Introduction

What is Formaldehyde?

Formaldehyde is a colorless, polymerizable gas at room temperature and has a very noticeable and pungent odor. It has a chemical formula of HCHO and is classified as a volatile organic compound. It is widely used in industry in the manufacturing of building materials, and is supplied commercially to laboratories as formalin. Formalin is a 34-38% solution of formaldehyde in water, stabilized with a 10-15% solution of methanol. Formalin is used, among other things, to disinfect cultures and blood films, and also for preserving and fixing tissues for histological examinations. Formaldehyde is also used as a fertilizer, disinfectant, and biocide as well as in embalming fluids, as a reducing agent in the recovery of gold and silver, and as a corrosion inhibitor in oil wells. It is used in the durable press treatment of textile fabrics, as an industrial sterilant, in foam insulation, particle board, plywood, and as a versatile chemical intermediate. Formaldehyde is also often used in the laboratory as a preservative, and for the disinfecting of surfaces and spaces.

Formaldehyde is an irritant and can cause allergic symptoms at very low levels. It is metabolized in the liver, excreted in the urine, and subsequently exhaled. It is normally present at low levels of approximately 0.06 ppm in both indoor and outdoor air. When the presence of formaldehyde reaches 0.1 ppm, acute health effects will occur in most individuals. Those individuals who are most sensitive to formaldehyde can show symptoms at lower doses. Acute effects of formaldehyde include eye, nose, and throat irritation, insomnia, headaches, depression, memory loss, dizziness, fatigue, nausea, diarrhea, chest pains, rashes, and asthma attacks due to destruction to tissue of the mucous membranes and upper respiratory tract. Chronic effects from
Formaldehyde exposure can include the alteration of genetic material and carcinogenic effects. If an individual has an acute exposure to formaldehyde and begins to show symptoms, usually removing that individual from the exposure will allow for recovery without any persisting effects. It is chronic exposure to small doses of formaldehyde that is a major cause for study and concern. The effects of exposure to differing concentrations vary from one individual to another, but here is a general guide: Health Effects of Formaldehyde

Reported Health Effect Formaldehyde Concentration, ppm

<table>
<thead>
<tr>
<th>Formaldehyde Concentration, ppm</th>
<th>Health Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.05</td>
<td>Unperceived</td>
</tr>
<tr>
<td>0.05-1.0</td>
<td>Odor</td>
</tr>
<tr>
<td>1.0-10.0</td>
<td>Irritation of upper respiratory system</td>
</tr>
<tr>
<td>10.0-20.0</td>
<td>Severe respiratory symptoms</td>
</tr>
<tr>
<td>&gt; 20.0</td>
<td>Serious injury to respiratory tract</td>
</tr>
<tr>
<td>&gt; 50.0</td>
<td>Death</td>
</tr>
</tbody>
</table>


* The low concentration of 0.01 was observed in the presence of other pollutants that may have acted synergistically.

Similarities of OSHA Formaldehyde Standard/ OSHA Hazard Communication Standard/ OSHA Laboratory Standard

1. All require a written plan.
2. All address labeling.
3. The OSHA Formaldehyde and OSHA Laboratory Standards address designated/regulated areas for carcinogens.
4. All address availability of reference materials (MSDs) for more information.
5. All address the concept of permissible exposure limits (PELs). OSHA sets these limits to ensure worker safety.
6. All address training.
7. The Lab Standard and the Formaldehyde Standard both address monitoring and medical surveillance.
8. All address control measures for protection from hazards.
9. All require recordkeeping.

Tulane’s Written Plan for Formaldehyde

Formaldehyde is a substance known to possess hazardous characteristics requiring specific handling, usage, storage, monitoring, labeling, and disposal methods. The OSHA formaldehyde Standard requires that Tulane prepare a specific policy to provide employees who are using or have the potential of being exposed to formaldehyde with more precise protective guidelines, in addition to those set forth under the Hazard Communication Standard. Tulane’s written Formaldheyde Policy is available to employees and can be found as section 450-00 of the Office of Environmental Health and Safety’s Policies and Procedures Manual (see Appendix A of this booklet).

Labeling

OSHA regulates how formaldehyde is to be labeled:

1. Products releasing 0.1-0.5 ppm must have a label which says “Contains Formaldehyde” and must state the hazard information on the label.
2. Products releasing >0.5 ppm must contain the words “Potential Cancer Hazard” and must contain information on respiratory sensitization.
3. Laundry contaminated with formaldehyde must be labeled. This label must state “Danger, Formaldehyde contaminated clothing, avoid inhalation and skin contact.” Contaminated laundry must be ventilated for 48 hours (possibly in a fume hood), placed in a plastic bag, and cleaned through a commercial laundry service designated by Tulane. It is not to be brought home for laundering.

Designated/ Regulated Areas

Formaldehyde is a carcinogen, and as such, may only be used in a designated/regulated area. All entrances and access ways to the designated/regulated area must be posted bearing the following information: Danger Formaldehyde Irritant and Potential Cancer Hazard AUTHORIZED PERSONNEL ONLY

Only persons who are trained in the hazards of formaldehyde and who are familiar with how to protect themselves will be allowed access to these areas, and any contract labor must be informed about access restrictions and locations of such areas.

Availability of Reference Materials

Formaldehyde, all mixtures or solutions composed of greater than 0.1% formaldehyde, and materials capable of releasing formaldehyde into the air under reasonably foreseeable conditions of use at concentrations reaching or exceeding 0.1 ppm are subject to the formaldehyde regulations. The MSDS provided by the manufacturer when a chemical is initially purchased and which can be obtained from OEHS, will be used as a reference to communicate the possible hazards of exposure. The supervisor is responsible for annual inventory reports to OEHS and to ensure that the correct MSDS is obtained and kept in the affected work area. An MSDS for formaldehyde can be found in Appendix B. It lists signs and symptoms of exposure, first aid measures, exposure controls (personal protective equipment, engineering, and work practice controls), toxicological information, etc. Information on formaldehyde can also be found from other sources such as a chemical dictionary, the Merck Index, Chemical Abstracts, etc.

Permissible Exposure Limits (PELs)

OSHA sets permissible exposure limits to ensure worker safety. For formaldehyde, the PELs are as follows:

1. Time Weighted Average (TWA) - No employee shall be exposed to airborne concentrations of formaldehyde which exceed 0.75 ppm for an 8 hour work period.
2. Short Term Exposure Limit (STEL) - No employee is to be exposed to an airborne
concentration of formaldehyde which exceeds 2 ppm in any 15 period.

3. Action Level - No employee shall be exposed at or above the action level of 0.5 ppm over an 8 hour work period without action being taken to determine and reduce exposure levels.

In the event of an emergency where the PELs may be exceeded, the area should be evacuated and OEHS contacted immediately so that monitoring and procedures to reduce exposure can be implemented. Respirators as well as engineering and work practice controls should be implemented by trained personnel until exposures are within the acceptable range and clearance is given by OEHS.

Training

For formaldehyde, training is required at the following times:

1. Initial training must be provided upon initial assignment to a job with the potential for formaldehyde exposure. (A brief introduction is given at new employee orientation.)
2. Annual training is required if exposure to formaldehyde is greater than or equal to 0.1 ppm.
3. Training is required whenever new conditions or hazards are introduced.

