

DEPARTMENT OF CONSUMER AND INDUSTRY SERVICES

DIRECTOR'S OFFICE

OCCUPATIONAL HEALTH STANDARDS--FORMALDEHYDE

(By authority conferred on the director of the department of consumer and industry services by section 24 of 1974 PA 154, MCL 408.1024, and Executive Reorganization Order Nos. 1996-1 and 1996-2, MCL 330.3101 and 445.2001)

R 325.51451 Scope and application.

Rule 1. (1) These rules apply to exposures to any of the following:

- (a) Formaldehyde from any source.
- (b) Formaldehyde gas.
- (c) Formaldehyde solutions.
- (d) Materials that release formaldehyde.

(2) These rules apply to all employment situations, including general industry and construction industry employment.

(3) These rules replace all references to formaldehyde contained in tables G-1 and G-2 in occupational health rules 2102 and 2103; table G-1-A and G-2 in R 325.51108, and table 3 of exhibit I of occupational health rule 6201(1).

History: 1990 AACS.

R 325.51452 Definitions.

Rule 2. As used in these rules:

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

(b) "Authorized person" means any person who is required by work duties to be present in regulated areas or who is authorized to be present in regulated areas by the employer, by these rules, or by 1974 PA 154, MCL 408.1001 et seq.

(c) "Director" means the director of the Michigan department of consumer and industry services or his or her designee.

(d) "Emergency" means any occurrence, such as an equipment failure, the rupture of containers, or the failure to control equipment, that results in an uncontrolled release of a significant amount of formaldehyde.

(e) "Employee exposure" means the exposure to airborne formaldehyde that would occur without the use of a respirator.

(f) "Formaldehyde" means the chemical substance HCHO, chemical abstracts service registry no. 50-00-0.

History: 1990 AACS; 1999 AACS.

R 325.51453 Permissible exposure limits (PEL).

Rule 3. (1) An employer shall ensure that an employee is not exposed to an airborne concentration of formaldehyde at a level of more than 0.75 parts of formaldehyde per million parts of air (0.75 ppm) as an 8-hour, time-weighted average (TWA).

(2) An employer shall ensure that an employee is not exposed to formaldehyde at a level of more than 2 parts of formaldehyde per million parts of air (2 ppm) during any 15-minute period. This is designated as a short-term exposure limit (STEL).

History: 1990 AACS; 1993 AACS.

R 325.51454 Exposure monitoring generally.

- Rule 4. (1) An employer shall monitor to determine employee exposure to formaldehyde.
- (2) An employer is not required to monitor exposures if it can be documented, using objective data, that the presence of formaldehyde or formaldehyde-releasing products in the workplace could not possibly expose an employee at or above the action level or STEL under foreseeable conditions of use.
- (3) Employee exposure to formaldehyde shall be determined by representative monitoring for each job classification, in each work area, for each shift, and during the full shift or for a short-term exposure, as appropriate. Other work shift monitoring need not be conducted if objective data can document equivalent exposures for different work shifts.
- (4) Monitoring shall be accurate, at the 95% confidence level, to within plus or minus 25% for airborne concentrations of formaldehyde at the TWA and the STEL and to within plus or minus 35% for airborne concentrations of formaldehyde at the action level.

History: 1990 AACS; 1993 AACS.

R 325.51455 Initial exposure monitoring.

- Rule 5. (1) An 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.
- (2) Unless an employer chooses to measure the exposure of each employee who is potentially exposed to formaldehyde, an 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.
- (3) The initial monitoring process shall be repeated each time there is a change in any of the following which may result in new or additional exposure to formaldehyde:
- (a) Production.
 - (b) Equipment.
 - (c) Process.
 - (d) Personnel.
 - (e) Control measures.
- (4) If an employer receives reports of an employee who has signs or symptoms of respiratory or skin conditions that are associated with formaldehyde exposure, the employer shall promptly monitor and determine the affected employee's exposure.

History: 1990 AACS; 1993 AACS.

R 325.51456 Periodic exposure monitoring.

