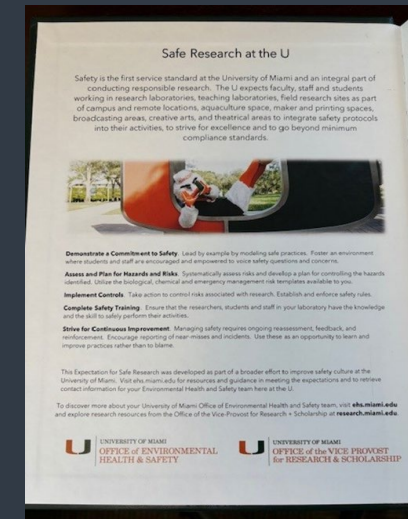
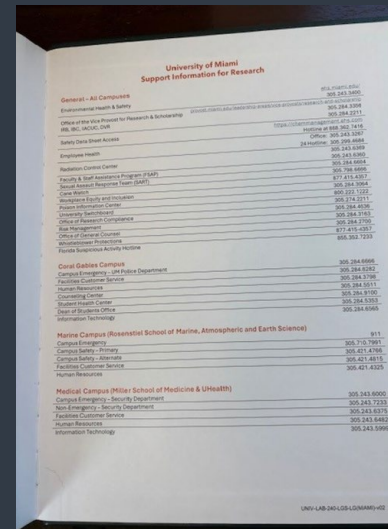


FEBRUARY 10TH, 2025

Giveaway!

- Branded Laboratory Research Notebook
- Sebastian on front cover
- Hardcover
- 232 pages
- Brought to you by:

- Office of Environmental Health & Safety
- Office of the Vice Provost for Research & Scholarship





Adrian Hernández, CSP; Chemical Safety Manager

CHEMICAL FUME HOODS

February 2025



UNIVERSITY
OF MIAMI

Agenda

1. Identify general facts about fume hoods.
2. Identify parts of a fume hood.
3. Identify types of fume hoods.
4. List factors that affect the proper fume hood airflow.
5. Describe proper practices for working in a fume hood.
6. Giveaway questions
7. Q&A

440 UNITS IN UM

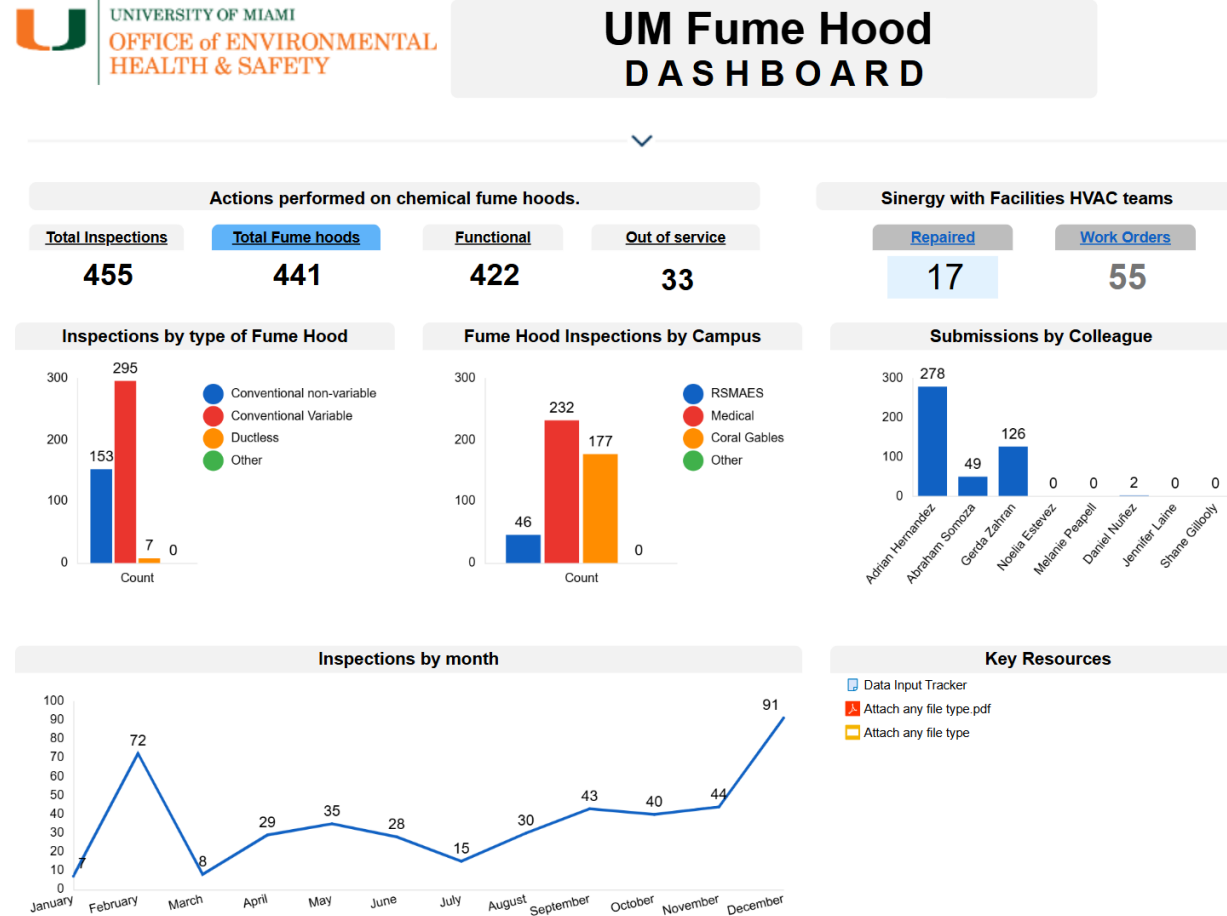
As primary engineering control of chemical hazards in laboratories



