Airborne Formaldehyde Monitoring and Exposure Response in the Gross Anatomy Lab	SOP #: AN.004.00
Effective Date	8.6.2025
Last Revision/Review	

1. Purpose

Purpose

To establish a protocol for monitoring airborne formaldehyde levels in the gross anatomy laboratory facilities and managing incidents of formaldehyde exposure due to elevated airborne formaldehyde levels in the lab. This SOP ensures the safety of all personnel and participants in laboratory activities. Airborne formaldehyde levels will be continuously monitored using a continuous monitor, while active monitor testing will occur to confirm airborne formaldehyde levels once threshold levels have been reached by the continuous monitor.

Scope

This SOP applies to all personnel responsible for monitoring and ensuring safe formaldehyde levels in the gross anatomy lab. It includes lab staff, faculty, students, and maintenance personnel who may be exposed to formaldehyde in the course of their work.

2. Related Policy/Authority

29 CFR 1910.1048, Formaldehyde

3. Faculty/Staff Responsibilities

Director of the Gross Anatomy Lab: Oversees the operations of the gross anatomy lab, ensures compliance with safety regulations, and maintains adherence to institutional and OSHA policies, training requirements, and incident reporting.

Gross Anatomy Laboratory Technician: Perform routine checks for ambient formaldehyde levels, monitor symptoms of exposure, and report potential formaldehyde exposure.

Facilities Management: Assess ventilation and make necessary adjustments.

Safety Manager: Review formaldehyde exposure data to ensure compliance with OSHA regulations, work with facilities and the Director of Gross Anatomy Labs to validate corrective actions taken during high-level incidents, and ensure compliance with training requirements.

Associate Vice President of Administration: Provides oversight for high-level incidents and compliance with institutional policies.

4. Definitions/Abbreviations

Formaldehyde (HCHO): A colorless, strong-smelling vapor used in embalming fluids.

Permissible Exposure Limit (PEL): 0.75 ppm measured as an 8-hour time-weighted average.

Short-Term Exposure Limit (STEL): 2.0 ppm measured as an average during a 15-minute period and is the maximum exposure allowed during a 15-minute period.

Action Level: 0.5 ppm measured as an 8-hour time-weighted average. Triggers increased monitoring and initiation of worker medical surveillance.

High-Level Incident: Any event involving formaldehyde levels that exceed 2.0 ppm.

Permissible Levels: Airborne formaldehyde levels at or below 0.75 ppm.

Precautionary Levels: Airborne formaldehyde levels above 0.75 ppm and below 2.0 ppm.

Non-Permissible Levels: Airborne formaldehyde levels at or above 2.0 ppm.

Continuous Monitor: A continuous air quality sensor that detects ambient airborne formaldehyde levels in the air in real-time.

Personal Protective Equipment (PPE): Equipment worn to minimize hazards within the gross anatomy laboratory.

5. Procedural Steps

5.1 Exposure Control Measures

5.1.1 Engineering Controls - Use local exhaust ventilation to remove fumes and maintain air turnover rates as per OSHA regulations.

5.1.2 Administrative Controls - Adjust work schedules and rotate personnel as needed to limit exposure duration.

5.1.3 Personal Protective Equipment (PPE) - neoprene or nitrile gloves, goggles, face shields, face masks, gowns, lab coats, and aprons applied as relevant to limit formaldehyde exposure.

5.1.4 Respirators - If employee exposures are found to exceed permissible limits, respiratory protection will be provided in accordance with 29 CFR 1910.134 until feasible engineering or administrative controls can be implemented.

5.1.5 Hygiene Measures - Eating, drinking, and smoking are prohibited in the laboratory. Handwashing is mandatory after handling cadaveric specimens.

5.2 Routine Monitoring of Formaldehyde Levels

5.2.1 Continuous monitors will assess airborne formaldehyde levels in the gross anatomy lab. Sampling badges may also be worn by students or lab personnel while actively working in the lab.

5.2.2 If continuous monitoring detects airborne formaldehyde levels at or above the action level of 0.5 ppm, an audible or visual alert will activate.

