



EAST TENNESSEE STATE UNIVERSITY

Facilities Management

Policy Number: 700.20

Title: Chemical Fume Hood Policy

Implementation Date: January 2002

Last Audited: June 2019

Last Revised: July 1st, 2019

Introduction

The laboratory chemical fume hood is the most common local exhaust ventilation system used in laboratories and is the primary method used to control inhalation exposures to hazardous substances. When used properly, 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, glove boxes, histology grossing tables, clean benches, bench-top exhausts and similar local exhaust ventilation.

Purpose

The purpose of this document is to provide 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 in accordance with ANSI/AIHA Z9.5-2003, *Laboratory Ventilation Standard* and ANSI/ASHRAE 110-1995, *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 non-radiological chemical fume hoods must have an average face velocity of 90 feet per minute (fpm) for high velocity hoods and 60 fpm for low velocity hoods.
- All radiological chemical fume hoods must have an average face velocity of 100 fpm or greater for high velocity hoods and 60 fpm for low velocity hoods.

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 to assure 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 will be 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 in 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 the duct work 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: chemical resistant gloves, safety goggles or face shield.
- After completing maintenance tasks, wash the outside of re-useable gloves or discard disposable gloves.
- 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 upon request related to chemical fume hood use.
- Place a sticker on chemical fume hoods indicating the date of test.
- If test doesn't pass, place "Do Not Use" sticker on sash and notify the Principal Investigator.

Facilities Supervisors:

- Assure that employees assigned to work on laboratory chemical hood exhaust systems are adequately trained and utilize the appropriate personal protective equipment.
- Assure 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 439-6056 before working on a chemical hood exhaust system where a room is posted with a radioactive materials sign. If possible, check with researcher as to what radionuclides are being used presently in the hood and a history of 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 down line 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 439-6056 for further directions.
- All radiological chemical fume hoods must have an average face velocity of 100 fpm or greater for high velocity hoods and 60 fpm for low velocity hoods.

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 have questions regarding the proper use of your chemical hood, contact the EH&S Department at 439-6028.

Contact Persons

Director of Environmental Health and Safety
Environmental Compliance Manager
Health and Safety Specialist

Approved by: _____

William Brady Rasnick, Jr., Associate Vice President, Facilities
Management

Date approved: _____

Audited: August, 2017
June, 2019

Revised: July 1st, 2019

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.**