A chemical fume hood is the primary laboratory equipment used to protect staff when working with hazardous chemicals

Chemical fume hood inventory (smartsheet©)

Coral Gables fire
Department
requirement
Digital
Dashboard



Proper and improper uses

- Fume hoods **DO** provide:

- **Personnel protection** from inhaling chemical gases, vapors, and aerosols by exhausting air outside the building. The sash provides some splash protection for your face.

- Fume hoods **DO NOT** provide:

- **Environment protection** Air exhausted from a fume hood is not filtered or treated before release

- Fume hoods **DO NOT** provide:

- **Product protection** (such as samples and specimens) from contamination. Air drawn into the hood from the room **is not filtered.**

Parts of a fume hood



1. Sash.
2. Light switch.
3. System airflow monitor and hood face velocity monitor.
4. Work surface.
5. Sill (airfoil).
6. Baffles.
7. Hood face.

Parts of a fume hood

1. Sash: Glass window that opens and closes either vertically, horizontally, or a combination of both



Parts of a fume hood



2. Light switch: On/off control for the fluorescent light, located on the fume hood



Parts of a fume hood



3. System airflow monitor and hood face velocity monitor: Device is located on the exterior of the hood to indicate airflow



Parts of a fume hood

4. Work surface: Where work is conducted



Parts of a fume hood



5. Sill (airfoil): Located at the bottom front of the hood to guide air smoothly into the hood and reduce turbulence



Foil performance while doing a smoke test



Parts of a fume hood



6. Baffles: Moveable partitions that create slotted openings along the back wall to maintain uniform airflow across the front opening and improve containment

Parts of a fume hood



7. Hood face: The hypothetical plane between the bottom of the sash and the work surface

How fumes travel through our buildings to the exterior



Types of exhaust systems

Chemical fume hoods are equipped with various exhaust systems. The two types of chemical fume hood exhaust systems are constant air volume and variable air volume.

Constant Air Volume



143 units

Ductless fume hoods



6 units

Variable Air Volume



291 units

Other models of fume hoods



ADA compliant



Sash combination



Full or walk in

Purpose-specific fume hoods



- **Perchloric acid fume hood**

Cabinets of fume hoods



Acids or Flammables

These are not chemical fume hoods

This can concentrate the chemical vapors that you breathe.

Do not use the following as chemical fume hood substitutes:

- Biological safety cabinets
- Ventilated balance enclosures
- Clean benches



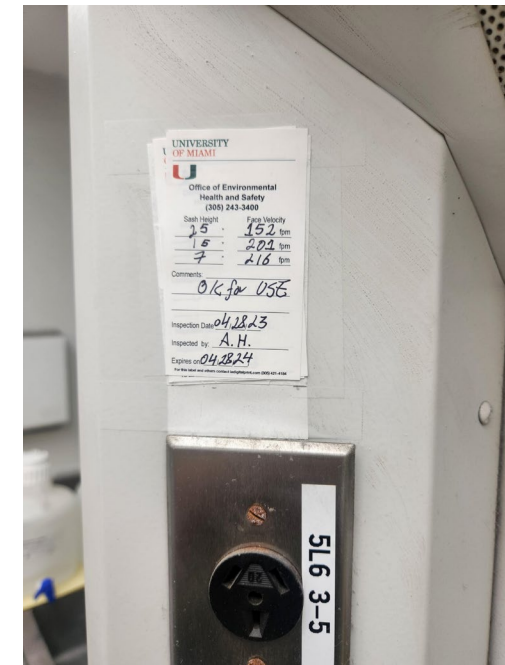
Use only approved fume hoods

OSHA's laboratory standard (29 CFR 1910.1450 (e)(3)(iii)) requires that fume hoods be maintained and function properly when used.