OEHS trains supervisors or their representatives who in turn are required to train others in their areas of responsibility when there is the potential for workplace exposure to formaldehyde. The training must be repeated annually and must be documented. A training documentation form can be found in Appendix C of this booklet.

Training for formaldehyde must address the following topics:

1. Contents of the OSHA Formaldehyde Standard, Tulane’s Plan, and the MSDS (See Appendices)
2. The medical surveillance program, signs and symptoms of exposure, reporting of injuries, and follow-up procedures
3. Control measures such as safe work practices, engineering controls, and personal protective equipment (See sections below)
4. Emergency procedures, spills (Go over Tulane’s policies)

(For a detailed description of the Training Program, see 450-11.05 OEHS Policies and Procedures Manual.)

Control Measures

The supervisor, under the advice of OEHS personnel, will institute safe work practices and engineering controls to reduce and maintain exposures to formaldehyde at or below the TWA and STEL. These will be accomplished through the following examples.

Safe Work Practices - Examples

1. Scheduling formaldehyde activities over longer time frames instead of all at once.
2. Employee rotation.
3. Leaving the work area when the work is complete and allowing it to air out.
4. Avoiding close contact with formaldehyde sources by keeping the breathing zone away from the source of the vapors.

Engineering Controls - Examples

1. Local exhaust ventilation/dilution exhaust ventilation including chemical fume hoods which exhaust 100% to the outside with no recirculation, as well as slot ventilation which draws fumes to the back of the work space and away from the worker and then exhausts them 100% to the outside. (Note: Dilution exhaust ventilation is not as satisfactory for health hazard control as is local exhaust ventilation.)
2. An Emergency Shower is needed if there is a greater than or equal to 1% solution of formaldehyde in the working area.
3. An Emergency Eyewash is needed in the immediate work area if 0.1% or greater solution of formaldehyde is present in the working area.

Personal Protective Equipment - Examples

PPE will be selected based on the form of formaldehyde, the conditions of use, and the degree of hazard.

1. Chemical protective clothing and gloves impervious to formaldehyde should be worn.
2. Other equipment such as goggles and face shields should be used to prevent contact to the eyes and skin from solutions containing 1% or more of formaldehyde.

Respiratory Protection

Annual fit testing, training, and a medical evaluation is required in order to wear a respirator for protection from formaldehyde exposures. According to the OSHA Formaldehyde Standard, respirators are required

1. During the interval necessary to install or implement feasible engineering and work practice controls.
2. For work operations and repair activities where engineering and work practice controls are not feasible.
3. Where feasible engineering and work practice controls are not yet sufficient to reduce exposures below the PELs.
4. In emergencies.
For the type of respirator, contact OEHS for assistance. Where an air purifying, full face respirator is required, OSHA requires that cartridges be replaced after 3 hours of use or at the end of the shift, unless the cartridge contains an end of service indicator. Individuals not required by the standard, but who wish to wear a respirator, may do so if fit testing and a medical evaluation are done. The department must pay for these requested services just as if the standard required the requesting individual to wear a respirator. (See Section 450-05 OEHS Formaldehyde Policy for complete methods of compliance.)

Monitoring
Whether monitoring will be needed or not depends on if signs and symptoms are experienced, if procedures can cause spills and splashes, the ventilation that is available, the quantity and concentration of formaldehyde that is used, the length of time exposed, etc. A survey form (See Section 450-13.02 OEHS Formaldehyde Policy) needs to be filled out, submitted to OEHS, and evaluated by the OEHS industrial hygienist.

The Industrial Hygienist from OEHS will evaluate the survey and if it is felt that there is little chance of exposure at or above the PELs under foreseeable conditions, no monitoring will be done. Otherwise, representative sampling will be performed, with the worst exposure areas sampled first. If these worse case areas are below the PELs, the industrial hygienist may decide that similar areas may not need to be monitored. However, if signs and symptoms of formaldehyde exposure are experienced, monitoring WILL be done. The survey and monitoring process will need to be repeated if there is a change in production, equipment, process, personnel, or control measures.

Periodic monitoring will be conducted if results were at or above the PELs. If at or above the action level, monitoring will be done every 6 months. If at or above the STEL, monitoring will be done every year under worst conditions.

Termination of monitoring will occur when results from 2 consecutive sampling periods at least 7 days apart are below the action level or STEL.

Notification of results will be in writing within 15 days of receipt. You will be expected to sign a form stating that the results were received. If above the PELs, the supervisor is required to provide and implement a written plan to reduce exposures and to give written notice to employees of corrective action being taken to reduce exposures.

Medical Surveillance
Medical requirements should be implemented under the following conditions:
1. If exposure is above the action level or STEL - required.
2. If signs and symptoms are experienced (Note: If <0.1 ppm, or formaldehyde is in concentration <0.1%, and symptoms are rare) - medical surveillance must be made available.
3. In an emergency - medical surveillance must be made available.
4. To wear a respirator - an annual medical evaluation is required.

Medical Disease Questionnaire (See 450-13.03 OEHS Formaldehyde Policy)
1. This should be filled out prior to a job where formaldehyde levels are known to be at or above the action level or STEL, and annually thereafter.
2. It should be filled out promptly if there are signs or symptoms of exposure to formaldehyde.
3. The form contains questions on the work history, smoking history, eye, nose, throat irritation, airway problems, allergic skin conditions, and respiratory problems.
4. The physician will review the form to determine if a medical exam is needed.

Medical Exam
1. This will be done if the physician feels the person is at an increased risk or if a respirator is required.
2. This includes a physical exam, baseline and annual pulmonary function tests, other tests ordered by the physician, and counseling.
3. In the event of exposure in an emergency, the medical disease questionnaire needs to be filled out, the physical exam needs to be performed, and any tests required by the physician need to be done.

Info to the Physician
The physician needs to receive the following information:
1. A copy of the Formaldehyde Standard,
2. A description of the job duties,
3. The exposure level if known,
4. Personal protective equipment and respiratory protection used,
5. Information from previous medical exams, and
6. If an emergency, how it occurred and the possible exposure of the victim.

Written Opinion of Physician
1. This will only contain results related to occupational exposure.
2. It will list if the employee has a medical condition that would place him at increased risk to formaldehyde exposure.
3. It will list limitations or changes in personal protective equipment.
4. It will contain a statement that the employee has been informed and if additional treatment is needed.
5. It will be given to the employee within 15 days of receipt.

Medical Removal

1. If the employee reports any signs and symptoms, he will be evaluated by a physician. If the physician says that an examination is not needed, there will be a 2 week evaluation period to see if the signs and symptoms subside. If they worsen, the employee should immediately refer to the physician.

2. At the end of the 2 week period the employee will report again to the physician if they are still experiencing signs or symptoms of exposure. (Note: If <0.1% formaldehyde, the physician shall presume that these are not due to formaldehyde.)

3. If the physician feels the signs and symptoms are due to occupational exposure, he may recommend restrictions or removal. The employee, in this case, will be transferred to comparable work having less or no exposure to formaldehyde. Current earnings, seniority, and benefits will be maintained until it is determined that the employee is unable to return to formaldehyde exposure, until the employee can return to his original job, or for 6 months.

