(ii)

Employers may substitute an air-purifying, half mask respirator for an air-purifying, full facepiece respirator when they equip the half mask respirator with a cartridge approved for protection against formaldehyde and provide the affected employee with effective gas-proof goggles.

1910.1048(g)(3)(iii)

Employers must provide employees who have difficulty using negative pressure respirators with powered air-purifying respirators permitted for use under paragraph (g)(3)(i)(A) of this standard and that affords adequate protection against formaldehyde exposures.

1910.1048(h)

Protective equipment and clothing. Employers shall comply with the provisions of 29 CFR 1910.132 and 29 CFR 1910.133. When protective equipment or clothing is provided under these provisions, the employer shall provide these protective devices at no cost to the employee and assure that the employee wears them.

1910.1048(h)(1)

Selection. The employer shall select protective clothing and equipment based upon the form of formaldehyde to be encountered, the conditions of use, and the hazard to be prevented.

1910.1048(h)(1)(i)

All contact of the eyes and skin with liquids containing 1 percent or more formaldehyde shall be prevented by the use of chemical protective clothing made of material impervious to formaldehyde and the use of other personal protective equipment, such as goggles and face shields, as appropriate to the operation.

1910.1048(h)(1)(ii)

Contact with irritating or sensitizing materials shall be prevented to the extent necessary to eliminate the hazard.

1910.1048(h)(1)(iii)

Where a face shield is worn, chemical safety goggles are also required if there is a danger of formaldehyde reaching the area of the eye.

1910.1048(h)(1)(iv)

Full body protection shall be worn for entry into areas where concentrations exceed 100 ppm and for emergency reentry into areas of unknown concentration.

1910.1048(h)(2)

Maintenance of protective equipment and clothing.

1910.1048(h)(2)(i)

The employer shall assure that protective equipment and clothing that has become contaminated with formaldehyde is cleaned or laundered before its reuse.

1910.1048(h)(2)(ii)

When ventilating formaldehyde-contaminated clothing and equipment, the employer shall establish a storage area so that employee exposure is minimized. Containers for contaminated clothing and equipment and storage areas shall have labels and signs containing the following information:

DANGER
FORMALDEHYDE-CONTAMINATED [CLOTHING] EQUIPMENT
AVOID INHALATION AND SKIN CONTACT

1910.1048(h)(2)(iii)

The employer shall assure that only persons trained to recognize the hazards of formaldehyde remove the contaminated material from the storage area for purposes of cleaning, laundering, or disposal.

1910.1048(h)(2)(iv)

The employer shall assure that no employee takes home equipment or clothing that is contaminated with formaldehyde.

1910.1048(h)(2)(v)

The employer shall repair or replace all required protective clothing and equipment for each affected employee as necessary to assure its effectiveness.

1910.1048(h)(2)(vi)

The employer shall inform any person who launders, cleans, or repairs such clothing or equipment of formaldehyde's potentially harmful effects and of procedures to safely handle the clothing and equipment.

1910.1048(i)

Hygiene protection.

1910.1048(i)(1)

The employer shall provide change rooms, as described in 29 CFR 1910.141 for employees who are required to change from work clothing into protective clothing to prevent skin contact with formaldehyde.

1910.1048(i)(2)

If employees' skin may become splashed with solutions containing 1 percent or greater formaldehyde, for example, because of equipment failure or improper work practices, the employer shall provide conveniently located quick drench showers and assure that affected employees use these facilities immediately.

1910.1048(i)(3)

If there is any possibility that an employee's eyes may be splashed with solutions containing 0.1 percent or greater formaldehyde, the employer shall provide acceptable eyewash facilities within the immediate work area for emergency use.

1910.1048(j)

Housekeeping. For operations involving formaldehyde liquids or gas, the employer shall conduct a program to detect leaks and spills, including regular visual inspections.

1910.1048(j)(1)

Preventative maintenance of equipment, including surveys for leaks, shall be undertaken at regular intervals.

1910.1048(j)(2)

In work areas where spillage may occur, the employer shall make provisions to contain the spill, to decontaminate the work area, and to dispose of the waste.

1910.1048(j)(3)

The employer shall assure that all leaks are repaired and spills are cleaned promptly by employees wearing suitable protective equipment and trained in proper methods for cleanup and decontamination.

1910.1048(j)(4)

Formaldehyde-contaminated waste and debris resulting from leaks or spills shall be placed for disposal in sealed containers bearing a label warning of formaldehyde's presence and of the hazards associated with formaldehyde.