- Rule 6. (1) An 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.
- (2) If the last monitoring results reveal employee exposure at or above the action level, an employer shall repeat monitoring of the employee at least once every 6 months.
- (3) If the last monitoring results reveal employee exposure at or above the STEL, an employer shall repeat monitoring under the worst STEL conditions of the employees at least once a year.
- (4) An employer may discontinue periodic monitoring for employees if results from 2 consecutive sampling periods taken not less than 7 days apart show that employee exposure is below the action level and the STEL. The results shall be statistically representative and consistent with the employer's knowledge of the job and work operation.

History: 1990 AACS.

R 325.51457 Exposure monitoring; notification and observation.

Rule 7. (1) Within 15 days of receiving the results of exposure monitoring conducted pursuant to these rules, an employer shall notify the affected employees of the results. Notification shall be accomplished by distributing copies of the results to the employees or by posting the results. If employee exposure is over either permissible exposure limit (TWA or STEL), an employer shall develop and implement a written plan to reduce employee exposure to or below both PELs and give written notice to employees. The written notice shall contain a description of the corrective action being taken by the employer to decrease exposure.

(2) An employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to formaldehyde required by these rules. 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, an 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.

History: 1990 AACS.

R 325.51458 Regulated areas.

Rule 8. (1) An employer shall establish regulated areas where the concentration of airborne formaldehyde is more than 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

(2) An employer shall limit access to regulated areas to authorized persons who have been trained to recognize the hazards of formaldehyde.

(3) An employer at a multiemployer worksite who establishes a regulated area shall communicate the access restrictions and location of the area to other employers with work operations at that worksite.

History: 1990 AACS.

R 325.51459 Engineering and work practice controls.

Rule 9. (1) An employer shall institute engineering and work practice controls to reduce and maintain employee exposures to formaldehyde at or below the TWA and the STEL.

(2) If an 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 PELs to the extent feasible and shall supplement them with respirator protection pursuant to the provisions of R 325.51460 and occupational health rule 3502.

History: 1990 AACS.

R 325.51460 Respiratory protection.

Rule 10. (1) For employees who use respirators required by these rules, the employer shall provide respirators that comply with the requirements of these rules. An employer shall ensure that an employee uses a respirator during all of the following:

- (a) Periods necessary to install or implement feasible engineering and work practice controls.
- (b) 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.
- (c) Work operations for which feasible engineering and work practice controls are not yet sufficient to reduce exposure to or below the PELs.
- (d) Emergencies.

- (2) An employer shall select appropriate respirators from table 1 of this rule.
- (3) An employer shall provide a powered air-purifying respirator that is adequate to protect against formaldehyde exposure to any employee who has difficulty using a negative-pressure respirator.
- (4) Table 1 reads as follows:

Table 1

Minimum Requirements for Respiratory Protection Against Formaldehyde

Condition of use or formaldehyde concentration (ppm) Minimum respirator required

1 Up to 7.5 ppm
(10 x PEL)

Full facepiece with cartridges or canisters specifically approved for protection against formaldehyde.² Up to

75 ppm
(100 x PEL)

Full-face mask with chin-style or chest or back-mounted type with industrial-size canister specifically approved for protection against formaldehyde.

Type C supplied-air respirator, pressure demand or continuous-flow type, with full facepiece, hood, or helmet

Above 75 ppm or unknown
(emergencies)
(100 x PEL)

Self-contained breathing apparatus (SCBA) with positive-pressure full facepiece. Combination supplied-air, full facepiece, positive-pressure respirator with auxiliary self-contained air supply

Firefighting

SCBA with positive pressure in full facepiece.

Escape

SCBA in demand or pressure demand mode Full-face mask with chin-style or front or back-mounted type industrial-size canister specifically approved for protection against formaldehyde.

1 Respirators specified for use at higher concentrations may be used at lower concentrations.
2 A half-mask respirator with cartridges specifically approved for protection against formaldehyde can be substituted for the full facepiece respirator if effective gasproof goggles are provided and used in combination with the half-mask respirator.

History: 1990 AACCS; 1993 AACCS; 1999 AACCS.

R 325.51461 Respirator program.