Perform this checks before using a chemical fume hood.

1. Check the test sticker
2. Check airflow monitor (green or equivalent indication)
3. Check sash operation

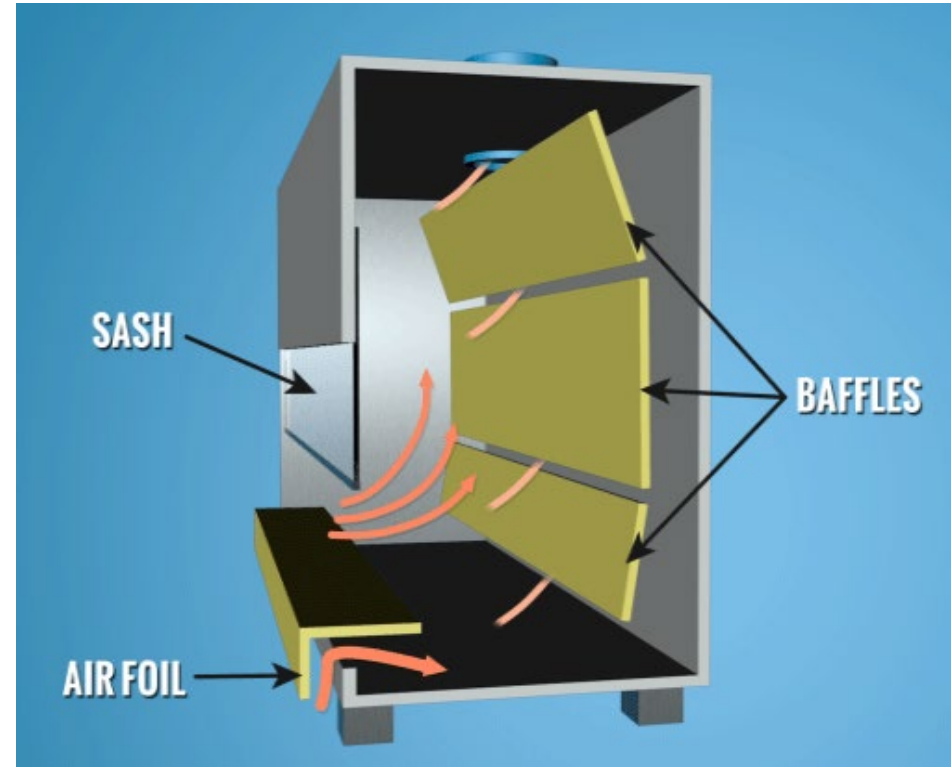
NOTE: If your fume hood does not have an updated test sticker or the Test is not ok to use, do not use the fume hood. Contact the EHS office for assistance.



Airflow performance

Air flows by negative pressure from the front through the work surface and exhausting it out the top.

The airfoils located along the hood sill help guide airflow smoothly into the hood to minimize turbulence. Air sweeps across the work surface toward the baffles on the back wall. The baffles help maintain uniform airflow and containment across the front face.



Airflow performance

Maintain proper airflow to ensure a fume hood's performance, containment and protective function.

Several factors can affect airflow. These are the main factors:

- Sash height
- Placement of equipment and materials inside the hood
- Your movements inside the hood
- Air disturbances around the hood from:
 - Opening doors
 - Ceiling air diffusers
 - Motion activities surrounding the front of the hood (such as people walking by)