4. A follow-up medical exam must be done within 6 months after removal to determine if the employee can return to his original position or if the removal is to be permanent.

5. It is the employee's right after the initial physician visit to seek a second opinion. The employee needs to notify Tulane within 15 days of the initial physician's written opinion that he intends to seek a second opinion and make the appointment. A third physician may be called in if there is a disagreement between the opinions. The third physician's findings stand.

Recordkeeping

Exposure records must be kept for 30 years.
Medical records must be kept for the duration of employment + 30 years.
Fit testing records must be kept until replaced with a more recent record.
Training records must be kept annually. Appendix A 450-00 Office of Environmental Health and Safety's Policies and Procedures Manual Tulane's Written Formaldehyde Policy Tulane University Policy and Procedure Manual - Formaldehyde Policy
Policy No. 450-0 Date: June 1994

450-00 Formaldehyde Policy
(Occupational Exposure to Formaldehyde)

450-01 Preface

450-01.01 Tulane University is firmly committed to providing each of its employees a safe and healthful work environment. This commitment is evident in the Hazard Communication Plan and Policy established by Tulane in response to the OSHA Hazard Communication Standard (Right-to-Know) (Tulane University Environmental Health and Safety Policies and Procedures Manual, EHS-P&P 400-00). The OSHA Formaldehyde Standard (FS) 29 CFR 1910.1048 is an evolution of the OSHA Hazard Communication Standard. This standard can be found in its entirety in Appendix I of this policy.

As stated in Tulane's Hazard Communication Plan and Policy (EHS-P&P §400-00), it is recognized that in the course of teaching, research, the provision of healthcare, and other essential activities, the use of chemicals which have potentially hazardous properties is frequently required. Formaldehyde is one such substance which is known to possess hazardous characteristics requiring specific handling, usage, storage, monitoring, labeling, and disposal methods. OSHA developed the Formaldehyde Standard (FS) to protect employees against the adverse health effects which could result from exposure to formaldehyde. The OSHA Formaldehyde Standard requires Tulane to prepare a specific policy to provide employees who are using or have the potential to be exposed to formaldehyde with more precise protective guidelines in addition to those set forth under the Hazard Communication Standard (Right to Know).

Thus, a written Formaldehyde Policy has been established. By complying with the OSHA Formaldehyde Standard, Tulane, through the Office of Environmental Health and Safety (OEHS), is able to meet its obligations imposed by this new OSHA regulation.

450-01.02 Written Program

Tulane's written Formaldehyde Policy (FP) contains the details of the formaldehyde labeling policy, the Material Safety Data Sheet (MSDS) Policy, exposure monitoring, medical surveillance, medical removal, the permissible exposure limits (PELs), respiratory protection, protective clothing and its maintenance, emergency situations, and employee information and training. This FP supplements the requirements of the generic Hazard Communication policy. EHS-P&P §400-00, to accommodate the unique properties of formaldehyde and in addition details steps that will be taken to reduce employee exposure to formaldehyde.

450-01.03 Access to the Written Policy

This written Formaldehyde Policy (FP) is available to employees, their designated representatives and other parties having a need to view this document.

450-01.04 Employee Responsibility

The success of this FP depends upon the cooperation of employees identified via surveys and monitoring, and notified by OEHS to be at risk for exposure to formaldehyde. As with the Hazard Communication Policy (EHS-P&P §400-00), employees should be alerted to the potential hazards of all the materials in their work area, especially formaldehyde, by consulting the MSDSs. Employees should also follow the appropriate work practices that have been established to protect their health and safety. Active employee participation in the FP will result in the continued protection of employees from formaldehyde-related illnesses and injuries at Tulane.
This policy applies to all occupational exposures to formaldehyde, i.e. formaldehyde gas, its solutions (formalin, etc.), and materials that release formaldehyde.

450-02 Supervisory Responsibilities

Laboratory supervisors and department heads are responsible for communicating the elements of the FP to all their subordinate employees who are determined by OEHs to be at risk for occupational exposure to formaldehyde as defined in Section EHS-P&PM §450-02 above. Initial training of the supervisory level employee, surveys, and monitoring will be provided by OEHs. Supervisors will be required to submit to OEHs answers to the survey form provided in Appendix II of this policy, and documentation of training of all their employees determined to be at risk of exposure. The cost of initial medical surveillance will be a necessary expense to the laboratory/department; therefore, sufficient departmental funds must be provided for this purpose, and any prescribed personal protective equipment (PPE) and/or engineering controls must be funded through departmental budgets, grants, etc.

450-03 Exposure Limits and Monitoring

450-03.01 Permissible Exposure Limits (PELs)

It is the goal of Tulane that the following OSHA permissible exposure limits will be met. In the event of an emergency where the PELs may be exceeded, the area should be evacuated and OEHs contacted immediately so that monitoring and procedures to reduce exposure can be implemented. (This includes exposure to workers in the area as well as spill cleanup personnel.) Respirators as well as engineering controls should be implemented by trained personnel until exposures are within the acceptable range and clearance is given by OEHs.

a. TWA (Time Weighted Average): No employee at Tulane shall be exposed to airborne concentrations of formaldehyde which exceed 0.75 parts per million (ppm) of formaldehyde as
   an 8 hour TWA.

b. Short Term Exposure Limit (STEL): No employee at Tulane is to be exposed to an airborne concentration of formaldehyde which exceeds 2 parts per million (ppm) of formaldehyde as a
   15 minute STEL.

c. Action level: No employee shall be exposed at or above the action level of 0.5 ppm over an 8 hour TWA without being taken to determine and reduce exposure levels.

450-03.02 Exposure Monitoring

a. Each department, laboratory, or work area that is designated by OEHs, via survey, to possibly be
   at risk of overexposure to formaldehyde, will be monitored to determine the employee's actual
   exposure to formaldehyde. The criteria OEHs will use to determine who will be monitored is
   based upon the state or form of the formaldehyde, quantity, concentration, duration and
   frequency of exposure, and the availability of engineering controls.

b. For areas in which there is documented and objective data that formaldehyde cannot result in
   concentrations at or above the action level (0.5 ppm over an 8 hour TWA) or the STEL (2.0 ppm
   over a 15 minute period) under foreseeable conditions of use, the measuring of employee
   exposure to formaldehyde in these areas will not be required.

c. 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.

d. Representative samples for each job classification in each work area shall be taken for each
   shift unless OEHs determines with documented objective data that exposure levels for a
   given job classification are equivalent for different work shifts.

450-03.03 Initial Monitoring

a. OEHs will conduct surveys (Appendix II) initially of all laboratory or work area personnel to
   identify employees who may be exposed at or above the action level (0.5 ppm 8 hour TWA) or
   at
   or above the STEL (2.0 ppm over a 15 minute period) and accurately determine the exposure
   of
   each employee so identified.

b. OEHs will develop a representative sampling strategy and measure significant exposures
   within each job classification for each work shift to correctly characterize and not underestimate the
   exposure of any employee within each exposure group.

c. Initial monitoring will be repeated each time an area at risk for exposure to formaldehyde
   changes production, equipment, process, S.O.P. (standard operating procedure), personnel or
   control measures which may result in new or additional formaldehyde exposure(s).

d. Upon receipt of reports of signs or symptoms of respiratory or dermal conditions associated
   with formaldehyde exposure, OEHs will promptly monitor the affected employee's exposure.