Rule 11. (1) An employer shall implement a respiratory protection program in accordance with 29 C.F.R. '1910.134(b) to (d) and (f) to (m), except for (d)(1)(iii) and (d)(3)(iii)(b)(1) and (2), as adopted by reference in R 325.60051 et seq. of the Michigan Administrative Code.

(2) If air-purifying chemical-cartridge respirators are used, then the employer shall do both of the following:

(a) Replace the cartridge after 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.

(b) Unless the canister contains a NIOSH-approved ESLI to show when breakthrough occurs, replace canisters used in atmospheres up to 7.5 ppm

(10 x PEL) every 4 hours and industrial-size canisters used in atmospheres up to 75 ppm (100 x PEL) every 2 hours, or at the end of the workshift, whichever occurs first.

History: 1990 AACS; 1993 AACS; 1999 AACS.

R 325.51462 Protective equipment and clothing.

Rule 12. (1) An employer shall comply with the provisions of general industry safety standards, Part 33. Personal Protective Equipment, being R 408.13301 et seq. and construction standard Part 6. Personal Protective Equipment, being R 408.40601 et seq. of the Michigan Administrative Code. If protective equipment or clothing is provided under Part 33 or Part 6, then an employer shall provide the protective devices at no cost to the employee and assure that the employee wears the devices.

(2) An 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.

(3) An employer shall ensure that chemical-protective clothing made of material impervious to formaldehyde and other personal protective equipment, such as goggles and face shields, is used to prevent an employee's eyes and skin from coming into contact with liquids that contain 1% or more formaldehyde, as appropriate to the operation.

(4) An employer shall ensure that contact with irritating or sensitizing materials is prevented to the extent necessary to eliminate the hazard. If a face shield is worn, then an employer shall ensure that an

employee wears chemical safety goggles if there is a danger of formaldehyde reaching the area of the eye. An employer shall ensure that an employee wears full body protection for entry into areas where concentrations of formaldehyde are more than 100 ppm and for emergency reentry into areas of unknown concentrations.

History: 1990 AACS; 1999 AACS.

R 325.51463 Maintenance of protective equipment and clothing.

Rule 13. (1) An employer shall assure that protective equipment and clothing that has become contaminated with formaldehyde is cleaned or laundered before its reuse.

(2) When ventilating formaldehyde-contaminated clothing and equipment, an employer shall establish a storage area so that employee exposure is minimized. Labels for containers for contaminated clothing and equipment and signs for storage areas for contaminated clothing and equipment shall contain the following information:

DANGER
FORMALDEHYDE-CONTAMINATED CLOTHING/EQUIPMENT
AVOID INHALATION AND SKIN CONTACT

(3) An employer shall assure that only persons who are trained to recognize the hazards of formaldehyde remove the contaminated items from the storage areas or container for the purposes of cleaning, laundering, or disposal.

(4) An employer shall assure that an employee does not take his or her formaldehyde-contaminated clothing or equipment home.

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

(6) An employer shall inform any person who launders, cleans, or repairs contaminated clothing or equipment of formaldehyde's potentially harmful effects and of procedures to safely handle the clothing and equipment.

History: 1990 AACCS.

R 325.51464 Hygiene facilities.

Rule 14. (1) An employer shall provide change rooms, as described in occupational health rule 4201(5), for employees who are required to change from work clothing into protective clothing to prevent skin contact with formaldehyde.

(2) If the possibility of employee skin contact with solutions containing 1% or more formaldehyde exists, for example because of equipment failure or improper work practices, an employer shall provide conveniently located quickdrench showers and assure that affected employees use these facilities immediately.

(3) If there is any possibility that an employee's eyes may be splashed with solutions containing 0.1% or more formaldehyde, an employer shall provide acceptable facilities for flushing eyes within the immediate work area for emergency use.

History: 1990 AACCS.

R 325.51465 Housekeeping.

Rule 15. For operations involving formaldehyde liquids or gas, an employer shall conduct a program to detect leaks and spills, including regular visual inspections. The program shall include all of the following that are applicable:

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

(b) In work areas where spillage may occur, an employer shall provide for containing the spill, decontaminating the work area, and disposing of the waste.

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

(d) 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.

History: 1990 AACCS.

