




OREGON DEPARTMENT OF FISH AND
WILDLIFE POLICY
Human Resources Division

Title:	Formalin Handling	HR_480_12
Supersedes:	HR_480_12, dated September 1, 2004	
Applicability:	All employees required to use formalin in ODFW worksites and operations.	
Reference:	OAR 437- 2/ Z-1910.1048	
Effective Date:	November 1, 2011	Approved: 

I. PURPOSE

To ensure that control measures are in place to minimize employee exposure to formaldehyde through control measures such as work practices, engineering controls, and personal protective equipment requirements (including respirators).

II. DEFINITIONS

- A. **Action Level:** 0.5 ppm of formaldehyde expressed as an 8-hr TWA. The Action Level is also established by OR-OSHA.
- B. **Formaldehyde:** A nearly colorless gas with a pungent suffocating odor. It has the chemical formula HCHO.
- C. **Formalin:** An aqueous solution containing 30% to 50% formaldehyde by weight. Inhibited formalin solutions contain from 10% to 20% methanol (methyl alcohol). Formalin solutions may off-gas formaldehyde.
- D. **Permissible Exposure Limit (PEL):** 0.75 ppm of formaldehyde expressed as an 8-hour time-weighted average (TWA). The PEL is established by OR-OSHA.
- E. **Personal Protective Equipment (PPE):** E.g., clothing, masks and gloves worn by workers to protect them from known chemical hazards. PPE must be determined by evaluation of the chemical hazards present.
- F. **Regulated Area:** A location where the airborne concentration of formaldehyde exceeds, or may possibly exceed, the Action Level or STEL.
- G. **Short Term Exposure Limit (STEL):** 2 ppm of formaldehyde expressed as a 15-minute average. The STEL is established by OR-OSHA.
- H. **Threshold Limit Value (TLV):** 0.3 ppm of formaldehyde expressed as a Ceiling Limit not to be exceeded in the workplace. TLVs are established by the American Conference of Governmental Industrial Hygienists (ACGIH). TLVs are recommended limits, not legal standards.

III. POLICY

A. Scope

1. This policy covers users of formalin in all ODFW worksites and operations. This policy may not apply to laboratories where formalin is used at a "laboratory scale," as described in a Chemical Hygiene Plan developed for that laboratory. However, if air monitoring and/or work practices demonstrate possible inhalation and skin exposure to formaldehyde, then parts of this procedure may be implemented as determined by the Safety and Health Manager.
2. Employees required to use formalin are subject to this policy. Failure to comply with the provision of this policy may result in disciplinary action.

B. Handling, Use and Storage

1. Each site where formalin is used shall establish specific handling, use, and storage requirements for that site. The requirements will take into account the amount of formalin used, the number of people potentially exposed (including the general public), and the results of any air monitoring or health and safety surveys at the site.
2. The requirements shall include the following:
 - a. Locations where formalin will be stored and used.
 - b. Labeling requirements for containers. All incoming containers of formalin must be labeled with the identity of the substance(s); name and address of the chemical manufacturer, importer, or distributor; and the appropriate hazard warnings. Appropriate hazard warnings include target organs, nature of hazard (e.g., corrosive or flammable), and first aid measures. Secondary containers (except pipes) must be labeled with at least the identity of the substance(s) and the appropriate hazard warnings.
 - c. How other employees and the general public will be informed that formalin is being used in an area (e.g., signage, barrier tape).
 - d. Eyewashes must be located within 10 seconds of travel in areas where employees may be splashed with formalin due to spills, leaks, or equipment failure. Drench showers or a charged hose must be in areas where significant drenching of the body is foreseeable.

C. Personal Protective Equipment (PPE)

Personnel handling formalin shall use personal protective equipment (PPE) as appropriate:

1. Gloves shall be made of a material that is impermeable to formalin. Contact the vendor for the specific type to use. The recommended glove material may vary among vendors.
2. Goggles shall be tight-fitting so that no liquid can leak through. If full facepiece respirators are worn, goggles need not be used. Note: Gloves and goggles are

required to be worn during any operation where formalin is used or formalin-bearing containers or equipment is handled.