1910.1048(k)

Emergencies. For each workplace where there is the possibility of an emergency involving formaldehyde, the employer shall assure appropriate procedures are adopted to minimize injury and loss of life. Appropriate procedures shall be implemented in the event of an emergency.

1910.1048(l)

Medical surveillance -

1910.1048(I)(1)

Employees covered.

1910.1048(I)(1)(i)

The employer shall institute medical surveillance programs for all employees exposed to formaldehyde at concentrations at or exceeding the action level or exceeding the STEL.

1910.1048(I)(1)(ii)

The employer shall make medical surveillance available for employees who develop signs and symptoms of overexposure to formaldehyde and for all employees exposed to formaldehyde in emergencies. When determining whether an employee may be experiencing signs and symptoms of possible overexposure to formaldehyde, the employer may rely on the evidence that signs and symptoms associated with formaldehyde exposure will occur only in exceptional circumstances when airborne exposure is less than 0.1 ppm and when formaldehyde is present in material in concentrations less than 0.1 percent.

1910.1048(I)(2)

Examination by a physician. All medical procedures, including administration of medical disease questionnaires, shall be performed by or under the supervision of a licensed physician and shall be provided without cost to the employee, without loss of pay, and at a reasonable time and place.

1910.1048(I)(3)

Medical disease questionnaire. The employer shall make the following medical surveillance available to employees prior to assignment to a job where formaldehyde exposure is at or above the action level or above the STEL and annually thereafter. The employer shall also make the following medical surveillance available promptly upon determining that an employee is experiencing signs and symptoms indicative of possible overexposure to formaldehyde.

1910.1048(I)(3)(i)

Administration of a medical disease questionnaire, such as in Appendix D, which is designed to elicit information on work history, smoking history, any evidence of eye, nose, or throat irritation; chronic airway problems or hyperreactive airway disease; allergic skin conditions or dermatitis; and upper or lower respiratory problems.

1910.1048(I)(3)(ii)

A determination by the physician, based on evaluation of the medical disease questionnaire, of whether a medical examination is necessary for employees not required to wear respirators to reduce exposure to formaldehyde.

1910.1048(I)(4)

Medical examinations. Medical examinations shall be 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. The medical examination shall include:

1910.1048(I)(4)(i)

A physical examination with emphasis on evidence of irritation or sensitization of the skin and respiratory system, shortness of breath, or irritation of the eyes.

1910.1048(I)(4)(ii)

Laboratory examinations for respirator wearers consisting of baseline and annual pulmonary function tests. As a minimum, these tests shall consist of forced vital capacity (FVC), forced

expiratory volume in one second (FEV(1)), and forced expiratory flow (FEF).

1910.1048(I)(4)(iii)

Any other test which the examining physician deems necessary to complete the written opinion.

1910.1048(I)(4)(iv)

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.

1910.1048(I)(5)

Examinations for employees exposed in an emergency. The employer shall make medical examinations available as soon as possible to all employees who have been exposed to formaldehyde in an emergency.

1910.1048(I)(5)(i)

The examination shall 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.

1910.1048(I)(5)(ii)

Other examinations shall consist of those elements considered appropriate by the examining physician.

1910.1048(I)(6)

Information provided to the physician. The employer shall provide the following information to the examining physician:

1910.1048(I)(6)(i)

A copy of this standard and Appendix A, C, D, and E;

1910.1048(I)(6)(ii)

A description of the affected employee's job duties as they relate to the employee's exposure to formaldehyde;

1910.1048(I)(6)(iii)

The representative exposure level for the employee's job assignment;

1910.1048(I)(6)(iv)

Information concerning any personal protective equipment and respiratory protection used or to be used by the employee; and

1910.1048(I)(6)(v)

Information from previous medical examinations of the affected employee within the control of the employer.

1910.1048(I)(6)(vi)

In the event of a nonroutine examination because of an emergency, the employer shall provide to the physician as soon as possible: a description of how the emergency occurred and the exposure the victim may have received.

1910.1048(I)(7)

Physician's written opinion.

1910.1048(I)(7)(i)

For each examination required under this standard, the employer shall obtain a written opinion from the examining physician. This written opinion shall contain the results of the medical examination except that it shall not reveal specific findings or diagnoses unrelated to occupational exposure to formaldehyde. The written opinion shall include:

1910.1048(I)(7)(i)(A)

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;

1910.1048(l)(7)(i)(B)

Any recommended limitations on the employee's exposure or changes in the use of personal protective equipment, including respirators;

1910.1048(l)(7)(i)(C)

A statement that the employee has been informed by the physician of any medical conditions which would be aggravated by exposure to formaldehyde, whether these conditions may have resulted from past formaldehyde exposure or from exposure in an emergency, and whether there is a need for further examination or treatment.

