

## FORMALDEHYDE STANDARD - 29 CFR 1910.1048

### 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(l)(1)**

Employees covered.

##### **1910.1048(l)(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(l)(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(l)(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(I)(7)(i)(B)**

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

**1910.1048(I)(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(I)(7)(ii)**

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

**1910.1048(I)(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(I)(8)**

Medical removal.

**1910.1048(I)(8)(i)**

The provisions of paragraph (I)(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(I)(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 (I)(3). If the physician determines that a medical examination is not necessary under paragraph (I)(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(I)(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(I)(8)(iv)**

Medical examinations shall be conducted in compliance with the requirements of paragraph (I)(5)(i) and (ii). Additional guidelines for conducting medical exams are contained in Appendix C.

### **1910.1048(I)(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(I)(8)(vi)**

When an employee is removed pursuant to paragraph (I)(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(I)(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(I)(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(I)(8)(ix)**

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

**1910.1048(I)(9)**

Multiple physician review.

**1910.1048(I)(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(I)(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(I)(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(I)(9)(iii)(A)**

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

**1910.1048(I)(9)(iii)(B)**

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

**1910.1048(I)(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(I)(9)(iv)(A)**

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

**1910.1048(I)(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(I)(9)(v)**

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

**1910.1048(I)(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]