450-03.04 Periodic Monitoring

a. Employees will be monitored periodically and their exposure to formaldehyde accurately
   determined if shown by the initial monitoring to be exposed at or above the action level or at or
   above the STEL.

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

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

450-03.05 Termination of Monitoring

OEHs 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. These results will be statistically representative and consistent with OEHS and laboratory supervisor's knowledge of the job and work operation.

450-03.06 Accuracy of Monitoring
Monitoring shall be accurate, at the 95% confidence level, to within plus or minus 25% for airborne concentrations for formaldehyde at the TWA and the STEL, and to within plus or minus 35% for airborne concentrations of formaldehyde at the action level.

450-03.07 Employee Notification of Results
OEHS will communicate to the affected employee the results of exposure monitoring within 15 days of receiving the results. Notification will be in writing, either by distribution of copies of the results to the employees or by posting the results. If the employee exposure is greater than the PEL, the laboratory supervisor, with the guidance of OEHS industrial hygiene and lab safety personnel, must develop and implement a written plan to reduce employee exposure to a level at or below both PEL's and give written notice to the affected employees. The written notice will contain a description of the corrective action being taken by the supervisor of the work area to decrease exposure.

450-03.08 Observation of Monitoring
a. OEHS will allow affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to formaldehyde.
b. If such observation of monitoring occurs in an area requiring protective clothing or equipment, the employee's laboratory/department will provide such clothing and equipment to the observer. The observer will be required to use such clothing and equipment, under the advisement of OEHS, who will assure that the observer complies with all other applicable safety and health procedures.

450-03.09 Record Retention
Exposure records and determinations including documentation of objective data shall be kept by OEHS industrial hygiene personnel for at least 30 years. See Section 450-12 for further details.

450-04 Regulated Areas
450-04.01 OEHS will assist the laboratory supervisor in establishing regulated areas where the concentration of airborne formaldehyde exceeds either the TWA or STEL. OEHS will advise in posting all entrances and accessways with signs bearing the following information: Danger Formaldehyde Irritant And Potential Cancer Hazard AUTHORIZED PERSONNEL ONLY

450-04.02 The laboratory supervisor will limit access to regulated areas to authorized persons who have been trained to recognize the hazards of formaldehyde.

450-04.03 Any contract labor working in or around such regulated areas must be told about the access restrictions and locations of such areas by the laboratory supervisor for that area.

450-05 Methods of Compliance
450-05.01 Engineering controls and work practices
a. The laboratory supervisor or department head, with the advice and direction of OEHS personnel, will institute appropriate engineering and work practice controls to reduce and maintain exposures to formaldehyde at or below the TWA and the STEL.
b. When OEHS has established that feasible engineering controls and work practice controls cannot reduce employee exposure to or below either of the PELs, the laboratory supervisor or department head will apply these controls to reduce employee exposures to the extent feasible, and shall supplement them with respirators which satisfy this policy.

450-06 Respiratory Protection
450-06.01 Where respiratory protection is required, the laboratory supervisor or department head shall provide the respirators at no cost to the employee and will assure that they are properly used as advised by OEHS, after the employee has been approved for respirator use by medical examination. Fit testing for the proper respirator will be conducted by OEHS. The respirators will comply with the requirements of this policy and shall reduce the concentration of formaldehyde inhaled by the employee to a level that is at or below the TWA and the STEL.

450-06.02 Respirators shall be used in the following circumstances:

a. During the interval necessary to install or implement feasible engineering and work practice controls,
b. In work operations, such as maintenance and repair activities or vessel cleaning, for which OEHS establishes that engineering and work practice controls are not feasible,
c. In work areas where feasible engineering and work practice controls are not yet sufficient to reduce exposure at or below the PELs, and
d. In emergencies.

450-06.03 Respirator Selection
a. The appropriate respirator as specified in the following table (Table 1) shall be selected by OEHS in accordance with those approved by the Mine Safety and Health Administration (MSHA) and by the National Institute for Occupational Safety and Health (NIOSH) consistent with provisions of 30 CFR Part 11.

<table>
<thead>
<tr>
<th>Conditions for Use or Formaldehyde Concentration (ppm)</th>
<th>Minimum Respirator Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 7.5 ppm (10 x PEL)</td>
<td>Full face piece with cartridge or canisters specifically approved for protection against formaldehyde.</td>
</tr>
</tbody>
</table>

Table 1. Minimum Requirements for Respiratory Protection Against Formaldehyde.
formaldehyde. Any difficulties which an employee may have with respirator usage will be addressed by OEHS and the responsible department head and laboratory supervisor.

450-06.04 Respirator Use

a. Tulane University Environmental Health and Safety Policy and Procedures Manual Provisions for Respiratory Protection Policy (EHS-P&PM §450-00) will be utilized in all areas determined by OEHS survey/monitoring to need respiratory protection for formaldehyde exposure as discussed in this FP EHS-P&PM §450-00 in accordance with 29 CFR 1910.134 (b), (d), (e), and (f). It is the supervisor's responsibility to ensure that all employees are provided with appropriate respiratory equipment, fit-tested, evaluated by a physician, and trained in respiratory usage.

b. The provisions for respiratory protection policy 20-01.07 of EHS-P&PM includes prescribed fit testing in accordance with Appendix E to 29 CFR 1910.1048, Qualitative and Quantitative Fit Testing Procedures (see Appendix I of this policy), and its outlined fit test protocols. Fit test records shall be maintained by OEHS industrial hygiene personnel until replaced by a more recent record (see 450-12 for recordkeeping details).

c. Where air purifying chemical cartridge respirators are used, the cartridges must be replaced after three hours of use or at the end of the workshift, whichever is sooner unless the cartridge contains a NIOSH-approved end-of-service indicator to show when breakthrough occurs.

d. Unless canisters have a NIOSH-approved end-of-service indicator, if used in atmospheres up to 7.5 ppm, they shall be replaced every 4 hours. Industrial sized canisters used in atmospheres up to 75 ppm must be replaced every 2 hours or at the end of the workshift, whichever is sooner.

e. Laboratory supervisors and department heads will permit employees to leave their work area to wash their faces and respirator face pieces as needed to prevent skin irritation from respirator use.

450-07 Protective Equipment and Clothing

Laboratory supervisors and department heads will comply with the provisions of 29 CFR 1910.32 and 20 CFR 1910.133. When protective clothing or equipment is provided under these provisions, the laboratory supervisor or department head shall provide these protective devices at no cost to the employee and assure that the employee wears them.

450-07.01 Selection

a. Laboratory supervisors or department heads, along with the approval and assistance of OEHS personnel, will select protective clothing and equipment based upon the form of formaldehyde to be encountered, the conditions of use, and the hazard to be prevented.

