



WAKE FOREST  
UNIVERSITY

## Standard Operating Procedure (SOP)



### FORMALDEHYDE, FORMALIN AND PARAFORMALDEHYDE

Effective Date: **8/23/2013**

Revised Date: **8/23/2013**

#### INTRODUCTION

- This SOP applies to FORMALDEHYDE, FORMALIN AND PARAFORMALDEHYDE.
- FORMALDEHYDE exposure in Anatomy Lab will be monitored at the beginning of each semester dissections are performed. Environmental Health and Safety will perform monitoring and results will be provided to the PI.
- Other laboratories on campus are required to use FORMALDEHYDE, FORMALIN AND PARAFORMALDEHYDE in fume hood.

#### GENERAL LAB RULES

1. No eating, drinking, smoking, handling contact lenses, or applying cosmetics in the laboratory.
2. Persons shall wear buttoned lab coat, long pants, safety glasses or goggles and appropriate gloves when working with hazardous chemicals.
3. Mouth pipetting is prohibited; mechanical pipetting devices are to be used at all times.
4. All procedures are performed carefully to minimize the creation of splashes or aerosols.
5. Wash hands
  - after handling chemicals materials,
  - after removing gloves, and
  - before leaving the laboratory.

Additional Lab Specific Rules Here

#### POTENTIAL HAZARDS

- Potential human carcinogen.
- Moderate fire and explosion hazard when exposed to heat or flame.
- Incompatibilities and materials to avoid: Aniline, Phenol, Isocyanates, Acid anhydrides, Acids, Strong bases, Strong oxidizing agents, Amines, Peroxides.

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#### HEALTH HAZARDS

- Potential human carcinogen.
- Irritation of the eyes, nose, and throat (airborne concentrations above 0.1 ppm).
- Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
- Severity of irritation increases as concentrations increase; at 100 ppm it is immediately dangerous to life and health.
- Dermal contact causes various skin reactions including sensitization.
- Target Organs: Eyes, Kidney, Liver, Heart, Central nervous system.

#### PERSONAL PROTECTIVE EQUIPMENT

##### EYE PROTECTION

- Safety glasses, goggles or face shields shall be worn during operations in which FORMALDEHYDE, FORMALIN AND PARAFORMALDEHYDE might contact the eyes (e.g., through vapors or splashes of solution).
- Ordinary (street) prescription glasses do not provide adequate protection. Adequate safety glasses must meet the requirements of the Practice for Occupational Education Eye and Face Protection (ANSI Z87.1-1989) and must be equipped with side shields.

##### HAND PROTECTION

- Use disposable nitrile gloves when working with chemicals. Check chemical compatibility chart for breakthrough time when using
- Laboratory personnel should thoroughly wash hands with soap and water before and immediately upon removal of gloves.

##### LAB COATS, ETC.

- Button lab coats, closed toed shoes, long pants and long sleeved clothing shall be worn when handling FORMALDEHYDE, FORMALIN AND PARAFORMALDEHYDE.
- Protective clothing shall be worn to prevent any possibility of skin contact with FORMALDEHYDE, FORMALIN AND PARAFORMALDEHYDE.

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#### WORK PRACTICES

- All FORMALDEHYDE, FORMALIN AND PARAFORMALDEHYDE work shall be done in the laboratory fume hood or on anatomy dissection draw-down table.
- If fume hood or anatomy dissection draw-down table are not functioning, do not proceed with work. Call x4255 immediately for repair.
- If you are weighing paraformaldehyde powder and the balance cannot be located in a fume hood or BSC, tare a container then add powder in the hood and cover before returning to the balance to weigh the powder.
- Labs handling moderate to large quantities of formaldehyde-containing solutions on a regular basis should contact EHS at x3427 for assessment of exposure. Areas that handle only small (100 ml or less) pre-filled specimen containers, or that work with formaldehyde-containing solutions exclusively in a functioning chemical fume hood, would have low potential for overexposure, but should contact EHS if there are concerns.
- Once work with formalin/paraformaldehyde is complete, wipe down area with a soap and water solution.

#### EXPOSURE MONITORING

- WFU EH&S will periodically monitor faculty to determine their exposure to formaldehyde.
- WFUHS EH&S will periodically measure and accurately determine exposure to formaldehyde for faculty, staff, and students shown by the initial monitoring to be exposed at or above the action level, or at or above the Short Term Exposure Limit.
- If the last monitoring results reveal employee exposure at or above the action level, WFU EH&S will repeat monitoring of the faculty, staff, and/or students.
- Regulated areas where the concentration of airborne formaldehyde exceeds either the Time Weighted Average (TWA) or the Short Term Exposure Limit (STEL) will be posted at all entrances and access ways with signs bearing the following information:

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

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#### SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

- Do not store with incompatible material
- Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.
- Keep away from sources of ignition - No smoking. Take measures to prevent the build-up of electrostatic charge.
- Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Additional Lab Specific Special Handling/Storage Procedures

#### WASTE DISPOSAL

- Excess FORMALDEHYDE and all waste material containing FORMALDEHYDE must be placed in a container labeled with the following **“HAZARDOUS WASTE (FORMALDEHYDE, FORMALIN OR PARAFORMALDEHYDE)”**.
- Contact EHS at x3427 for hazardous waste removal.

#### EMERGENCY PROCEDURES

##### Emergency Numbers:

Fire and Medical Emergencies	x5911 (911 on cell phone)
Environmental Health and Safety	x3427
Hillcrest Urgent Care (employees)	336-760-8999
Student Health (students only)	x5218
Poison Control	800-222-1222

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#### FIRST AID

1. If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Call x5911 for medical assistance.
2. In case of skin contact: Take off contaminated clothing and shoes immediately. Wash off in safety shower for at least 15 minutes. Call x5911 for medical assistance.
3. In case of eye contact: Rinse thoroughly with plenty of water at eyewash for at least 15 minutes and call x5911 for medical assistance.
4. If swallowed: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Call x5911 for medical assistance.
5. Call x5911 and describe the extent of injuries.
6. Report all accidental exposures to EHS and Human Resources (employees) or Student Health (students).
7. Complete an [online injury/illness report](#) if there is an over-exposure to the chemical or if there is an accident involving the chemical.

#### SPILL AND ACCIDENT PROCEDURES

- If FORMALDEHYDE, FORMALIN OR PARAFORMALDEHYDE is released outside a fume hood, evacuate area immediately and contact x3427, regardless of spill amount.
- Lab personnel will clean up minor spills, including most spills confined to the chemical fume hood. Wearing double nitrile gloves, splash goggles, face shield and lab coat (and impermeable apron, if available), use absorbent pads to absorb spilled material. (For small spills of solid PFA, dampen the absorbent pad with methanol before placing over the spilled material and allow to sit for a few minutes before wiping up.) After spill has been completely absorbed, wash down contaminated area with soap and water at least two times. Contaminated PPE and clean-up materials must be placed in a clear plastic bag or compatible container for pick-up.