Airflow performance

**Do not modify
general lab
ventilation without
Facilities
involvement and
approval**

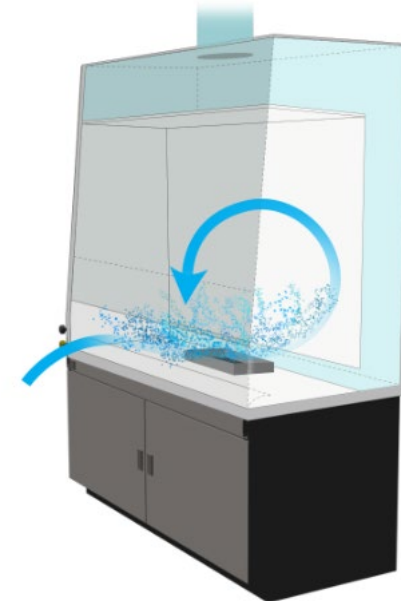
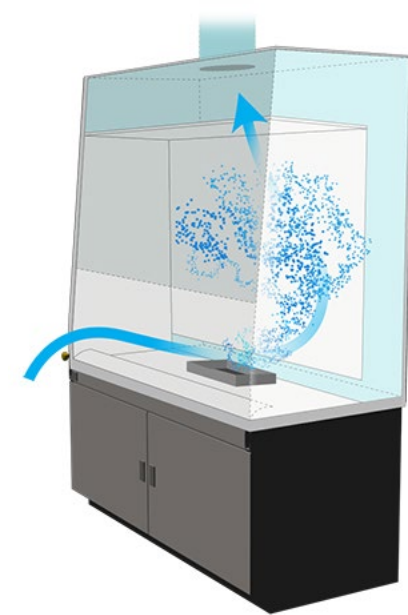
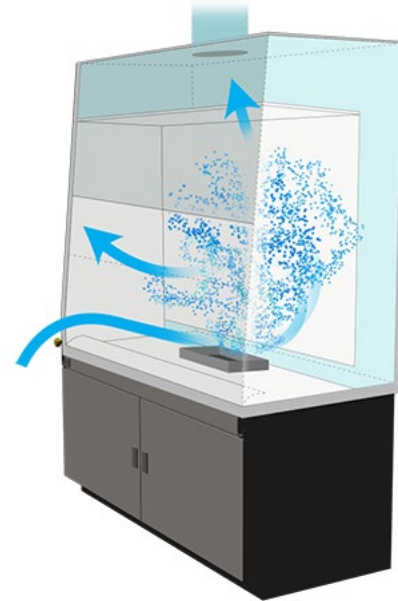
Sash height

The correct sash height provides optimal airflow and protection. You can raise the sash to load and position equipment if it is needed. Lower it back to tested level before work begins.

If too high, the hood face velocity will slow and potentially allow leakage of vapors.

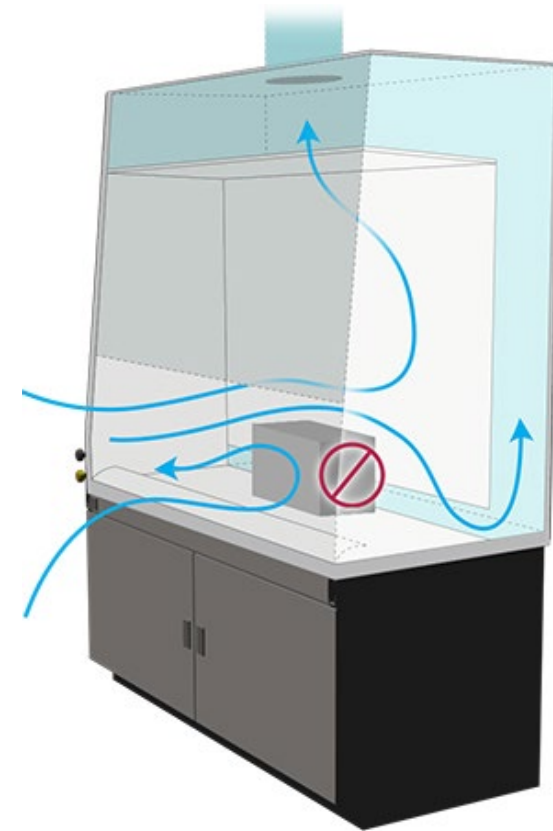
If too low, the face velocity will increase, which can cause increased turbulence and disrupt materials inside the hood.