R 325.51466 Emergencies.

Rule 16. For each workplace where there is the possibility of an emergency involving formaldehyde, an employer shall assure that appropriate procedures are adopted to minimize injury and loss of life. Appropriate procedures shall be implemented in the event of an emergency.

History: 1990 AACCS.

R 325.51467 Medical surveillance generally.

Rule 17. (1) An employer shall institute medical surveillance programs for all employees who are exposed to formaldehyde at concentrations at or exceeding the action level or exceeding the STEL.

(2) An employer shall make medical surveillance available for employees who develop signs and symptoms of overexposure to formaldehyde and for all employees who are exposed to formaldehyde in emergencies. When determining whether an employee may be experiencing signs and symptoms of possible overexposure to formaldehyde, an 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 materials in concentrations less than 0.1%.

(3) All medical procedures, including the 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.

(4) An employer shall make the following medical surveillance documents available to employees before 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 documents available promptly upon determining that an employee is experiencing signs and symptoms indicative of possible overexposure to formaldehyde:

(a) An employer-administered medical disease questionnaire, such as in appendix D to these rules, which is designed to elicit information in the following areas:

- (i) Work history.
- (ii) Smoking history.
- (iii) Any evidence of eye, nose, or throat irritation.
- (iv) Chronic airway problems or hyperactive airway disease.
- (v) Allergic skin conditions or dermatitis.
- (vi) Upper or lower respiratory problems.

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

History: 1990 AACS; 1993 AACS.

R 325.51468 Medical examinations.

Rule 18. (1) 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 shall be given at the time of initial assignment and at least annually thereafter to all employees who are required to wear a respirator to reduce exposure to formaldehyde. The medical examination shall include all of the following:

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

(b) Laboratory examinations for respirator wearers consisting of baseline and annual pulmonary function tests. At a minimum, these tests shall consist of forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1), and forced expiratory flow (FEF).

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

(d) Counseling of employees who have medical conditions that would be directly or indirectly aggravated by exposure to formaldehyde on the increased risk of impairment of their health.

(2) An employer shall make medical examinations available as soon as possible to all employees who have been exposed to formaldehyde in an emergency. The examination shall include a medical and work history with an emphasis on any evidence of upper or lower respiratory problems, allergic conditions, skin reaction or hypersensitivity, and eye, nose, or throat irritation. Other examinations shall consist of those elements considered appropriate by the examining physician.

(3) An employer shall provide all of the following information to the examining physician:

(a) A copy of these rules and appendices A, C, D, and E.

(b) A description of the affected employee's job duties as they relate to the employee's exposure to formaldehyde.

(c) The representative exposure level for the employee's job assignment.

(d) Information concerning any personal protective equipment and respiratory protection used or to be used by the employee.

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

(f) For a nonroutine examination because of an emergency, an employer shall provide, as soon as possible, a description of how the emergency occurred and the exposure the victim may have received.

History: 1990 AACS.

R 325.51469 Physician's written opinion.

Rule 19. (1) For each examination pursuant to the provisions of R 325.51468, an 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 all of the following:

(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.

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

(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.

(2) An employer shall provide for retention of the results of the medical examination and tests conducted by the physician.

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

History: 1990 AACS.

R 325.51470 Employee medical removal procedures.

Rule 20. (1) This rule applies if an employee reports any of the following symptoms attributed to workplace formaldehyde exposure:

(a) Significant irritation of the mucosa of the eyes or of the upper airways.

(b) Respiratory sensitization.

(c) Dermal irritation.

(d) Dermal sensitization. This rule does not apply in the case of dermal irritation or sensitization if the product that is suspected of causing the dermal condition contains less than 0.05% formaldehyde.

(2) A physician shall evaluate an employee's report of signs or symptoms of possible overexposure to formaldehyde. An employer shall select the physician under R 325.51467. If the physician determines that a medical examination is not necessary, then there shall be a 2-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. An employer may also implement industrial hygiene measures that limit an employee's exposure to formaldehyde during the 2-week period. An employer shall immediately refer an employee to a physician before the end of the 2-week period if the signs or symptoms worsen. An employer shall not alter earnings, seniority, and benefits during the 2-week period because of an employee's medical report.