1910.1048(l)(7)(ii)

The employer shall provide for retention of the results of the medical examination and tests conducted by the physician.

1910.1048(l)(7)(iii)

The employer shall provide a copy of the physician's written opinion to the affected employee within 15 days of its receipt.

1910.1048(l)(8)

Medical removal.

1910.1048(l)(8)(i)

The provisions of paragraph (l)(8) 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. 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.

1910.1048(l)(8)(ii)

An employee's report of signs or symptoms of possible overexposure to formaldehyde shall be evaluated by a physician selected by the employer pursuant to paragraph (l)(3). If the physician determines that a medical examination is not necessary under paragraph (l)(3)(ii), there shall be a two-week evaluation and remediation period to permit the employer to ascertain whether the signs or symptoms subside untreated or with the use of creams, gloves, first aid treatment or personal protective equipment. Industrial hygiene measures that limit the employee's exposure to formaldehyde may also be implemented during this period. The employee shall be referred immediately to a physician prior to expiration of the two-week period if the signs or symptoms worsen. Earnings, seniority and benefits may not be altered during the two-week period by virtue of the report.

1910.1048(l)(8)(iii)

If the signs or symptoms have not subsided or been remedied by the end of the two-week period, or earlier if signs or symptoms warrant, the employee shall be examined by a physician selected by the employer. The physician shall 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 contain less than 0.1 percent formaldehyde.

1910.1048(l)(8)(iv)

Medical examinations shall be conducted in compliance with the requirements of paragraph

(l)(5)(i) and (ii). Additional guidelines for conducting medical exams are contained in Appendix C.

1910.1048(l)(8)(v)

If the physician finds that significant irritation of the mucosa of the eyes or of the upper airways, respiratory sensitization, dermal irritation, or dermal sensitization result from workplace formaldehyde exposure and recommends restrictions or removal, the employer shall promptly comply with the restrictions or recommendation of removal. In the event of a recommendation of removal, the employer shall remove the affected employee from the current formaldehyde exposure and if possible, transfer the employee to work having no or significantly less exposure to formaldehyde.

1910.1048(l)(8)(vi)

When an employee is removed pursuant to paragraph (l)(8)(v), the employer shall transfer the employee to comparable work for which the employee is qualified or can be trained in a short period (up to 6 months), where the formaldehyde exposures are as low as possible, but not higher than the action level. The employer shall maintain the employee's current earnings, seniority, and other benefits. If there is no such work available, the employer shall maintain the employee's current earnings, seniority and other benefits until such work becomes available, until the employee is determined to be unable to return to workplace formaldehyde exposure, until the employee is determined to be able to return to the original job status, or for six months, whichever comes first.

1910.1048(l)(8)(vii)

The employer shall arrange for a follow-up medical examination to take place within six months after the employee is removed pursuant to this paragraph. This examination shall determine if the employee can return to the original job status, or if the removal is to be permanent. The physician shall make a decision within six months of the date the employee was removed as to whether the employee can be returned to the original job status, or if the removal is to be permanent.

1910.1048(l)(8)(viii)

An employer's obligation to provide earnings, seniority and other benefits to a removed employee may be reduced to the extent that the employee receives compensation for earnings lost during the period of removal either from a publicly or employer-funded compensation program or from employment with another employer made possible by virtue of the employee's removal.

1910.1048(l)(8)(ix)

In making determinations of the formaldehyde content of materials under this paragraph the employer may rely on objective data.

1910.1048(l)(9)

Multiple physician review.

1910.1048(l)(9)(i)

After the employer selects the initial physician who conducts any medical examination or consultation to determine whether medical removal or restriction is appropriate, the employee may designate a second physician to review any findings, determinations or recommendations of the initial physician and to conduct such examinations, consultations, and laboratory tests as the second physician deems necessary and appropriate to evaluate the effects of formaldehyde exposure and to facilitate this review.

1910.1048(l)(9)(ii)

The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation for the purpose of medical removal or restriction.

1910.1048(l)(9)(iii)

The employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following within fifteen (15) days after receipt of the notification of the right to seek a second medical opinion, or receipt of the initial physician's written opinion, whichever is later;

1910.1048(l)(9)(iii)(A)

The employee informs the employer of the intention to seek a second medical opinion, and

1910.1048(l)(9)(iii)(B)

The employee initiates steps to make an appointment with a second physician.