3. Splash aprons or raingear shall be made of a material impermeable to formalin where significant body contact is possible.
4. Rubber or neoprene boots shall be worn where applicable. For example, boots should be worn when pouring formalin from drums into smaller containers. These boots shall be removed after working with formalin to prevent contamination of other areas.
5. Unless air monitoring and/or objective data indicate exposure levels below 0.3 ppm (the ACGIH TLV), a tight fitting air-purifying respirator (APR) with cartridges specific for formaldehyde shall be used. If a half facepiece APR is used, liquid-tight goggles must also be worn (see # 2 above in this section). Contact the vendor for the specific respirator used at the site to determine the service life of the cartridges. In any event, cartridges may not be used for a period of longer than 3 hours, either continuous or intermittent.
6. Respiratory protection shall be used in accordance with the HR Policy 480_15, Respiratory Protection Program.
7. Personal protective equipment that is contaminated with formalin shall be cleaned before reuse. Heavily contaminated and/or damaged equipment shall be disposed of.
8. PPE used when handling formalin shall be stored in a well ventilated area, away from pedestrian traffic as much as possible. Containers or areas where contaminated PPE is venting will be labeled:

DANGER

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

9. Formalin contaminated clothing will be handled only by persons trained in the proper procedures for handling formalin.
10. Employees shall not take home formalin-contaminated clothing.

D. Exposure monitoring

Exposure monitoring for formaldehyde will be performed at sites handling formalin every two years or when a formalin system/procedure is changed.. Exposure monitoring may be performed by site personnel, the ODFW Safety and Health Manager, SAIF, OR-OSHA, or private consultants.

E. Medical Surveillance

1. Where exposure monitoring shows employees to be exposed to formaldehyde above either the OR-OSHA Action Level (0.5 ppm as an 8-hour TWA), or the Short-Term Exposure Limit (2 ppm as a 15-minute average), a routine medical surveillance program meeting the requirements of the OR-OSHA formaldehyde regulation will be implemented.

2. The routine medical surveillance program required by OR-OSHA includes completing a medical disease questionnaire similar to the one contained in Attachment A of this procedure. Upon review of the questionnaire, the doctor will take the necessary medical action that may include:
 - a. 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.
 - b. Laboratory examinations for respirator wearers consisting of baseline and annual pulmonary function tests. These will include forced vital capacity (FVC), forced expiratory volume in one second (FEV1), and forced expiratory flow (FEF).
 - c. Any other tests which the examining physician deems necessary to complete the written opinion.
 - d. 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.
3. Those employees included in a medical surveillance program shall participate in it before performing the activity(ies) that result in elevated formaldehyde exposures, and annually thereafter. The medical surveillance program may be discontinued if exposure monitoring indicates that exposure levels are below the applicable limits or if the employee no longer performs the activities where elevated exposures occur.
4. Medical surveillance shall also be provided as soon as possible upon determining that an employee is experiencing signs and symptoms indicative of possible overexposure to formaldehyde. Should this become necessary, an Occupational Health Physician shall be contacted to provide assistance. Attachment B of this procedure lists the procedure and physician(s) to call in the event that employees are experiencing signs and symptoms associated with formaldehyde exposure. As a minimum, a medical evaluation must include completing a medical disease questionnaire similar to the one contained in Attachment B of this procedure. Upon review of the questionnaire, the doctor shall take the necessary medical action that may include items a through d above.
5. Medical surveillance shall also be provided to all employees exposed to formaldehyde such that it constitutes a medical emergency. Attachment A of this procedure outlines the procedures to follow for medical emergencies. The medical evaluation for emergencies will include:
 - a. An examination that includes 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.
 - b. Any other elements considered appropriate by the examining physician.

