

Title: Safety Procedures for Controlling Exposure to Formaldehyde at NYU College of Dentistry

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Issuing Authority: VP, Facilities and Construction Management

Responsible Officer: Director Environmental Health and Safety

PURPOSE OF THE PROCEDURE

This procedure has been developed to protect employees from health hazards associated with formalin containing at least 1% or greater formaldehyde [HCHO]. This program fulfills the requirements as established by the Occupational Safety and Health Administration [OSHA] standard for Formaldehyde [HCHO] exposure [29CFR-1910.1048].

SCOPE OF THIS PROCEDURE

This procedure applies to all NYU students and staff that handle and use formalin solutions in their work.

WHO NEEDS TO KNOW THIS PROCEDURE

This program applies to all New York University Dental Center [DC] employees and students that work in the histology laboratory and any research laboratory utilizing formalin solutions for preservation or any other purposes. NYU employees and students in the Center for Neural Science [CNS], Biology, and Office of Veterinary Resources [OVR] also utilize formalin solutions and must be aware of this procedure.

Department of Environmental Health and Safety

The Director of Environmental Health & Safety [EHS] is responsible for developing and evaluating this program.

Directors, Managers or Department Chairs

- Assistant Chemical Hygiene Officers (ACHO) and the Director of OVR are responsible for implementing this program and serves as a contact for information and support for employees concerned with protection during the course of formalin solution use.
- Chairperson of any Department that utilizes formalin solutions must ensure that the procedure is made available to employees and that the required procedures are carried out.

UNIVERSITY PROCEDURE

Exposure Monitoring:

1. Initial monitoring will be performed to establish a profile of exposure during lab procedures. If the monitoring results reveal employee exposure is at or above the action level [0.5 ppm based on an 8-hr time weighted average [TWA]] or the Short Term Exposure Level [STEL] of 2.0 ppm [based on a 15-minute worst-case sample], monitoring will be repeated annually during any procedures utilizing formalin solutions. If the results

are below the action level and the STEL for two consecutive years, monitoring may be terminated unless there is a change in procedure, equipment, or control measures that may result in new or additional exposure to HCHO.

2. Monitoring will include testing the air in the worker's personal breathing zone as well as area monitoring of the lab:
 - a. Personal monitoring will be accomplished by passive dosimeter attached to the lapel of the worker. HCHO concentrations in this location are the most representative of those in the workers breathing zone.
 - b. Area monitoring will be performed by placing the passive dosimeters throughout the lab at points that will give a good indication of the air concentration levels during the lab processes.
 - c. Employees will be notified of the monitoring results within 15 days of receiving the results from the analytical lab.

Regulated Areas

Regulated areas will be established where the concentration of airborne formaldehyde exceeds either the Permissible Exposure Limit [PEL] of 0.75 ppm based on an 8-hr TWA or the STEL of 2.0 ppm and signs will be posted at all entrances and access-ways to the lab.

1. Signage will be posted bearing the following information:

**DANGER
FORMALDEHYDE
IRRITANT AND POTENTIAL CANCER HAZARD
AUTHORIZED PERSONNEL ONLY**

2. Access will be limited to authorized persons who have been trained to recognize the hazards of formaldehyde.

Engineering Controls

Engineering and work practices will be instituted to reduce and maintain employee exposure to formaldehyde at or below the PEL and the STEL.

1. Room Ventilation
 - a. Airflow or supplied outside air should be in a percentage [at least 12 air exchanges with no re-circulated air] where room dilution will keep the concentration of HCHO below the PEL of 0.75 ppm or the STEL of 2.0 ppm in the work area.
 - b. If concentrations are consistently above the TWA or the STEL, a local exhaust should be use if feasible.
2. Employees must use good lab practices to limit personal exposure to formaldehyde. Contact with irritating or sensitizing materials must be prevented to the extent necessary to eliminate the hazard. Personal protective equipment [PPE] must be worn during lab processes and changed when contaminated.

Respiratory Protection

If engineering and work practices controls cannot reduce employee exposure to or below either the PEL or the STEL, then respiratory protection must be used.