The bottom of the sash must be lower to the mouth and face of user



Placement of equipment and materials

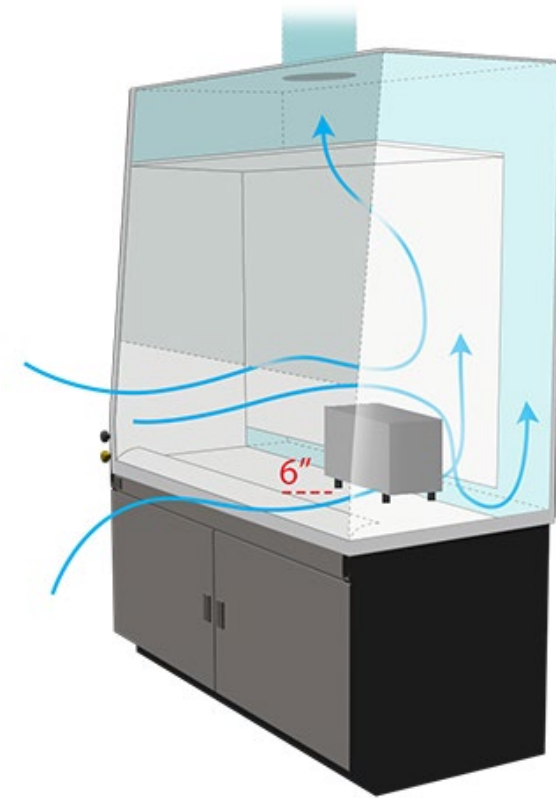
Do not:



Place large equipment directly on the work surface without elevating the equipment

Placement of equipment and materials

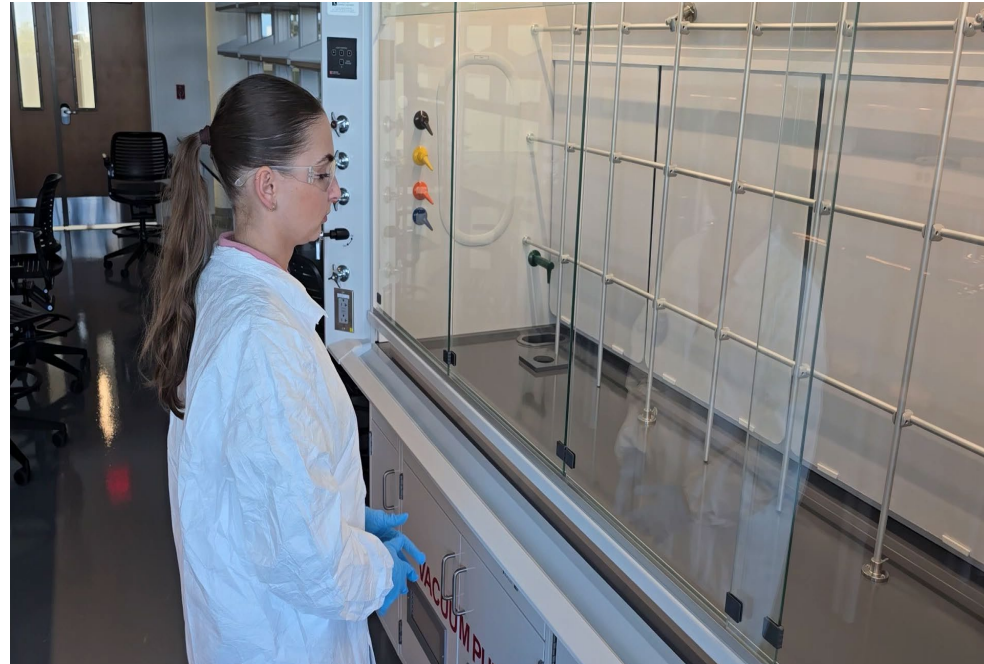
Do:



Place equipment and materials at least 6 inches behind the front edge Elevate items on risers such as blocks

Movement inside the hood

- Move your arms in and out slowly and keep them perpendicular to the front opening. Do not make sweeping motions with your arms.
- Never put your head inside the hood or in the plane of the hood opening.



Air disturbance around the hood

- Keep the laboratory door closed.
Air currents are generated by opening and closing the door.
- Locate hoods away from doors, ceiling air diffusers, air supply, and air conditioning vents.
- Avoid walking past the hood when someone is working.

Air disturbance around the hood

- Chemicals close to the front are more likely to leak out
- Six inches at least from the front
- Move slowly the sash
- Walking at 3 miles per hours that is 250 ft /min, vortices can be created
- No A/C or diffusers close to fume hoods.



Startup procedure

- Place all materials you will be using inside the hood ahead of time to reduce arm movements while working.
- You can raise the sash to load materials; but return it to the correct level before working.
- Make sure the sash is at the operation level.

Cleanup procedure

After finishing work in a fume hood:

- Cap or close containers, even if they look empty. Do not allow chemicals to evaporate in the hood.
- Return chemicals to proper storage locations. Do not permanently store chemicals inside the hood.
- Properly discard disposable supplies and waste.
- Clean up all spills. In the event of a chemical spill, follow the established SOP or CHP guidelines for proper handling and cleanup.
- Store chemical waste in the designated waste storage area.