1910.1048(l)(9)(iv)

If the findings, determinations or recommendations of the second physician differ from those of the initial physician, then the employer and the employee shall assure that efforts are made for the two physicians to resolve the disagreement. If the two physicians are unable to quickly resolve their disagreement, then the employer and the employee through their respective physicians shall designate a third physician who shall be a specialist in the field at issue:

1910.1048(l)(9)(iv)(A)

To review the findings, determinations or recommendations of the prior physicians; and

1910.1048(l)(9)(iv)(B)

To conduct such examinations, consultations, laboratory tests and discussions with the prior physicians as the third physician deems necessary to resolve the disagreement of the prior physicians.

1910.1048(l)(9)(v)

In the alternative, the employer and the employee or authorized employee representative may jointly designate such third physician.

1910.1048(l)(9)(vi)

The employer shall act consistent with the findings, determinations and recommendations of the third physician, unless the employer and the employee reach an agreement which is otherwise consistent with the recommendations of at least one of the three physicians.

1910.1048(m)

Hazard communication -

1910.1048(m)(1)

General. Communication of the hazards associated with formaldehyde in the workplace shall be governed by the requirements of paragraph (m). The definitions of 29 CFR 1910.1200 (c) shall apply under this paragraph.

1910.1048(m)(1)(i)

The following shall be subject to the hazard communication requirements of this paragraph: formaldehyde gas, all mixtures or solutions composed of greater than 0.1 percent formaldehyde, and materials capable of releasing formaldehyde into the air, under reasonably foreseeable conditions of use, at concentrations reaching or exceeding 0.1 ppm.

1910.1048(m)(1)(ii)

As a minimum, specific health hazards that the employer shall address are: cancer, irritation and sensitization of the skin and respiratory system, eye and throat irritation, and acute

toxicity.

1910.1048(m)(2)

Manufacturers and importers who produce or import formaldehyde or formaldehyde-containing products shall provide downstream employers using or handling these products with an objective determination through the required labels and MSDSs if these items may constitute a health hazard within the meaning of 29 CFR 1910.1200(d) under normal conditions of use.

1910.1048(m)(3)

Labels.

1910.1048(m)(3)(i)

The employer shall assure that hazard warning labels complying with the requirements of 29 CFR 1910.1200(f) are affixed to all containers of materials listed in paragraph (m)(1)(i), except to the extent that 29 CFR 1910.1200(f) is inconsistent with this paragraph.

1910.1048(m)(3)(ii)

Information on labels. As a minimum, for all materials listed in paragraph (m)(1)(i) capable of releasing formaldehyde at levels of 0.1 ppm to 0.5 ppm, labels shall identify that the product contains formaldehyde; list the name and address of the responsible party; and state that physical and health hazard information is readily available from the employer and from material safety data sheets.

1910.1048(m)(3)(iii)

For materials listed in paragraph (m)(1)(i) capable of releasing formaldehyde at levels above 0.5 ppm, labels shall appropriately address all hazards as defined in 29 CFR 1910.1200 (d) and 29 CFR 1910.1200 Appendices A and B, including respiratory sensitization, and shall contain the words "Potential Cancer Hazard."

1910.1048(m)(3)(iv)

In making the determinations of anticipated levels of formaldehyde release, the employer may rely on objective data indicating the extent of potential formaldehyde release under reasonably foreseeable conditions of use.

1910.1048(m)(3)(v)

Substitute warning labels. The employer may use warning labels required by other statutes, regulations, or ordinances which impart the same information as the warning statements required by this paragraph.

1910.1048(m)(4)

Material safety data sheets.

1910.1048(m)(4)(i)

Any employer who uses formaldehyde-containing materials listed in paragraph (m)(1)(i) shall comply with the requirements of 29 CFR 1910.1200(g) with regard to the development and updating of material safety data sheets.

1910.1048(m)(4)(ii)

Manufacturers, importers, and distributors of formaldehyde-containing materials listed in paragraph (m)(1)(i) shall assure that material safety data sheets and updated information are provided to all employers purchasing such materials at the time of the initial shipment and at the time of the first shipment after a material safety data sheet is updated.

