



THE UNIVERSITY OF ALABAMA FUME HOOD MANAGEMENT PLAN

ENVIRONMENTAL HEALTH AND SAFETY
410 CAMPUS DRIVE EAST
BOX 870178
TUSCALOOSA, ALABAMA 35487
(205)348-5905

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1. SCOPE

- 1.1 The Chemical Fume Hood Plan applies to all chemical fume hoods located at The University of Alabama. It does not apply to biological safety cabinets, snorkels, canopy hoods or other laboratory ventilation devices.

2. PURPOSE

- 2.1 Chemical fume hoods are critical pieces of safety equipment used to protect laboratory personnel throughout UA. When properly installed, maintained and used, chemical fume hoods can provide protection from hazardous fume associated with chemical use. When not properly installed, maintained and/or used, the health and safety of laboratory personnel, maintenance personnel, and university personnel in general can be severely compromised and research efforts can be hindered.
 - 2.1.1. Fume hoods for new construction are installed according to construction specifications and tested based on manufacturer's recommendations and the current (at time of construction) ASHRAE 110: Method of Testing Performance of Laboratory Fume Hoods standard as part of building commissioning. EHS will take responsibility for routine fume hood certification after The University of Alabama assumes ownership of the fume hood.
 - 2.1.2. Fume hoods are sometimes installed in existing construction during remodeling or renovation activities. These are to be installed according to construction specifications and tested based on manufacturer's specs and the current (at time of construction) ASHRAE 110: Method of Testing Performance of Laboratory Fume Hoods standard as part of building commissioning. EHS will take responsibility for routine fume hood certification after The University of Alabama assumes ownership of the fume hood.

3. PRINCIPLE INVESTIGATOR (PI) RESPONSIBILITIES

- 3.1. Principle Investigators (PIs) are responsible for the spaces designated for them or their lab groups.
 - 3.1.1. Ensure that personnel in your lab have been trained on how to properly use chemical fume hoods safely and effectively (see section 5).
 - 3.1.2. Ensure that personnel in your lab know how to respond in the event that chemical fume hood air flow has been compromised (see section 10).
 - 3.1.3. Ensure that personnel in your lab have access to proper personnel protective equipment.
 - 3.1.4. Ensure that chemical fume hoods have been appropriately cleaned and decontaminated prior to requesting a fume hood be removed from service or prior to relinquishing lab space. This process must be approved by EHS per the UA Decommissioning Guidelines.

- 4.1.10. Notify EHS when a chemical fume hood has been repaired so that the chemical fume hood can be recertified for operation.
- 4.1.11 EHS will assess any reported issues and coordinate with a Facilities representative whenever assistance is required

5. ENVIRONMENTAL HEALTH & SAFETY OFFICE

- 5.1. EHS personnel are responsible for checking and certifying that chemical fume hoods are functioning according to manufacturer specifications and installation certification.
 - 5.1.1. Ensure that chemical fume hoods are checked according to the most current version of ASHRAE 110: Method of Testing Performance of Laboratory Fume Hoods on an annual basis.
 - 5.1.2 Post a magnet found in Appendix A for all chemical fume hoods that do not have adequate airflow.
 - 5.1.3. Monitor the chemical fume hood program to ensure compliance with this plan and that the appropriate procedures are being performed.
 - 5.1.4. Provide training on the proper use of chemical fume hoods and the different chemical fume hoods systems in use.
 - 5.1.5. Review all requests to hibernate a fume hood when it will be out of use for more than 90 days. Coordinate systems review with other UA personnel to determine if these requests can be approved.
 - 5.1.6. Review and revise this plan when necessary.
 - 5.1.7. Maintain a database of chemical fume hoods, lab contacts, and Principle Investigators.
 - 5.1.8. Maintain a database of all testing results and repair requests for all fume hoods.
 - 5.1.9. All hazard control ventilation system plans/blueprints/change orders are reviewed by EHS to ensure the safety of these systems.

6. CHEMICAL FUME HOOD SURVEYS

- 6.1. All chemical fume hoods will be surveyed by EHS personnel on an annual basis to ensure that adequate airflow is being provided and to ensure that the chemical fume hoods are being properly used.