1. Prevention of all contact of the eyes and skin to liquid containing 1% or more formaldehyde will be done with the use of chemical protective clothing impervious to formaldehyde and by the use of other personal protective equipment (PPE) such as goggles and face shields as appropriate to the operation in the assigned work area.

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

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

4. Full body protection will be used for entry into areas where concentrations exceed 100 ppm and for emergency reentry to areas of unknown concentration.

450-07.02 Maintenance of Protective Clothing

a. The laboratory supervisor or department head will assure that protective equipment and clothing that has become contaminated with formaldehyde is ventilated for at least 48 hours in a chemical fume hood or other ventilated storage area, and is cleaned and laundered before reuse.

b. When ventilating formaldehyde contaminated clothing and equipment, the ventilated storage area or chemical fume hood must be labeled with the following information:

DANGER
FORMALDEHYDE CONTAMINATED [CLOTHING] EQUIPMENT

AVOID INHALATION AND SKIN CONTACT

Labels can be obtained from OEHS.

c. The laboratory supervisor or department head shall assure that only persons trained to recognize the hazards of formaldehyde remove the contaminated material from the storage area for the purpose of cleaning, laundering or disposal. The ventilated clothing should be placed into plastic bags labeled with the same information listed above before being brought to laundry handlers. The use of OEHS approved laundry tags on plastic bags informing a handler of the harmful effects according to EHS-P&PM §450-07.02(b) above, is required. Labels can be

<table>
<thead>
<tr>
<th>Concentration</th>
<th>Respiratory Protection</th>
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<tbody>
<tr>
<td>Up to 75 ppm (100 x PEL)</td>
<td>Full face mask with chin style or chest or back mounted type industrial size canister specifically approved for protection against formaldehyde. Type C supplied air respirator, pressure demand or continuous flow type with full face piece, hood or helmet.</td>
</tr>
<tr>
<td>Above 75 ppm or Unknown (Emergencies) (100 x PEL)</td>
<td>Self-contained breathing apparatus (SCBA) with positive pressure full face piece, combination supplied air respirator, full face piece positive pressure respirator with auxiliary self-contained air supply.</td>
</tr>
<tr>
<td>Escape</td>
<td>SCBA in demand or pressure demand mode. Full face mask with chin style front or back mounted type industrial canister specifically approved for protection against formaldehyde.</td>
</tr>
</tbody>
</table>

1 Respirators specified for use at higher concentrations may be used at lower concentrations.

2 A half mask respirator with canisters specifically approved for protection against formaldehyde can be substituted for full face piece respirator providing that effective gas-proof goggles are provided and used in combination with the half mask respirator.

b. OEHS will determine the appropriate approved respirator required to prevent overexposure to formaldehyde. Any difficulties which an employee may have with respirator usage will be addressed by OEHS and the responsible department head and laboratory supervisor.

450-06.04 Respirator Use

a. Tulane University Environmental Health and Safety Policy and Procedures Manual Provisions for Respiratory Protection Policy (EHS-P&PM §450-00) will be utilized in all areas determined by OEHS survey/monitoring to need respiratory protection for formaldehyde exposure as discussed in this FP EHS-P&PM §450-00 in accordance with 29 CFR 1910.134 (b), (d), (e), and (f). It is the supervisor's responsibility to ensure that all employees are provided with appropriate respiratory equipment, fit-tested, evaluated by a physician, and trained in respiratory usage.

b. The provisions for respiratory protection policy 20-01.07 of EHS-P&PM includes prescribed fit testing in accordance with Appendix E to 29 CFR 1910.1048, Qualitative and Quantitative Fit Testing Procedures (see Appendix I of this policy), and its outlined fit test protocols. Fit test records shall be maintained by OEHS industrial hygiene personnel until replaced by a more recent record (see 450-12 for recordkeeping details).

c. Where air purifying chemical cartridge respirators are used, the cartridges must be replaced after three hours of use or at the end of the workshift, whichever is sooner unless the cartridge contains a NIOSH-approved end-of-service indicator to show when breakthrough occurs.

d. Unless canisters have a NIOSH-approved end-of-service indicator, if used in atmospheres up to 7.5 ppm, they shall be replaced every 4 hours. Industrial sized canisters used in atmospheres up to 75 ppm must be replaced every 2 hours or at the end of the workshift, whichever is sooner.

e. Laboratory supervisors and department heads will permit employees to leave their work area to wash their faces and respirator face pieces as needed to prevent skin irritation from respirator use.

450-07 Protective Equipment and Clothing

Laboratory supervisors and department heads will comply with the provisions of 29 CFR 1910.32 and 20 CFR 1910.133. When protective clothing or equipment is provided under these provisions, the laboratory supervisor or department head shall provide these protective devices at no cost to the employee and assure that the employee wears them.

450-07.01 Selection

a. Laboratory supervisors or department heads, along with the approval and assistance of OEHS personnel, will select protective clothing and equipment based upon the form of formaldehyde to be encountered, the conditions of use, and the hazard to be prevented.

1. Prevention of all contact of the eyes and skin to liquid containing 1% or more formaldehyde will be done with the use of chemical protective clothing impervious to formaldehyde and by the use of other personal protective equipment (PPE) such as goggles and face shields as appropriate to the operation in the assigned work area.

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

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

4. Full body protection will be used for entry into areas where concentrations exceed 100 ppm and for emergency reentry to areas of unknown concentration.

450-07.02 Maintenance of Protective Clothing

a. The laboratory supervisor or department head will assure that protective equipment and clothing that has become contaminated with formaldehyde is ventilated for at least 48 hours in a chemical fume hood or other ventilated storage area, and is cleaned and laundered before reuse.

b. When ventilating formaldehyde contaminated clothing and equipment, the ventilated storage area or chemical fume hood must be labeled with the following information:

DANGER
FORMALDEHYDE CONTAMINATED [CLOTHING] EQUIPMENT

AVOID INHALATION AND SKIN CONTACT

Labels can be obtained from OEHS.

c. The laboratory supervisor or department head shall assure that only persons trained to recognize the hazards of formaldehyde remove the contaminated material from the storage area for the purpose of cleaning, laundering or disposal. The ventilated clothing should be placed into plastic bags labeled with the same information listed above before being brought to laundry handlers. The use of OEHS approved laundry tags on plastic bags informing a handler of the harmful effects according to EHS-P&PM §450-07.02(b) above, is required. Labels can be

<table>
<thead>
<tr>
<th>Concentration</th>
<th>Respiratory Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 75 ppm (100 x PEL)</td>
<td>Full face mask with chin style or chest or back mounted type industrial size canister specifically approved for protection against formaldehyde. Type C supplied air respirator, pressure demand or continuous flow type with full face piece, hood or helmet.</td>
</tr>
<tr>
<td>Above 75 ppm or Unknown (Emergencies) (100 x PEL)</td>
<td>Self-contained breathing apparatus (SCBA) with positive pressure full face piece, combination supplied air respirator, full face piece positive pressure respirator with auxiliary self-contained air supply.</td>
</tr>
<tr>
<td>Escape</td>
<td>SCBA in demand or pressure demand mode. Full face mask with chin style front or back mounted type industrial canister specifically approved for protection against formaldehyde.</td>
</tr>
</tbody>
</table>
d. The laboratory supervisor or department head will assure that no employee takes home equipment or clothing that is contaminated with formaldehyde.

e. In-house laundry handlers shall be trained by OEHS in the hazards associated with formaldehyde and shall handle all labeled bags containing formaldehyde contaminated clothing with care in order to minimize exposure. Tulane laundry handlers are responsible for informing outside laundry contractors of the dangers of formaldehyde exposure and the necessary precautions to prevent exposure during processing.

f. The laboratory supervisor or department head shall repair or replace, as necessary, all required protective clothing or equipment in order to ensure its effectiveness.