1910.1048(m)(5)

Written hazard communication program. The employer shall develop, implement, and maintain at the workplace, a written hazard communication program for formaldehyde

exposures in the workplace, which at a minimum describes how the requirements specified in this paragraph for labels and other forms of warning and material safety data sheets, and paragraph (n) for employee information and training, will be met. Employers in multi-employer workplaces shall comply with the requirements of 29 CFR 1910.1200(e)(2).

1910.1048(n)

Employee information and training -

1910.1048(n)(1)

Participation. The employer shall assure that all employees who are assigned to workplaces where there is exposure to formaldehyde participate in a training program, except that where the employer can show, using objective data, that employees are not exposed to formaldehyde at or above 0.1 ppm, the employer is not required to provide training.

1910.1048(n)(2)

Frequency. Employers shall provide such information and training to employees at the time of initial assignment, and whenever a new exposure to formaldehyde is introduced into the work area. The training shall be repeated at least annually.

1910.1048(n)(3)

Training program. The training program shall be conducted in a manner which the employee is able to understand and shall include:

1910.1048(n)(3)(i)

A discussion of the contents of this regulation and the contents of the Material Safety Data Sheet.

1910.1048(n)(3)(ii)

The purpose for and a description of the medical surveillance program required by this standard, including:

1910.1048(n)(3)(ii)(A)

A description of the potential health hazards associated with exposure to formaldehyde and a description of the signs and symptoms of exposure to formaldehyde.

1910.1048(n)(3)(ii)(B)

Instructions to immediately report to the employer the development of any adverse signs or symptoms that the employee suspects is attributable to formaldehyde exposure.

1910.1048(n)(3)(iii)

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;

1910.1048(n)(3)(iv)

The purpose for, proper use of, and limitations of personal protective clothing and equipment;

1910.1048(n)(3)(v)

Instructions for the handling of spills, emergencies, and clean-up procedures;

1910.1048(n)(3)(vi)

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

1910.1048(n)(3)(vii)

A review of emergency procedures including the specific duties or assignments of each employee in the event of an emergency.

1910.1048(n)(4)

Access to training materials.

1910.1048(n)(4)(i)

The employer shall inform all affected employees of the location of written training materials and shall make these materials readily available, without cost, to the affected employees.

1910.1048(n)(4)(ii)

The employer shall provide, upon request, all training materials relating to the employee training program to the Assistant Secretary and the Director.

1910.1048(o)

Recordkeeping -

1910.1048(o)(1)

Exposure measurements. The employer shall establish and maintain an accurate record of all measurements taken to monitor employee exposure to formaldehyde. This record shall include:

1910.1048(o)(1)(i)

The date of measurement;

1910.1048(o)(1)(ii)

The operation being monitored;

1910.1048(o)(1)(iii)

The methods of sampling and analysis and evidence of their accuracy and precision;

1910.1048(o)(1)(iv)

The number, durations, time, and results of samples taken;

1910.1048(o)(1)(v)

The types of protective devices worn; and

1910.1048(o)(1)(vi)

The names, job classifications, social security numbers, and exposure estimates of the employees whose exposures are represented by the actual monitoring results.

1910.1048(o)(2)

Exposure determinations. Where the employer has determined that no monitoring is required under this standard, the employer shall maintain a record of the objective data relied upon to support the determination that no employee is exposed to formaldehyde at or above the action level.

1910.1048(o)(3)

Medical surveillance. The employer shall establish and maintain an accurate record for each employee subject to medical surveillance under this standard. This record shall include:

1910.1048(o)(3)(i)

The name and social security number of the employee;

1910.1048(o)(3)(ii)

The physician's written opinion;

1910.1048(o)(3)(iii)

A list of any employee health complaints that may be related to exposure to formaldehyde; and

1910.1048(o)(3)(iv)

A copy of the medical examination results, including medical disease questionnaires and results of any medical tests required by the standard or mandated by the examining physician.

1910.1048(o)(4)

Respirator fit testing.

1910.1048(o)(4)(i)

The employer shall establish and maintain accurate records for employees subject to negative pressure respirator fit testing required by this standard.

1910.1048(o)(4)(ii)

This record shall include:

1910.1048(o)(4)(ii)(A)

A copy of the protocol selected for respirator fit testing.

1910.1048(o)(4)(ii)(B)

A copy of the results of any fit testing performed.

1910.1048(o)(4)(ii)(C)

The size and manufacturer of the types of respirators available for selection.

1910.1048(o)(4)(ii)(D)

The date of the most recent fit testing, the name and social security number of each tested employee, and the respirator type and facepiece selected.