(3) If an employee's signs or symptoms of possible overexposure to formaldehyde have not subsided or been remedied by the end of the 2-week period, or earlier if the signs or symptoms warrant, then a physician who is selected by the employer shall examine the employee. The physician shall presume, absent contrary evidence, that observed dermal irritation or dermal sensitization is not attributable to formaldehyde when products to which the affected employee is exposed contain less than 0.1% formaldehyde.

(4) An employer shall ensure that a medical examination is conducted in compliance with R 325.51468(2). Additional guidelines for conducting medical exams are contained in appendix C to these rules.

(5) If the physician finds that significant irritation of the mucosa of the eyes or the upper airways, respiratory sensitization, dermal irritation, or dermal sensitization results from workplace formaldehyde exposure and recommends restrictions or removal of the employee from

formaldehyde exposure, then the employer shall promptly comply with the restrictions or recommendation of removal. If there is a recommendation of removal, then the employer shall remove the affected employee from the current formaldehyde exposure and, if possible, transfer the employee to work that does not result in exposure to formaldehyde or that results in significantly less exposure to formaldehyde.

(6) If an employee is removed under subrule (5) of this rule, then an employer shall transfer the employee to comparable work for which the employee is qualified or can be trained in not more than a 6-month period and work 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 comparable work is not available, then the employer shall maintain the employee's current earnings, seniority, and other benefits until comparable 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 6 months, whichever occurs first.

(7) An employer shall arrange for a follow-up medical examination to take place within 6 months after an employee is removed from formaldehyde exposure under this rule. The examination shall determine if the employee can return to the original job status or if the removal is to be permanent. A physician shall make a decision within 6 months of the date that an employee was removed as to whether the employee can be returned to the original job status or if the removal is to be permanent.

(8) An employer's obligation to provide earnings, seniority, and other benefits to an employee who is removed from formaldehyde exposure 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 that is made possible by the employee's removal.

(9) In making determinations of the formaldehyde content of materials under this rule, an employer may rely on objective data.

History: 1990 AACCS; 1993 AACCS; 1999 AACCS.

R 325.51471 Multiple physician review.

Rule 21. (1) If an employer selects the initial physician to conduct a medical examination or consultation to determine if medical removal or restriction is appropriate, an employee may designate a second physician to do both of the following:

- (a) Review the findings, determinations, or recommendations of the initial physician.
- (b) Conduct examinations, consultations, and laboratory tests as the second physician deems necessary and appropriate to evaluate the effects of formaldehyde exposure and to facilitate his or her review of the findings, determinations, or recommendations of the initial physician.

(2) An employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that a physician who is selected by the employer conducts a medical examination or consultation for the purpose of medical removal or restriction.

(3) An employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing both of the following within 15 days after receipt of the employer's notification, as required in subrule (2) of this rule, or receipt of the initial physician's written opinion, whichever is later:

- (a) Informing the employer that the employee intends to seek a second medical opinion.
 - (b) Initiating steps to make an appointment with a second physician.
- (4) If the findings, determinations, or recommendations of a second physician differ from those of an initial physician, the employee and the employer shall ensure that efforts are made for the 2 physicians to resolve their disagreement. If the 2 physicians are unable to quickly resolve the disagreement, the employer and the employee, through their respective physicians, shall designate a third physician who shall be a specialist in the field at issue to do both of the following:
- (a) Review the findings, determination, or recommendations of the prior physicians.
 - (b) Conduct examinations, consultations, laboratory tests, and discussions with the prior physicians as the third physician deems necessary to resolve the disagreement between the prior physicians.

As an alternative, the employer and the employee or authorized employee representative may jointly designate a third physician.

(5) An employer shall act consistent with the findings, determinations, and recommendations of the third physician, unless the employer and the employee reach an agreement that is otherwise consistent with the recommendations of at least 1 of the 3 physicians.

History: 1990 AACCS; 1993 AACCS.

R 325.51472 Hazard communication.