450-08 Personal Hygiene Protection

450-08.01 Laboratory supervisors and department heads shall provide change rooms as described in 29 CFR 1910.141 for employees who are required to change from work clothing into preventative clothing to prevent skin contact with formaldehyde.

450-08.02 If a chance exists that an employee's skin may become splashed with solutions of 1% or greater of formaldehyde, for example by equipment failure or improper work practices, the laboratory supervisor or department head shall provide conveniently located quick drench showers and assure that affected employees use these facilities immediately.

450-08.03 If there is any possibility that an employee's eyes may be splashed with solutions containing 0.1% or greater of formaldehyde, the laboratory supervisor or department head shall provide eyewash facilities within the immediate work area for emergency use. All eyewash units should meet the requirements of ANSI standards and should be approved by OEHS.

450-09 Housekeeping for Operations Involving Formaldehyde Liquids or Gas

450-09.01 Laboratory supervisors or department heads will conduct a program to detect leaks and spills including regular visual inspections as prescribed by OEHS.

450-09.02 Preventative maintenance of equipment, including surveys for leaks, will be done by the laboratory supervisor or department head.

450-09.03 In work areas where spillage may occur, the laboratory supervisor or department head will provide spill containment devices (spill pillows, boom, etc.) to contain the spill and to decontaminate the work area, and shall dispose of the waste as prescribed by OEHS hazardous waste disposal procedures.

450-09.04 The laboratory supervisor or department head will assure that OEHS is contacted in the case of a spill or leak, as monitoring may be required. The cleaning of small spills and leaks by employees wearing suitable protective equipment and who are trained in proper methods of clean-up and decontamination shall be done promptly under the supervision or direction of OEHS. Large spills will be cleaned by OEHS personnel who have been trained in proper emergency response procedures.

450-09.05 All waste and debris from formaldehyde decontamination incidents resulting from leaks or spills will be placed for disposal in sealed containers bearing a label warning of formaldehyde presence and of the hazards associated with formaldehyde, and shall be disposed of by OEHS as hazardous waste.

450-09.06 In the event a person is injured due to an emergency involving formaldehyde, that person shall follow the medical procedures listed in 450-10 below.

450-10 Medical Surveillance

450-10.01 Employees Covered

a. A medical surveillance program will be instituted by the laboratory supervisor or department head for all employees, determined via survey (Appendix II) and/or monitoring by OEHS, to be exposed to formaldehyde at concentrations at or exceeding the action level or STEL.

b. Medical surveillance will also be available to 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 laboratory supervisor or department head, with consultation from OEHS personnel, 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%. 

450-10.02 Examination by a Physician

a. All medical procedures shall be performed by or under the supervision of a licensed physician. The Medical Disease Questionnaire, Appendix D to 29 CFR 1910.148 (see Appendix I of this policy) should be administered by or under the supervision of the licensed physician and kept as part of the employee's medical records. Medical services will be provided without cost to the employee through the Tulane University Hospital Comprehensive Health Clinic or the Emergency Room at the employee's department's expense.

b. The laboratory supervisor or department head will 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 STEL and annually thereafter. Also, the laboratory supervisor or department head will make the following medical surveillance available promptly upon determining signs and symptoms indicative of possible overexposure to formaldehyde. Medical examinations are also required annually for those employees wearing a respirator for formaldehyde exposure.

1. The Medical Disease Questionnaire (Appendix D to 29 CFR 1910.148 - see Appendix I of this policy)

a. A determination will be made by a licensed Tulane Medical Center physician based on the 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.

b. The laboratory supervisor or department head shall repair or replace, as necessary, all required protective clothing or equipment in order to ensure its effectiveness.

2. Medical examinations will be given at the employee's department's expense to any employee who the physician feels, based on information provided 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.
3. Physical examinations will include emphasis on evidence of irritation or sensitization of the skin and respiratory system, shortness of breath, or irritation of the eyes.

4. Laboratory examination for respiratory wearers include:
   a. Baseline and annual pulmonary function tests, with forced vital capacity (FVC), forced expiratory volume in one second (FEV), and forced expiratory flow (FEF).
   b. Any recommended limitations on an employee's exposure or changes in the use of personal protective equipment including respirators shall be given.

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

450-10.03 Emergency Exposure Examinations

a. The Tulane University Hospital Comprehensive Health Clinic or the Emergency Room will be available to give medical examinations as soon as possible to all employees who have been exposed to formaldehyde in an emergency.

1. The examination by a licensed Tulane physician will include medical and work history with emphasis on any upper or lower respiratory problems, allergic conditions, skin reaction or hypersensitivity, and any evidence of eye, nose or throat irritation.

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

450-10.04 Information Provided to the Physician

a. A copy of this Tulane Formaldehyde Policy (EHS-P&PM 450-00) will be provided to the TUHC Comprehensive Health Clinic and Emergency Room.

b. The laboratory supervisor or department head will provide the physician with the affected employee's job description or duties as they relate to their exposure to formaldehyde and the representative exposure level of the employee's job assignment as determined by OEHS.

c. Information concerning any personal protective equipment (PPE) and respiratory protection used or to be used by the employee as prescribed by the laboratory supervisor and/or OEHS will be provided to the physician.

d. Information from previous medical exams of the affected employee within the control of Tulane University will be provided to the physician.

e. Emergencies: In the event of non-routine examination because of an emergency, persons familiar with the incident (i.e. laboratory supervisor, department head or OEHS personnel) should provide TUHC Comprehensive Health Clinic or Emergency Room with a description of how the incident or emergency occurred and the exposure the victim may have received.

450-10.05 Physician's Written Opinion

a. For each examination required under this policy, a written opinion from the examining physician will be provided to OEHS staff and the laboratory supervisor or department head. This written opinion shall contain the results of the medical examination with the exception that it shall not reveal specific findings or diagnoses unrelated to occupational exposure to formaldehyde.

1. The physician's opinion shall indicate 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.

2. Any recommended limitations on an employee's exposure or changes in the use of personal protective equipment including respirators shall be given.

3. A statement that the employee has been informed by the physician of any medical condition 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 shall be given.

b. OEHS will retain a copy of the physician's written opinion. Results of the medical examination and tests conducted by the physician, including the physician's written opinion, will be kept as part of the employee's medical record at Tulane University Hospital and Clinic and shall be kept for the duration of employment plus 30 years.

c. OEHS, through the laboratory supervisor or department head, will provide a copy of the physician's written opinion to the affected employee within 15 days of its receipt.