6. Sites or programs which use the medical providers for emergency and symptomatic evaluations will be billed at the provider's standard rates for the services rendered. Costs for these services may or may not be recovered through the workers' compensation process.
7. ODFW shall provide the following information regarding formaldehyde exposure to attending physicians:
 - a. A description of the affected employee's job duties as they relate to the employee's exposure to formaldehyde.
 - b. The representative exposure level for the employee's job assignment.
 - c. Information concerning any personal protective equipment and respiratory protection used or to be used by the employee.
 - d. Information from previous medical examinations of the affected employee within the control of the employer.
 - e. A copy of the OR-OSHA formaldehyde standard including Appendices, available from Oregon OSHA.
 - f. If the exam is being provided due to exposure in an emergency, the physician shall be given as soon as possible a description of how the emergency occurred and the exposure the victim may have received.
8. For each examination, the attending physician will supply ODFW with a written opinion that includes:
 - 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.
 - d. The physician may not provide ODFW with any specific findings or diagnoses unrelated to occupational exposure to formaldehyde.
9. A copy of the results of the medical examination and tests conducted by the physician shall be maintained in the employee's medical records file in the Human Resources Division. In addition, a copy of the physician's written opinion shall be provided to the employee within 15 days of its receipt by ODFW.

E. Spill Response

1. Classes of Spills:

- a. Minor spills would be those that generally cause the same amount of formalin to be spilled as is normally handled during a procedure. Employees who handle formalin may clean up minor spills as they occur while wearing the same PPE and respirators as when they are routinely handling formalin.
- b. Major spills are those that result in the sudden, uncontrolled release of one entire drum (55 gallon) or more of formalin, such as from a ruptured drum or broken PVC delivery line. Major spills may only be cleaned up by personnel who have been through a 24-hour (minimum) HAZ-WOPER emergency responders class, and are properly equipped to handle the spill. These personnel may be ODFW employees or outside responders as appropriate.

2. Spill Response Procedure

- a. Each site handling formalin shall develop a spill response procedure specific for the site taking into account the amount of formalin handled and stored, spill response equipment available at the site, training of site personnel, and proximity to outside emergency response organizations. Spilled formalin shall not be routinely flushed down drains. Every attempt shall be made to avoid allowing spilled formalin to reach drains. Formalin shall only be flushed down drains when there is an immediate inhalation exposure potential to employees or visitors, and flushing is the most effective means of preventing that exposure.
- b. Spill response equipment such as barriers, barrel containment pallets, absorbent pads or materials and waste containers shall be placed where formalin spills are most likely to occur, such as where formalin is transferred from one container to another or where formalin is stored.
- c. All spills of formalin shall be reported to the site manager or designee. In addition, uncontained spills in excess of 100 pounds (11 gallons) shall be reported immediately to the National Response Center at (800) 424-8802 and the Oregon Emergency Response System (OERS) via 911 or direct at (800) 452-0311.
- d. When empty formalin drums are "triple rinsed" to remove residual formalin, the rinsate (rinse water and residual formalin) may be placed into the ponds as part of a "treatment" process. Handling the rinsate in this manner eliminates having to dispose of it as a hazardous waste. If the rinsate is not placed into the ponds, it shall be handled and disposed of as a hazardous waste. Full PPE will be used during the barrel cleaning.

F. Training

Each site using formalin shall provide training to the affected employees. This may be accomplished as part of a regular monthly safety meeting. The topics will include:

1. A review of the MSDS for formalin;
2. Potential health hazards associated with formalin;
3. The need to report any signs or symptoms of formalin exposure immediately to the supervisor;
4. Areas where formalin is used and stored;
5. Safe work practices and engineering controls to prevent or minimize employee exposure to formalin;
6. Use and limitations of PPE and respirators; and
7. Spill handling procedures (minor and major).

G. Responsibilities

1. Employees shall:
 - a. Familiarize themselves with formalin and the handling procedures;
 - b. Use the specified PPE and respirators when handling formalin; and
 - c. Make no attempt to clean up major spills unless properly trained and equipped.
2. Supervisors shall:
 - a. Ensure formalin is used and stored in designated areas, and
 - b. Train personnel on proper handling of formalin.
3. The Safety and Health Manager shall:
 - a. Assist sites in developing safe formalin handling procedures;
 - b. Assist in developing training materials; and
 - c. Help sites in obtaining air monitoring services and equipment.

Attachment A Procedures for Medical Emergencies and Symptomatic Employees and Medical Surveillance Questionnaire

Attachment B Information about Formaldehyde