1. Workers must wear respiratory protection when HCHO concentrations are consistently greater than OSHA's PEL of 0.75 ppm for an 8-hr TWA or STEL of 2.0 ppm. If not practical, it is essential that engineering and work

practice be used to reduce exposure.

2. Any employee required to wear a respirator must comply with NYU Respiratory Protection Written Program, which includes medical clearance to wear the respirator, fit testing of the respirator, training on respiratory protection program and training on the use, maintenance and limitations of the respirator.
3. If air-purifying chemical-cartridge respirators are used by the employees, the HCHO specific cartridges must be replaced after five hours of use or at the end of the work-shift, whichever occurs first.

Chemical Protective Clothing

All contact of the eyes and skin with liquids containing 1% or greater HCHO will be prevented by the use of chemical protective clothing made of material that will provide the best prevention to permeation.

1. PPE, such as goggles, face shields, and gloves will be used appropriate to the lab processes. During necropsies, the glove material must be Neoprene [Breakthrough 1-4 hours after splashed with liquid] or Nitrile [Breakthrough >8 hours after splashed with liquid]. If using latex gloves during observation and there is a potential for splashing, double gloving is recommended. Lab coats must be worn in the lab as well as gloves to prevent contact with skin. Where a face shield is worn, chemical safety goggles are also required if there is a danger of HCHO reaching the eyes.
2. All protective equipment and clothing, other than disposable gloves, that has become contaminated with formaldehyde will be cleaned or laundered before its reuse. When ventilating HCHO-contaminated equipment or clothing, a storage area must be established and used to minimize employee exposure to the off-gas. The storage areas and containers shall have labels and signs containing the following information:

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

3. Safety showers and eyewash stations will be within the immediate work area for emergency use.

Contaminated Waste and Debris

HCHO contaminated waste and debris will be placed for disposal in sealed containers bearing a label warning of formaldehyde's presence and of the hazards associated with HCHO

Medical Surveillance

All employees that are exposed to HCHO at concentrations equal to or exceeding the action level or exceeding the STEL will be included in a medical surveillance program.

1. A medical surveillance questionnaire will be made available to all employees who show signs and symptoms of over exposure to formaldehyde. If there is a suspicion of over exposure than a questionnaire will also be administered to any effected students or staff.
2. Any student or employee who has evidence of signs and symptoms associated with HCHO, will be initially examined by a Student Health Center physician with emphasis on irritation or sensitization of the skin and respiratory system, shortness of breath or irritation of the eyes. Based upon that initial assessment Student Health Center can then send an employee to the NYU Langone Occupational Health Unit.

3. Medical exams may 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 HCHO.
4. Any employee with a medical condition that would place the employee at an increased risk of material impairment of health from exposure to HCHO will be medically removed or unable to work in the lab. 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% of HCHO.
5. An employee's report of signs and symptoms of possible overexposure to HCHO will be evaluated by a Student Health Center physician. If the physician determines that a medical exam is not necessary, there will be a two-week evaluation and remediation period to determine if the symptoms subside untreated or with the use of creams, gloves, first aid, PPE or other Industrial Hygiene [IH] procedures that would limit exposure. If the signs or symptoms worsen within the two weeks, the employee will be referred immediately to a physician.

Training

All lab employees and instructors must be trained, upon assignment to the area, on controlling exposures to formaldehyde during lab procedures utilizing formalin solutions as well as the hazards associated with exposure to the gas and contents of the regulation and this procedure. Training is not required if exposure levels in the lab do not equal or exceed 0.1 ppm based on an 8-hr TWA.

Record Retention

Medical records for any students or employees overexposed to HCHO will be on file at the Student Health Center or NYU Langone Occupational Health Unit respectively and the exposure records will reside at EHS with copies provided to individuals involved in any exposure monitoring surveys.

RELATED POLICIES

NYU Environmental Health and Safety Policy

RELEVANT RESOURCES

OSHA Standard for Formaldehyde 29CFR-1910.1048