450-10.06 Medical Removal

a. This portion of the policy applies when an employee reports significant irritation of the mucosa of the eyes or the upper airways, respiratory sensitization, dermal irritation, or dermal sensitization attributed to workplace formaldehyde exposure. Medical removal provisions do not apply to dermal irritation or dermal sensitization when the product suspected of causing the dermal condition contains less than 0.05% formaldehyde.

b. An employee's report of signs or symptoms of possible overexposure to formaldehyde shall be evaluated as in EHS-P&PM §450-10.02 or §450-10.03 above. If the examining physician determines that a medical examination as in EHS-P&PM §450-10.02(b)(2) is not necessary, then a two-week evaluation and remediation period is established to permit the laboratory supervisor or department head, in conjunction with OEHS personnel, to ascertain whether the signs and symptoms subside untreated or with the use of creams, gloves, first aid treatment or personal protective equipment. Industrial hygiene measures, as prescribed by OEHS, that limit the employee's exposure to formaldehyde may also be implemented during this period. The employee will be referred immediately to a physician prior to the 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.

c. If the signs and symptoms have not subsided or been remedied by the end of the two-week period, or earlier if signs or symptoms warrant, the employee shall be examined by a physician at TUHC Comprehensive Health Clinic. The physician shall presume, absent contrary evidence, that observed dermal irritation or dermal sensitization is not attributable to formaldehyde when the products to which the affected employee is exposed contain less than 0.1% formaldehyde.

d. Medical examinations shall be conducted in compliance with EHS-P&PM §450-10.02 as
450-11.07 Multiple Physician Review

a. The employee has the right to request a second opinion by a second physician to review the findings of the initial examining physician, and to have other tests performed that the second physician deems necessary and appropriate to evaluate the effects of any formaldehyde exposure and to facilitate this review.

b. The laboratory supervisor or department head must promptly notify the affected employee using the form in Appendix III of this right to a second opinion after each initial physician conducts an examination or consultation for the purpose of medical removal or restriction.

c. The following must occur in seeking a second opinion for Tulane University to participate in or pay for the multiple physician review mechanism: within fifteen (15) days after receipt of the notification of the right to seek a second opinion or receipt of the initial physician's written opinion, whichever is later.

1. The employee must inform the laboratory supervisor or department head of the intention to seek a second medical opinion, and

2. The employee must initiate steps to make an appointment with a second physician.

d. If the findings, determinations or recommendations of the second physician differ from those of the initial physician, Tulane's Office of Risk Management (ORM) and the second physician shall assure that efforts are made for the two (2) physicians to resolve the disagreement. If the two (2) physicians are unable to resolve their disagreement, then Tulane's Office of Risk Management and the employee, through the respective physicians, shall designate a third physician who is a specialist in the field at issue:

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

2. 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.

e. Tulane's Office of Risk Management and the employee or authorized employee representative may jointly designate such a third physician as an alternative to EHS-P&PM §450-10.07(d)(1) and (2) above.

f. The laboratory supervisor or department head shall act consistent with the findings, determinations and recommendations of the third physician, unless the employee and Tulane's Office of Risk Management reach an agreement which is otherwise consistent with the recommendations of at least one of the three (3) physicians.

g. Medical written opinions from the second and/or third physicians must be transferred to the employee's medical file at Tulane University Hospital and Clinic and a copy forwarded to OEHS.

450-11 Hazard Communication Requirements

450-11.01 Communication of the hazards associated with formaldehyde in the workplace will be governed by EHS-P&PM §400.00.

a. The following shall be subject to the Hazard Communication requirements:

1. Formaldehyde Gas

2. All mixtures or solutions composed of greater than 0.1 percent (%) formaldehyde.

3. Materials capable of releasing formaldehyde into the air, under reasonably foreseeable conditions of use, at concentrations reaching or exceeding 0.1 ppm (part per million).

b. The specific health hazards that the laboratory supervisor or department head shall address are:

1. Cancer, irritation and sensitization of the skin and respiratory system, eye and throat irritation, and acute toxicity.

2. A Material Safety Data Sheet (MSDS) provided by the manufacturer when a chemical is initially purchased and which can be obtained from OEHS, will be used to communicate the hazards above.

450-11.02 Labels

a. The laboratory supervisor or department head will assure that all containers of materials listed in EHS-P&PM §450-11.01 (1)(a)(3) above, bear the original container labels with the appropriate hazard warnings or the OEHS in-house labels listing the hazards of formaldehyde, as specified in EHS-P&PM §400-03.01 through §400-03.04, and shall provide and refer the user to the MSDS for more physical and health hazard information, having the MSDS readily available to the user.

b. For materials capable of releasing formaldehyde at levels above 0.5 ppm, the labels in addition to the above must specifically address respiratory sensitization and shall contain the words "Potential Cancer Hazard."

450-11.03 Material Safety Data Sheets
a. MSDSs will be available through OEHS, as specified in the EHS-P&PM §400-00.
b. Annual inventory reports to OEHS must be submitted to ensure the correct MSDS is obtained for the specific formaldehyde products in use for each affected work area in order to comply with OSHA laws, as well as other state and local laws as specified in EHS-P&PM §450-00 preface above. The laboratory supervisor or department head is responsible for this annual inventory submission to OEHS, in order to ensure their area of responsibility is in compliance with this policy.

450-11.04 Employee Training

a. The OEHS will train all laboratory supervisors or department heads so that they can train employees in their area of responsibility when there is the potential for workplace exposure to formaldehyde. This training will be done upon initial assignment, at least annually, and whenever new conditions or hazards are introduced into the work area. The training shall be repeated at least annually.
b. Exception to the above mentioned training requirements will be given to an area where it is determined by OEHS, using objective data, that employees in that area are not exposed to formaldehyde at or above 0.1 ppm.

450-11.05 Training Program

The training program shall be conducted in a manner which will include presentations which the employee is able to understand and shall include the following:

a. A discussion of the contents of this policy, the contents of the OSHA Formaldehyde Standard, and the contents of the MSDS.
b. The purpose for and a description of the Medical Surveillance program established in this policy, in EHS-P&PM §450-10 as above, including:
   1. A description of the potential health hazards associated with exposure to formaldehyde and a description the signs and symptoms of exposure to formaldehyde.
   2. Instructions to report immediately to the laboratory supervisor or department head the development of any adverse signs or symptoms that the employee suspects is attributable to formaldehyde exposure.
   c. A description of operations in the specific work area where formaldehyde is present and an explanation of the safe work practices appropriate for limiting exposure to formaldehyde in each job.
   d. The purpose for, proper use of, and limitations of personal protective equipment and clothing.
   e. Instructions for the handling of small 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 such controls; and
   g. A review of emergency procedures, including the notification of the OEHS and specific duties or assignments of each employee in the event of an emergency.

450-11.06 Access to training materials

a. The laboratory supervisor or department head will inform all affected employees of the availability and location of written training materials, and will make these readily available to the affected employees.
b. The OEHS, by retaining copies of departmental training materials, will be able to fulfill the university's responsibility to make these materials available if requested by OSHA. It will be the supervisor's responsibility to document and send copies of all training records to OEHS.