Rule 22. (1) Communication to employees of the hazards associated with formaldehyde in the workplace shall be governed by the provisions of this rule. The definitions set forth in the provisions of 29 C.F.R. S1910.1200 apply to these rules. The provisions of 29 C.F.R. S1910.1200 were incorporated by reference in Act No. 154 of the Public Acts of 1974, as amended, being S408.1001 et seq. of the Michigan Compiled Laws, by Act No.80 of the Public Acts of 1986, which added S408.1014a.

(2) The hazard communication requirements of this rule shall apply to formaldehyde gas, all mixtures or solutions composed of more than 0.1% formaldehyde, and materials that are capable of releasing formaldehyde into the air under any reasonably foreseeable condition of use at concentrations of, or more than, 0.1 ppm. At a minimum, an employer shall address all of the following specific health hazards:

- (a) Cancer.
- (b) Irritation and sensitization of the skin and respiratory system.
- (c) Eye and throat irritation.
- (d) Acute toxicity.

(3) Manufacturers and importers that produce or import formaldehyde or formaldehyde-containing products shall provide downstream employers who use or handle these products with an objective determination through the required labels and material safety data sheets (MSDS) if these items may constitute a health hazard within the meaning of the provisions of 29 C.F.R. S1910.1200(d) under normal conditions of use.

(4) With regard to labeling, all of the following provisions shall apply:

(a) An employer shall ensure that hazard warning labels that are in compliance with the requirements of 29 C.F.R. S1910.1200(f) are affixed to all containers of materials listed in subrule (2) of this rule, unless the provisions of 29 C.F.R. S1910.1200(f) are inconsistent with the provisions of this subdivision.

(b) Labels for all materials which are listed in subrule (2) of this rule and which are capable of releasing formaldehyde at levels of 0.1 ppm to 0.5 ppm shall contain all of the following information:

- (i) A statement that the material contains formaldehyde.
- (ii) The name and address of the manufacturer's or importer's responsible person.
- (iii) A statement that physical and health hazard information is readily available from the employer and from material safety data sheets (MSDS).

(c) Labels for all materials which are listed in subrule (2) of this rule and which are capable of releasing formaldehyde at levels of more than 0.5 ppm shall appropriately address all hazards that are defined in 29 C.F.R. S1910.1200(d) and appendices A and B of 29 C.F.R. S1910.1200. The label shall contain a statement that formaldehyde is a potential sensitizer of the respiratory system and shall contain the words "POTENTIAL CANCER HAZARD."

(d) In determining an anticipated level of formaldehyde release, an employer may rely on objective data that indicates the extent of potential formaldehyde release under reasonably foreseeable conditions of use.

(e) An employer may use warning labels which are required by other statutes, regulations, or ordinances and which impart the same information as the warning statements required by this subrule.

(5) With regard to material safety data sheets, both of the following provisions apply:

(a) An employer who uses formaldehyde-containing materials listed in subrule (2) of this rule shall comply with the requirements of 29 C.F.R. S1910.1200(g) with regard to the development and updating of material safety data sheets.

(b) Manufacturers, importers, and distributors of formaldehyde-containing materials listed in subrule (2) of this rule shall ensure that material safety data sheets and updated information are

provided to all employers who purchase 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.

(6) An employer shall develop, implement, and maintain, at the workplace, a written hazard communication program for formaldehyde exposures in the workplace. At a minimum, the program shall describe how the requirements of this rule and R 325.51473 will be met and how an employer in a multi-employer facility where other employers' workers may be exposed to formaldehyde will accomplish all of the following:

(a) Make copies of material safety data sheets for formaldehyde materials available to other employers and their employees.

(b) Inform other employers of precautionary measures that are needed to protect employees from formaldehyde exposure during normal operations and in foreseeable emergencies.

(c) Inform other employers of the labeling system that is used for formaldehyde materials.

History: 1990 AACS; 1993 AACS.

R 325.51473 Employee information and training.

Rule 23. (1) An employer shall ensure that all employees who are assigned to workplaces where there is exposure to formaldehyde at or above 0.1 ppm participate in a training program.

(2) An employer shall provide employees with information and training on formaldehyde at the time of their initial assignment and when a new exposure to formaldehyde is introduced into their work areas. Employers shall provide such information and training at least annually.

