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# EAST TENNESSEE STATE UNIVERSITY

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## Facilities Management

**Policy Number:** 700.20

**Title:** Chemical Fume Hood Policy

**Implementation Date:** January 2002

**Last Audited:** 4/2/2026

**Last Revised:** 4/2/2026

### **Introduction**

The laboratory chemical fume hood is the most common local exhaust ventilation system used in laboratories and is the primary method for controlling inhalation exposures to hazardous substances. When appropriately used, fume hoods offer a significant degree of protection for the user.

### **Scope**

This plan shall address chemical fume hoods used to control hazardous substances in the laboratory. This plan does not address biosafety cabinets, laminar flow hoods, glove boxes, histology grossing tables, clean benches, bench-top exhausts, or similar local exhaust ventilation.

### **Purpose**

This document provides guidance for the use and testing of chemical fume hoods on East Tennessee State University campuses and satellite locations.

### **Procedures**

Face velocity measurements are performed per OSHA's Occupational Exposure to Hazardous Chemicals in Laboratories 1910.1450 and ANSI/ASHRAE 110-2016, *Method of Testing Performance of Laboratory Fume Hoods*.

Safe work procedures have been developed to protect ETSU Facilities Management maintenance personnel and laboratory students, faculty, and staff from potential exposure to hazardous materials while laboratory ventilation exhaust systems are inspected and repaired.

### **Minimum Face Velocity Requirements**

- All chemical fume hoods must have an average face velocity of 60-150 feet per minute (fpm) (Table 1).
- Chemical fume hoods below 80 fpm must be serviced according to Table 1.

Face Velocity	Category	Action
>150	Excessive	Check for turbulence using dry ice, titanium tetrachloride, or another means of visualizing flow.
150 - 80	Ideal	Normal operations
79-61	Marginal	Work is allowed to continue in the hood; a work order will be placed to repair.
<60	Deficient	Work must stop until repairs occur.

**Table 1.** Fume Hood Face Velocity categories and actions

### **Pre-Maintenance Procedure**

- Whenever service requires that a laboratory chemical hood, biological safety cabinet, or other local exhaust system be shut down, the designated laboratory supervisor or department chair must be informed of the time and duration of the shutdown. The Facilities shop supervisor is responsible for arranging the shutdown.
- Whenever work is scheduled on the laboratory ventilation system, laboratory staff must confirm that hazardous materials have been secured. Laboratory staff is also responsible for ensuring that a work area in laboratory space is cleared of laboratory equipment; maintenance staff need room to place their tools and may occasionally need room to place a ladder.

**NOTE: Facilities maintenance employees shall not remove, alter, or move laboratory equipment or chemicals. Laboratory staff is responsible for removing items from laboratory hood cabinets.**

- Immediately before an exhaust system is shut down, the sign shown in **Attachment A** must be placed on the sash of the chemical hood.

### **Maintenance Procedure**

Facilities Management employees are only authorized to work on the clean side of the laboratory ventilation system. Any repairs on the dirty side of the chemical hoods require a safety evaluation and written approval from the Director of Environmental Health & Safety.

Clean side work for our purposes deals with maintenance and repairs on the laboratory ventilation exhaust system without cutting into or sticking part of the body into a duct or hood enclosure. The following are some examples of clean work

authorized by the Physical Plant but is not entirely inclusive of all work that can be performed safely:

1. Inspect the fan housing, vibration isolator, and ductwork for leaks.
2. Checking the condition of the fan motor and sheave for problems, i.e., v-belt tension, v-belt condition, etc.
3. Checking the electrical system for problems, i.e., blown fuse, circuit ground fault, etc.

**IN ALL SITUATIONS THAT INVOLVE WORKING ON THE CLEAN SIDE OF A LABORATORY VENTILATION EXHAUST SYSTEM THE EXHAUST SYSTEM MUST BE LOCKED OUT AND NO AIRFLOW EXHAUSTED FROM THE SYSTEM.**

### **Personal Protective Equipment**

At a minimum, Facilities Management maintenance personnel are required to:

- Wear the following personal protective equipment when working on the clean side of the hoods: disposable gloves, eye protection or face shield.
- Additional PPE such as coveralls, mechanics gloves, etc. may be obtained at EH&S office if necessary.
- After completing maintenance tasks, trash disposable PPE properly and wash hands and face.