5.2.3 Laboratory personnel must begin following the **5.3 Response to Continuous Monitor Alert** should an audible alert occur.

5.3 Response to Continuous Monitor Alert

5.3.1 Ensure all personnel are aware of the potential for elevated airborne formaldehyde levels and proceed with active monitoring.

5.3.2 Conduct active monitoring using a certified, calibrated air sampler to measure airborne formaldehyde levels at multiple locations in the lab, focusing on the area where the continuous monitor is located.

5.3.3 The active monitor results will be used as the official indication of formaldehyde levels in the air and will be used for **Section 5.3.4 Interpretation of Active Test Results.**

5.3.4 Interpretation of Active Test Results

- Permissible Levels: If active testing shows airborne formaldehyde levels below 0.75 ppm, document findings as detailed in **Section 5.4**, followed by resumption of normal lab activities.
- Precautionary Levels: If active testing shows levels above 0.75 ppm and below 2.0 ppm, initiate **Section 5.5 Immediate Response to Precautionary Levels of Formaldehyde**.
- Non-Permissible Levels: If levels are confirmed at or above 2.0 ppm, initiate **Section 5.6 Immediate Response to High Levels of Formaldehyde**.

5.4 Required Documentation for Active Monitoring of Airborne Formaldehyde:

5.4.1 In the event continuous monitoring exceeds 0.5 ppm, record the following:

- Date and time of alert
- Room temperature
- Monitor used
- Formaldehyde levels detected
- Location(s) of reading
- Personnel present
- Symptoms reported by any individuals present (if applicable)
- Immediate action taken [example: evacuation, heightened monitoring, etc]
- Name and title of person completing the report

5.5 Medical Surveillance Program

5.5.1 The employer will make medical surveillance available (per 29 CFR 1910.1048(I)) for employees who develop signs and symptoms of overexposure to formaldehyde and for all employees exposed to formaldehyde in emergencies. Medical surveillance shall be made available to:

5.5.1..1 Any employee exposed to airborne formaldehyde at or above the action level of 0.5 ppm.

5.5.1..2 Any employee experiencing signs or symptoms of formaldehyde exposure

5.5.1..3 Any employee exposed during an emergency involving formaldehyde

5.5.2 Program Components include:

5.5.2..1 Initial and annual health questionnaire (per OSHA Appendix D)

5.5.2..2 Physical examination, if indicated by the questionnaire or symptoms (focusing on eyes, skin, and respiratory system)

5.5.2..3 Pulmonary function testing (for those required to wear respirators)

5.5.2..4 Emergency medical evaluations, as soon as possible following unplanned high-level exposure

5.5.2..5 Written physician's opinion, documenting medical findings and any restrictions or PPE needs (without personal health details)

5.5.3 The institution shall:

5.5.3..1 Maintain medical records for 30 years

5.5.3..2 Provide employees with a copy of the physician's opinion

5.5.3..3 Ensure that all medical evaluations are conducted at no cost to the employee, during normal working hours

5.5.4 While medical surveillance requirements apply only to employees under OSHA guidelines, students reporting symptoms of formaldehyde exposure will be referred to appropriate institutional health services for evaluation and support.

5.6 Immediate Response to Precautionary Levels of Formaldehyde

5.6.1 During active testing, should airborne formaldehyde levels be between 0.75 ppm and 2.0 ppm, take the following proactive measures:

- Lab personnel may resume normal lab activities, but must be informed that the gross lab is operating under "**precautionary levels**".
- Inform the Director of the Gross Anatomy Laboratory and Chair of Anatomy and Cell Biology that precautionary airborne formaldehyde levels were measured.

5.7 Corrective Action for Precautionary Levels of Formaldehyde

5.7.1 Ensure that all lab ventilation systems are functioning properly by contacting facilities management.

5.7.2 Keep the temperature and humidity at the lowest comfortable setting to reduce formaldehyde release into the air.

5.7.3 Limit an individual's time in the lab to 2 hours.

5.8 Handling Precautionary Levels of Formaldehyde

5.8.1 Initiate medical surveillance by monitoring symptoms of formaldehyde exposure [eye irritation, respiratory symptoms, skin irritation, headache, or dizziness]. If any individual reports eye irritation, respiratory issues, or other symptoms of formaldehyde exposure, they should be directed to seek appropriate medical care.