- 6.1.1. Fume hood testing procedures will be based on the most recent version of ASHRAE 110: Method of Testing Performance of Laboratory Fume Hoods. Pass or Fail criteria will be based on the guidelines provided by the NIH guidelines for Fume Hood Requirements and Testing.
- 6.1.2. This survey will be conducted by EHS personnel in all UA buildings.
- 6.1.3. Traditionally, chemical fume hoods have been required to have a face velocity of 100 feet per minute (fpm) with an acceptable range of 80 – 120 fpm. High Efficiency hoods can range from 50-100 fpm, depending on calibration settings and configuration. Regardless of type, each hood is calibrated and tested for optimal performance.
- 6.1.4. EHS will perform a radiation survey on chemical fume hoods used for radioactive materials annually and prior to the chemical fume hoods removal from the lab.
- 6.1.5. During annual surveys, a risk assessment will be performed on any hood that fails certification testing. If the hood is not being used for hazardous materials and can safely be used for the materials involved (heat generation, odoriferous but not dangerous items, etc.), then the fume hood will remain in service. Lab personnel are responsible for notifying EHS if the intended use of this hood changes, so the risk assessment can be repeated to determine if the hood must be taken out of service for further assessment or repairs.
- 6.1.6. Where surveys show that a chemical fume hood is deficient in a manner which could compromise the safety of the occupants of the lab, EHS personnel will notify the PI and/or the laboratory occupants immediately. A danger magnet will be posted on these hoods (See Appendix A) until repairs can be completed and the hood successfully passes certification.
- 6.1.7. During annual surveys, any chemical fume hood found in a lab that is not in use will not be surveyed. This hood will be secured and EHS should be contacted before the lab is occupied. A survey will be conducted before new occupants being work in the lab space.
- 6.1.8. Any hood that cannot be repaired or brought into acceptable certification parameters will be secured and marked as out of service. At this point, EHS will contact UA personnel to assess alternatives for work involving the chemical fume hood.

7. USE OF CHEMICAL FUME HOODS

- 7.1. Chemical fume hoods shall be used in a safe manner, in accordance with standard safe work practices and manufacturers recommendations. Safe work practices include but are not limited to the following:
 - 7.1.1. Wear appropriate personal protective equipment when working with chemicals such as eye protection, gloves, closed toe shoes and lab coats.
 - 7.1.2. Always make sure that the chemical fume hood is functioning properly prior to use. Verify the controls are not in alarm or there are no alerts on control panels (if provided).

- 7.1.3. Keep sash height at the designated position of 18 inches or lower while working in the hood. When working in a hood with sliding panels make sure to slide panels in front of your torso and work with your arms around the panels to increase personal safety.
- 7.1.4. Do not use chemical fume hoods for excessive storage of Hazardous or Unwanted Chemicals unless approved by EHS.
- 7.1.5. Keep items in chemical fume hood at least six inches from the front of hood (sill) to ensure that contaminants are captured.
- 7.1.6. Do not place or store large pieces of equipment or supplies in chemical fume hoods when working with hazardous chemicals. This equipment can cause disruptions in air flow compromising the effectiveness of the chemical fume hood.
- 7.1.7. If equipment is to be placed in chemical fume hood, place it on a stand which allows air to flow under the equipment.
- 7.1.8. Do not use chemical fume hoods to evaporate unwanted solvents or spills. This act is potentially an EPA violation. This material should be cleaned up and disposed of properly through the unwanted chemical pick up via the Environmental Health & Safety office.
- 7.1.9. Doors and windows should remain closed at all times in rooms with chemical fume hoods to reduce air turbulence and maintain proper air pressure differences.

8. REMOVING CHEMICAL FUME HOODS FROM SERVICE

- 8.1. When a chemical fume hood is going to be taken out of service, the Principle Investigator must first ensure that all hazardous agents have been removed and the hood has been properly cleaned, disinfected, and decommissioned per UA Decommissioning Guidelines. Once the fume hood is decommissioned please notify EHS.
 - 8.1.1 If radioactive materials have been utilized in the chemical fume hood, it must be surveyed for radioactive material by the Principle Investigator and by the RSO to ensure that the chemical fume hood has not been contaminated by radioactive material. Once EHS releases the chemical fume hood, it can be removed.

9. ROOF WORK WHERE CHEMICAL FUME HOODS ARE LOCATED

- 9.1. In the event that UA employees need to conduct work activities on the roof of any building containing chemical fume hood exhaust(s), these employees will notify all contacts for affected areas to inform them of the time frame of the work to be conducted.
 - 9.1.1. The individuals completing the work will then post all chemical fume hoods that lead to all risers producing airstreams through which they may pass while completing the work. The sign to be utilized can be found in Appendix A.