(3) The training program shall be conducted in a manner that an employee is able to understand and shall include all of the following:

(a) A discussion of the contents of these rules and the contents of the material safety data sheet.

(b) An explanation of the purpose for, and a description of, the medical surveillance program required by these rules, including both of the following:

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

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

(c) A 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.

(d) An explanation of the purpose for, and proper use and limitations of, personal protective clothing and equipment.

(e) Instructions for the handling of spills, emergencies, and clean-up procedures.

(f) An explanation of the importance of engineering and work practice controls for employee protection and any necessary instruction in the use of these controls.

(g) A review of emergency procedures, including the specific duties or assignments of each employee in an emergency.

(4) An 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. The employer shall provide, to the director, upon request, all training materials relating to the employee training program.

History: 1990 AACS; 1993 AACS.

R 325.51474 Recordkeeping.

Rule 24. (1) An employer shall establish and maintain an accurate record of all measurements taken to monitor employee exposure to formaldehyde. This record shall include all of the following information:

(a) The date of measurement.

(b) The operation being monitored.

(c) The methods of sampling and analysis and evidence of their accuracy and precision.

(d) The number, durations, time, and results of samples taken.

(e) The types of protective devices worn.

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

(2) If an employer has determined that monitoring is not required pursuant to these rules, the employer shall maintain a record of the objective data relied upon to support the determination that employees are not exposed to formaldehyde at or above the action level.

(3) An employer shall establish and maintain an accurate record for each employee who is subject to medical surveillance pursuant to these rules. This record shall include all of the following information:

(a) The name and social security number of the employee.

(b) The physician's written opinion.

(c) A list of any employee health complaints that may be related to exposure to formaldehyde.

(d) A copy of the medical examination results, including medical disease questionnaires and results of any medical tests required by these rules or mandated by the examining physician.

(4) An employer shall establish and maintain accurate records for employees who are subject to negative-pressure respirator fit testing required by these rules. These records shall include all of the following information:

(a) A copy of the protocol selected for respirator fit testing.

(b) A copy of the results of any fit testing performed.

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

(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.

(5) An employer shall retain records required by these rules for not less than the following periods:

(a) Exposure records and determinations shall be kept for not less than 30 years.

(b) Medical records shall be kept for the duration of employment, plus 30 years.

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

(6) All of the following provisions apply with regard to the availability of records:

(a) Upon request, an employer shall make all records maintained as a requirement of these rules available for examination and copying to the director.

(b) An employer shall make employee exposure records, including estimates made from representative monitoring, available upon request for examination and copying to the subject employee or former employee and to employee representatives in accordance with the provisions of R 325.3451 et seq.

(c) Employee medical records required by these rules shall be provided upon request for examination and copying to the subject employee or former employee or to anyone who has the specific written consent of the subject employee or former employee in accordance with the provisions of R 325.3451 et seq.

History: 1990 AACCS.

R 325.51475 Compliance dates.

Rule 25. (1) Except as indicated in subrule (2) of this rule, compliance with the requirements of these rules is required on the effective date of these rules.

(2) Compliance with the rules specified in this subrule shall be as follows:

(a) R 325.51459, compliance with the 0.75 ppm exposure limit shall be completed as soon as possible, but not later than June 26, 1993.

(b) R 325.51470 and R 325.51471, compliance is required not later than December 31, 1992.

(c) R 325.51472(4), compliance is required not later than December 31, 1992.

History: 1990 AACCS; 1993 AACCS.

R 325.51476 Appendices.

Rule 26. Appendices A, B, C, and D to these rules are informational and are not intended to create any additional obligations not otherwise imposed or to detract from any existing obligations.

History: 1990 AACCS; 1993 AACCS.

R 325.51477 Availability of rules; permission to reproduce.

Rule 27. (1) Single copies of these rules and appendices is available to affected employers and employees at no cost from the Michigan Department of Consumer and Industry Services, Standards Division, P.O. Box 30643, Lansing, Michigan 48909.

(2) Permission to reproduce these rules and their appendices, in full or in part, is granted by the director.

History: 1990 AACCS; 1999 AACCS.