1910.1048(o)(5)

Record retention. The employer shall retain records required by this standard for at least the following periods:

1910.1048(o)(5)(i)

Exposure records and determinations shall be kept for at least 30 years.

1910.1048(o)(5)(ii)

Medical records shall be kept for the duration of employment plus 30 years.

1910.1048(o)(5)(iii)

Respirator fit testing records shall be kept until replaced by a more recent record.

1910.1048(o)(6)

Availability of records.

1910.1048(o)(6)(i)

Upon request, the employer shall make all records maintained as a requirement of this standard available for examination and copying to the Assistant Secretary and the Director.

1910.1048(o)(6)(ii)

The employer shall make employee exposure records, including estimates made from representative monitoring and available upon request for examination, and copying to the subject employee, or former employee, and employee representatives in accordance with 29 CFR 1910.1020 (a)-(e) and (g)-(i).

1910.1048(o)(6)(iii)

Employee medical records required by this standard shall be provided upon request for examination and copying, to the subject employee or former employee or to anyone having the specific written consent of the subject employee or former employee in accordance with 29 CFR 1910.1020 (a)-(e) and (g)-(i).

[56 FR 10378, Mar. 12, 1991; 56 FR 26909, June 12, 1991; 56 FR 37651, Aug. 8, 1991; 56 FR 57593, Nov. 13, 1991; 57 FR 2682, Jan. 23, 1992; 57 FR 19262, May 5, 1992; 57 FR 22290, May 27, 1992; 61 FR 5507, Feb. 13, 1996; 63 FR 1152, Jan. 8, 1998; 63 FR 20098, April 23, 1998; 70 FR 1143, Jan. 5, 2005; 71 FR 16672 and 16673, April 3, 2006; 71 FR 50190, August 24, 2006; 73 FR 75586, Dec. 12, 2008]

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Occupational Safety & Health Administration
200 Constitution Avenue, NW
Washington, DC 20210

APPENDIX B: P:NAU:CHM:9 – Standard Operating Procedure – Formaldehyde

Formaldehyde

1. Process

- a. General handling of Formaldehyde (37%) or Formalin

2. Describe process, hazardous chemical, or hazard class

- a. Toxic
- b. Carcinogen
- c. Flammable

3. Personal Protective Equipment

- a. If airborne exposures are suspected contact the Office of Regulatory Compliance (ORC) for consultation. Formaldehyde Exposure Assessments are required by law.
- b. Eye: Eye protection should be selected on potential for splash and exposure. *Minimum potential:* safety glasses with side shields when only low splash hazard exists (e.g. placing a tissue sample in a container). Chemical splash goggles should be worn if using or transferring larger quantities.
- c. Skin: Disposable or lightweight nitrile, neoprene, natural rubber or PVC gloves provide protection from incidental contact. Heavier gloves should be used when extended handling of contaminated or preserved materials or immersion is likely. A chemically resistant apron should be used when transferring or using large quantities and splash is likely

4. Engineering Controls

- a. Work with formaldehyde only in a fume hood or with local exhaust ventilation.
- b. Use only in an area equipped with a douse shower and eyewash.

5. Special Handling Procedures and Storage Requirements

- a. Read Material Safety Data Sheet (MSDS) prior to first use.
- b. Keep in a tightly closed container.
- c. Separate from oxidizing agents.
- d. Keep away from heat and flame.

6. Spill and Accident Procedures

- a. Small spills: Do not attempt cleanup if you feel unsure of your ability to do so or if you perceive the risk to be greater than normal laboratory

operations. Absorb incidental spills. Collect and submit for waste disposal by the ORC.

- b. Notify others in area. Evacuate room/immediate area. If splashed on an individual or in eyes flush for 15 minutes with copious quantities of water. Call Police (523-3000) for HazMat response. Post area and prevent unnecessary entry until ORC response team arrives. Provide assistance to ORC as requested.
- c. Inhalation: Remove to fresh air.
- d. Ingestion: If swallowed and the victim is conscious, dilute, inactivate, or absorb the ingested formaldehyde by giving milk, activated charcoal, or water. Any organic material will inactivate formaldehyde. Get medical attention immediately.
- e. Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
- f. Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

7. Decontamination Procedures

- a. Wash surfaces thoroughly with soap and water.
- b. Contain decontamination materials for proper waste disposal

8. Waste Disposal Procedures

- a. Formaldehyde is a listed RCRA hazardous waste. Dispose of waste through the ORC.

9. MSDS Location

- a. Available in lab
- b. Available through ORC
- c. Available through manufacturer's website