- 9.1.2. Work should not be performed on the roof of any building containing chemical fume hood exhaust(s) without occupant coordination and EHS notification. This ensures that acutely hazardous materials will not be part of the exhaust stream during the duration of work.
- 9.1.3. UA personnel should not interrupt air exhaust for chemical fume hoods without first notifying the occupants and determining the time needed to shut down any experiments occurring in the hoods. This protects the laboratory personnel from chemical contamination caused by a lack of ventilation or carried on airflow disruptions back into the lab room.

10. CHEMICAL FUME HOOD SYSTEM MALFUNCTION

- 10.1. In the event of a chemical fume hood malfunction, the person first recognizing this problem must contact EHS immediately. Fume Hood Service Requests can be submitted on the EHS webpage, ehs.ua.edu.
 - 10.1.1. EHS must treat these concerns as high priority.
 - 10.1.2. When EHS is notified of a deficient chemical fume hood, EHS will visit the reported fume hood to inspect the reason or reasons for the malfunction and take the appropriate actions to return the fume hood to proper functioning.
 - 10.1.3. It is imperative that the necessary information be communicated to EHS personnel about activities or observations that might have impacted the hood performance. In the event that the airflow of any chemical fume hood must be further disrupted or compromised, it is imperative that EHS personnel communicate with the lab occupants and anyone else who might be impacted.
 - 10.1.4. Prior to any repairs being conducted, the EHS employee performing the work will contact the lab to notify lab personnel of work and to post signage regarding the state of the chemical fume hood. If no lab personnel are available, these signs will be posted on the fume hood of the affected lab. The sign to be utilized can be found in Appendix A.
 - 10.1.5. Once repairs or maintenance has been completed, the EHS employee who posted this information will remove these signs.
 - 10.1.6. EHS will test the chemical fume hood to ensure they meet current ASHRAE 110 standard.
 - 10.1.7. If approved, EHS will notify Lab personnel that the chemical fume hood may be utilized.

11. HOOD SYSTEM DESIGN, SELECTION, AND INSTALLATION

- 11.1. Facilities Maintenance and/or Construction Administration must notify EHS of any changes to be made in any hazard control ventilation systems including chemical fume hoods.
 - 11.1.1. The proper type of chemical fume hood must be selected to protect laboratory occupants from the hazards associated with their research.

- 11.1.2. Chemical fume hoods must always be installed per lab design guidelines and tested according to ASHRAE 110 standards.

12. AIR FLOW INDICATOR DEVICE CALIBRATION

- 12.1. Many chemical fume hoods are equipped with air flow indicator devices, as well as audible and/or visual alarms to indicate airflow disruptions.
 - 12.1.1. Chemical fume hood monitors are checked by EHS for air flow calibration accuracy and adjusted as needed.
 - 12.1.2. Alarms on air flow indicator devices indicate a disruption in the fume hood's ability to capture and contain potential contaminants. These should be reported to EHS (see section 10 of this document).

13. CHEMICAL FUME HOOD HIBERNATION

- 13.1. If a fume hood in a laboratory is not being used, the PI can contact EHS to request that the fume hood be hibernated. Fume Hood Service Requests can be submitted on the EHS webpage, ehs.ua.edu.
 - 13.1.1. Hibernation requests will be assessed by EHS personnel, in connection with Facilities (HVAC and Energy Management) as well as Construction Administration (Mechanical Engineering).
 - 13.1.2. Hibernation requests must be for a period of more than 90 days to be considered.
 - 13.1.3. Approval of hibernation requests is based upon the systems and engineering controls within each building. Not all hoods are candidates for hibernation.
 - 13.1.4. If a hibernation request is approved, the hood will be closed and secured and building controls will be adjusted in such a way to allow minimal or zero airflow through the fume hood while maintaining required building balance and pressurization.
 - 13.1.5. EHS will maintain a log of all hibernation requests and their status.
 - 13.1.6. Anyone wishing to begin work in a hibernated hood should contact EHS. Fume Hood Service Requests can be submitted on the EHS webpage, ehs.ua.edu. EHS will coordinate with Facilities (HVAC and Energy Management) as well as Construction Administration (Mechanical Engineering) to return the hood to service. EHS will survey the hood to certify that it is functioning in an acceptable manner.
 - 13.1.7. Once a hood is released from hibernation, the PI will be contacted and allowed to begin regular hood use.

APPENDIX A.