450-12 Recordkeeping

450-12.01 Exposure Measurements

a. The OEHS will establish and maintain an accurate record of all measurements taken to monitor employee exposure to formaldehyde. This record will include:
   1. The date of measurements;
   2. The operation being monitored;
   3. The methods of sampling and analysis and evidence of their accuracy and precision;
   4. The number, duration, time and results of samples taken;
   5. The types of protective devices worn;
   6. The name, job classifications, social security numbers and exposure estimates of the employees whose exposures are represented by the actual monitoring results.

450-12.02 Exposure determinations

a. Where OEHS has determined that no monitoring is required under this policy, OEHS 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.

450-12.03 Medical Surveillance

a. The OEHS will establish and maintain an accurate record for each employee subject to medical surveillance including:
   1. The name of the employee;
   2. The physician's written opinion;
   3. A list of any employee health complaints that may be related to exposure to formaldehyde;
b. Tulane University Hospital and Clinic will maintain an accurate record of the items listed under 450-12.03(a) above as well as:
   1. A copy of the medical examination results including Medical Disease Questionnaires and results of any medical tests required.
2. A copy of the second and/or third physician's written opinion and any related medical records associated with these.

450-12.04 Respirator fit testing
a. The OEHS will establish and maintain accurate records for employees subject to negative pressure respirator fit testing required by this policy in accordance with 29 CFR 1910.1048.(o)(4) (ii)(A-D).

450-12.05 Record Retention
a. Records shall be maintained for at least the following periods:
   1. Exposure records and determination shall be kept for 30 years.
   2. Medical records shall be kept for the duration of employment plus 30 years.
   3. Respirator fit testing records shall be kept until replaced by a more recent record.

450-12.06 Availability of Records
a. Upon request, the OEHS and Tulane University Hospital & Clinic will make available all records maintained as a requirement of this policy for examination and copying to OSHA.
b. Employee exposure and medical records required by this policy 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 1910.20(a)-(c) and (g)-(i).

450-13 Appendices
<Note: Steve Morgan: Place a link here to the OSHA Formaldehyde Standard>

450-13.02 Appendix II - Formaldehyde Survey Form FORMALDEHYDE SURVEY
NAME:___________________________ DATE:___________________________
DEPARTMENT:_____________________ CAMPUS/BLDG:____________________
ROOM:___________________________ PHONE NUMBER:___________________

Is formaldehyde or any form of formaldehyde used in your lab?
YES [ ] NO [ ]
If NO, please sign the form and turn it in to OEHS.
If YES, please complete and sign this questionnaire.
1) What activities do you perform which utilize formaldehyde?

2) Which form/state of formaldehyde is used?
   solid [ ] liquid [ ] gas [ ]

3) Please indicate type(s) of formaldehyde used:
   10% formalin [ ] 37% concentrated formaldehyde [ ]
   paraformaldehyde [ ] other (specify) [ ]

4) Amount of formaldehyde used can best be described in:
   milliters (ml) liters (l) grams (g)

5) Are formaldehyde activities performed with the use of ventilation control? If NO, go to question 6.
   If yes, please indicate the ventilation control used:
   chemical fume hood [ ]
   counter top unit connected to ventilation system [ ]
   counter top unit with charcoal filter [ ]
   other ventilation, please specify [ ]

6) The length necessary to perform the activity is hours.

7) What is the frequency of formaldehyde used?
   a) x daily [ ]
   b) x weekly [ ]
   c) x monthly [ ]
   d) x yearly [ ]

8) Please specifically indicate which day(s) of week formaldehyde usage is heaviest. (For monitoring purposes)

9) What training have you received with respect to procedures to follow when using formaldehyde, health hazards related to formaldehyde, or personal protective equipment for use with formaldehyde?
   Has training been documented? YES [ ] NO [ ]
   If yes, a) When? (date)
   10) Have you/your work area been monitored for airborne levels of formaldehyde? YES [ ] NO [ ]
b) Were you informed of the formaldehyde levels? YES NO

c) What were the formaldehyde levels?

11) State the location of the nearest eyewash and safety shower.

12) Have you received a medical examination from your employer due to a (possible) formaldehyde exposure? YES NO

13) Have you experienced any spills, leaks, or emergencies with formaldehyde? YES NO

If yes, a) Describe the circumstances.

b) How often does this occur?

14) Are all containers of formaldehyde properly labeled? YES NO

Are Material Safety Data Sheets (MSDSs) readily available? YES NO

Have you read and familiarized yourself with the MSDSs? YES NO

15) Have you experienced any adverse affects while performing your work? YES NO

If yes, a) Please describe.

b) Have you informed your supervisor? YES NO

____________________________
Signature

____________________________
Date

For OEHS use only:
Monitoring Priority

Priority 1 - Immediate
Priority 2 - Delayed
Priority 3 - No monitoring required

____________________________
Signature

____________________________
Date

450-13.03 Appendix III - Right to a Second Opinion Form

INTERDEPARTMENTAL CORRESPONDENCE

DATE: ____________________________

FROM: NAME:__________________________________

OFFICE OF ENVIRONMENTAL HEALTH & SAFETY
TULANE UNIVERSITY

TO: NAME:__________________________________

DEPARTMENT:____________________________

RE: SECOND MEDICAL OPINION CONCERNING RESTRICTIONS OR REMOVAL DUE TO EXPOSURE TO FORMALDEHYDE

Following your recent exposure to formaldehyde and your subsequent visit to the Comprehensive Health Clinic or Emergency Room, Tulane University wishes to inform you of your right to seek the opinion of a second physician. A physician of your choice may review the findings of the physician at the Comprehensive Health Clinic or Emergency Room and perform any additional examinations and tests he deems necessary. Upon the receipt of this letter and/or the written opinion of the physician, whichever is later, you have 15 days to inform your Departmental Supervisor, Risk Management, and the OEHS of your intention to seek a second opinion and to make an appointment with the second physician. Please note that if the written opinions of the two physicians differ, steps will be taken to resolve the disagreement. Ultimately, a third physician accepted by both you and the Department of Risk Management will be asked to review all the findings and to resolve the disagreement. The recommendations of the third physician shall be followed, unless an agreement is made otherwise.

I understand that I have been informed of my right to a second medical opinion in accordance with the OSHA Formaldehyde Standard.

____________________________
Signature

____________________________
Print Name

____________________________
Date

RETURN FORM TO:
### Environmental Health & Safety Training Acknowledgement

#### Course Information (Please Print)

<table>
<thead>
<tr>
<th>Course Name:</th>
<th>Trainer(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date/Time of Course:</td>
<td>Location of Course:</td>
</tr>
</tbody>
</table>

#### Trainee Information

<table>
<thead>
<tr>
<th>Name (print):</th>
<th>Department/Section:</th>
<th>Dean/Director/PI:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room/Lab Numbers:</td>
<td>Building/Campus:</td>
<td></td>
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</tbody>
</table>

#### Acknowledgement

I acknowledge that I have been provided training and understood the content covering the subject(s) listed under "Course Information". Further, I agree to follow the safety guidelines noted in the provided training.

<table>
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<tr>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
</table>

#### Questions/Comments:

- Employees Training
- Supervisor/Combined Training
- Other