### **Responsibilities**

#### **Environmental Health and Safety Office:**

- Conduct annual chemical fume hood testing.
- Assist departments or individuals to the extent feasible with compliance.
- Maintain records as required.
- Provide training on chemical fume hood use upon request.
- Perform annual chemical fume hood testing. Based on test results, place work orders as needed and notify PI of any. Place a sticker on chemical fume hoods indicating the date of the test.
- If test doesn't pass, place "Do Not Use" sticker on sash, submit a work order for the repair, and notify the Principal Investigator or lab manager.

#### **Facilities Supervisors:**

- Ensure that employees assigned to work on laboratory chemical hood exhaust systems are adequately trained and utilize the appropriate personal protective equipment.
- Ensure that maintenance work requiring the shut-down of the system is coordinated with the laboratory or department.

#### **Facilities Maintenance Employees:**

- Perform work in a manner consistent with this policy, utilizing the appropriate personal protective equipment.

### **Safe Work Procedures for Working on Radioisotope Hoods**

- Contact ETSU's Radiation Safety Office at 439-7743 or 439-7773 before working on a chemical hood exhaust system where a room is posted with a radioactive materials sign. If possible, check with the researcher as to what radionuclides are presently being used in the hood and what have historically been used in the hood.
- A clearance survey by the RSO may be performed to determine if the inside of the hood is not contaminated with radioactive materials. A survey may be necessary to determine if downline ductwork is contaminated from legacy radionuclides in an air stream. It may be necessary to perform surveys on chemical hoods in clean labs, which have a radionuclide history.
- If radioisotope contamination is above applicable standards, special procedures will be specified by the Radiation Safety Officer. Do not proceed with work; contact the RSO at 439-7743 or 439-7773 for further directions.

All radiological chemical fume hoods must have an average face velocity >80 fpm.

### **General Work Practices for Chemical Fume Hoods**

- Operate the hood at the proper sash height as indicated on the EH&S profile sticker located on the front of the hood.
- Do not use the hood as a storage cabinet for chemicals and/or equipment. Materials stored in fume hoods should be kept to a minimum and stored in a manner that will not interfere with airflow.
- Do not use a hood for any function it was not designed for, such as perchloric acid and radioisotopes. The generation of perchloric acid vapors requires specially designed fume hoods with wash-down systems. Failure to use a wash-down system will result in the deposit of explosive perchloric acid crystals that may detonate in the hood ductwork. Hoods used for radioisotopes must be approved by the Radiation Safety Office.
- Keep all items in hood at least 6 inches from the front of the hood. This greatly improves capture rate for volatile chemicals.
- Keep hoods clean and organized and clean up any chemical spill immediately.
- Chemical hoods are not a substitute for personal protective equipment. Wear gloves, safety glasses, lab coats, etc. as necessary.
- Know the toxic properties of the chemicals with which you work. Be able to identify signs and symptoms of overexposure.
- If your hood is not working properly or if you have questions regarding the proper use of your chemical hood, contact the EH&S Department at 439-7773 or 439-7900.

### **Contact Persons**

Director of Environmental Health and Safety  
Associate Director of Environmental Health and Safety  
Environmental Compliance Manager  
Health and Safety Technician

**Approved by:** \_\_\_\_\_

Laura Bailey, Associate Vice President for Capital Planning and  
Facilities Services

**Date approved:** \_\_\_\_\_

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April 2<sup>nd</sup>, 2025

**Attachment A**

**HEALTH AND SAFETY NOTICE**

**ETSU Facilities Management will be shutting down  
laboratory ventilation system on:**

**Date:** \_\_\_\_\_

**Building:** \_\_\_\_\_

**Floor:** \_\_\_\_\_

**Time:** \_\_\_\_\_

**DO NOT USE laboratory chemical hood(s) during  
this time.**

**Please call Facilities Management at 439-7900 if  
you have any questions.**