5.8.2 Closely monitor airborne formaldehyde levels using an active monitor and re-test every 60 minutes until airborne formaldehyde levels fall below 0.75 ppm.

5.8.3 Initiate badge monitoring of lab personnel with the greatest exposure.

5.8.4 Conduct air monitoring every 6 months until two consecutive samples, taken 7 days apart, fall below the action level of 0.5 ppm.
5.8.5 Document findings measured by active testing as detailed in **Section 5.4**.

5.9 Immediate Response to High Levels of Formaldehyde

5.9.1 If airborne formaldehyde levels are detected above 2.0 ppm, immediately evacuate all individuals from the lab.
5.9.2 Place warning signs outside the lab indicating "Lab is closed—Do Not Enter".
5.9.3 Inform the Director of the Gross Anatomy Laboratory, Chair of Anatomy and Cell Biology, Facilities Management, Environmental Health and Safety Officer, and Associate Vice President of Administration that high levels of formaldehyde were measured and that individuals were evacuated from the gross anatomy laboratory.

5.10 Corrective Actions for High Levels of Formaldehyde

5.10.1 Ensure that all lab ventilation systems are functioning properly by contacting facilities management.
5.10.2 Re-test airborne formaldehyde levels after 30 minutes of vacating the gross anatomy lab.
5.10.3 Keep the temperature and humidity at the lowest comfortable setting to reduce formaldehyde release into the air.
5.10.4 Identify and mitigate the source of formaldehyde, such as lids for buckets and trash.
5.10.5 Ensure cadavers are fully covered.

5.11 Handling High-Level Exposure

5.11.1 Initiate medical surveillance by monitoring symptoms of formaldehyde exposure [eye irritation, respiratory symptoms, skin irritation, headache, or dizziness]. If any individual reports eye irritation, respiratory issues, or other symptoms of formaldehyde exposure, they should be directed to seek appropriate medical care.
5.11.2 Closely monitor airborne formaldehyde levels using an active monitor and re-test every 30 minutes until levels fall below 2.0 ppm.
5.11.3 Initiate badge monitoring of lab personnel with the greatest exposure.
5.11.4 Conduct air monitoring every 6 months until two consecutive samples, taken 7 days apart, fall below the action level of 0.5 ppm.
5.11.5 Document findings measured by active testing as outlined in **Section 5.4**.

5.12 Incident Reporting and Follow-up After High-Level Exposure

5.12.1 Complete an incident report detailing the exposure date and time, formaldehyde levels, and corrective actions taken within 24 hours of the incident.
5.12.2 Incident reports related to high-level exposure will adhere to OSHA guidelines for exposure monitoring and medical surveillance.
5.12.3 Severe cases, such as inpatient hospitalization and fatality, must be reported to OSHA within 24 and 8 hours, respectively.

5.13 Re-Entry Procedures

5.13.1 Conduct active monitoring testing before allowing personnel to re-enter the lab using an active monitor.

5.13.2 Before re-entry, the active monitor must confirm that airborne formaldehyde levels have returned to permissible levels.
5.13.3 If readings are within permissible levels, the Gross Anatomy Lab Director will inform the Chair of the Department of Anatomy and Cell Biology.
5.13.4 After final clearance and approval, Facilities Management will remove "Lab is closed - Do Not Enter" signage.
5.13.5 The Department Chair will notify personnel and students that re-entry into the gross anatomy laboratory is granted.
5.13.6 Re-entry may occur for students and personnel.

6. Reports/Charts/Forms/Attachments/Cross References

7. Maintenance

The Gross Anatomy Lab Director will review annually.

8. Signature

Approved by	8.6.2025
Department Head of Anatomy and Cell Biology	Date

9. Distribution List

Internal/External

10. Revision History

Revision Date	Subsection #	Summary of Changes	New/Cancellation/ Replacement Procedure? (if applicable)	Approval Date