Cleanup procedure

After finishing work in a fume hood:

- Clean the hood after each use:
 - Wipe down work surface and front airfoil sill.
 - To clean up water-soluble chemicals, simply dissolve with water and wipe up the spill with a damp paper towel.
 - Use soap and water to remove water-insoluble chemical residue.
- User should follow SOP for the chemical used in the hood as well as any dictated by the laboratory for a chemical spill.

Fume hood blocked

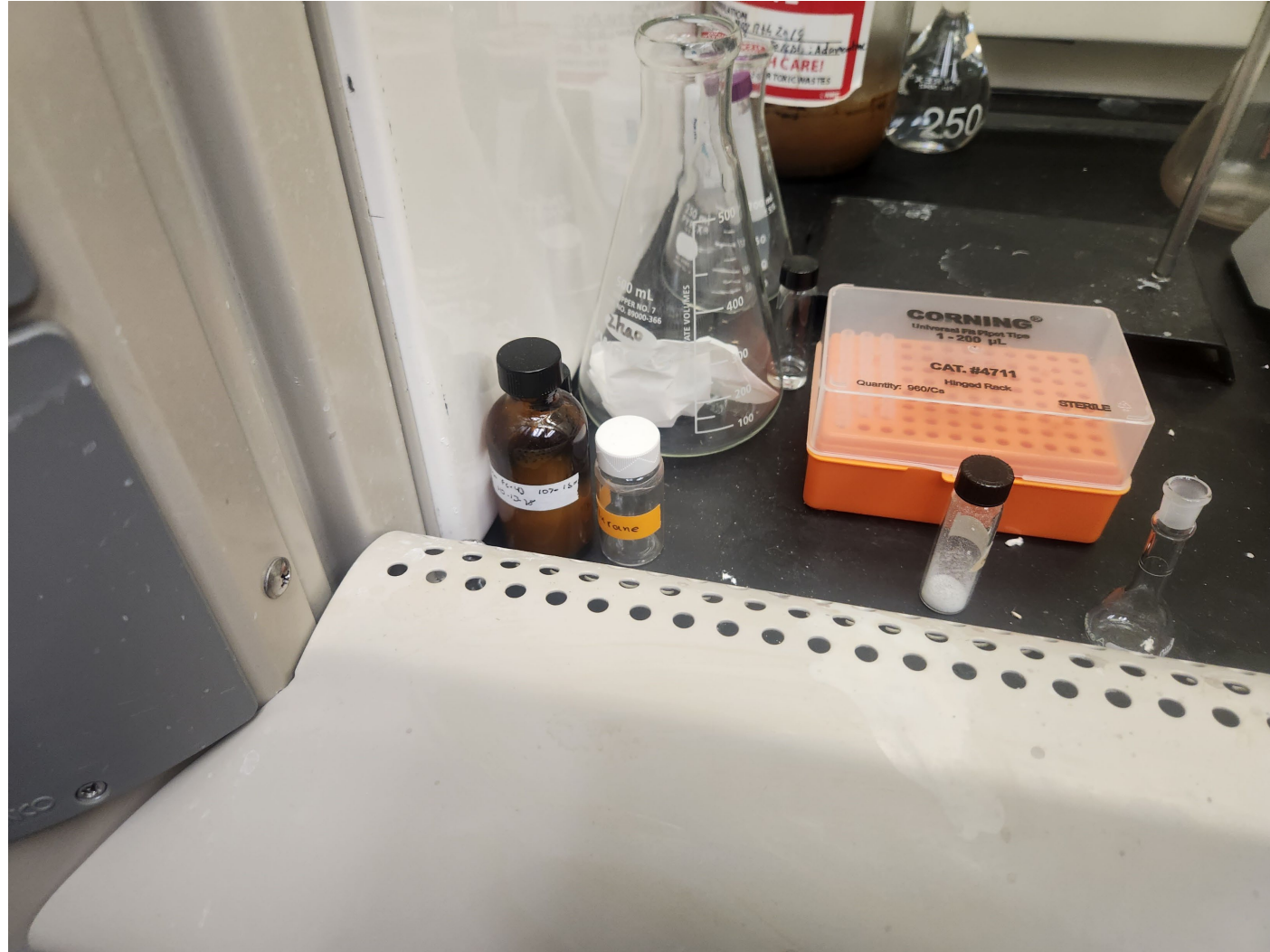


Sash damaged

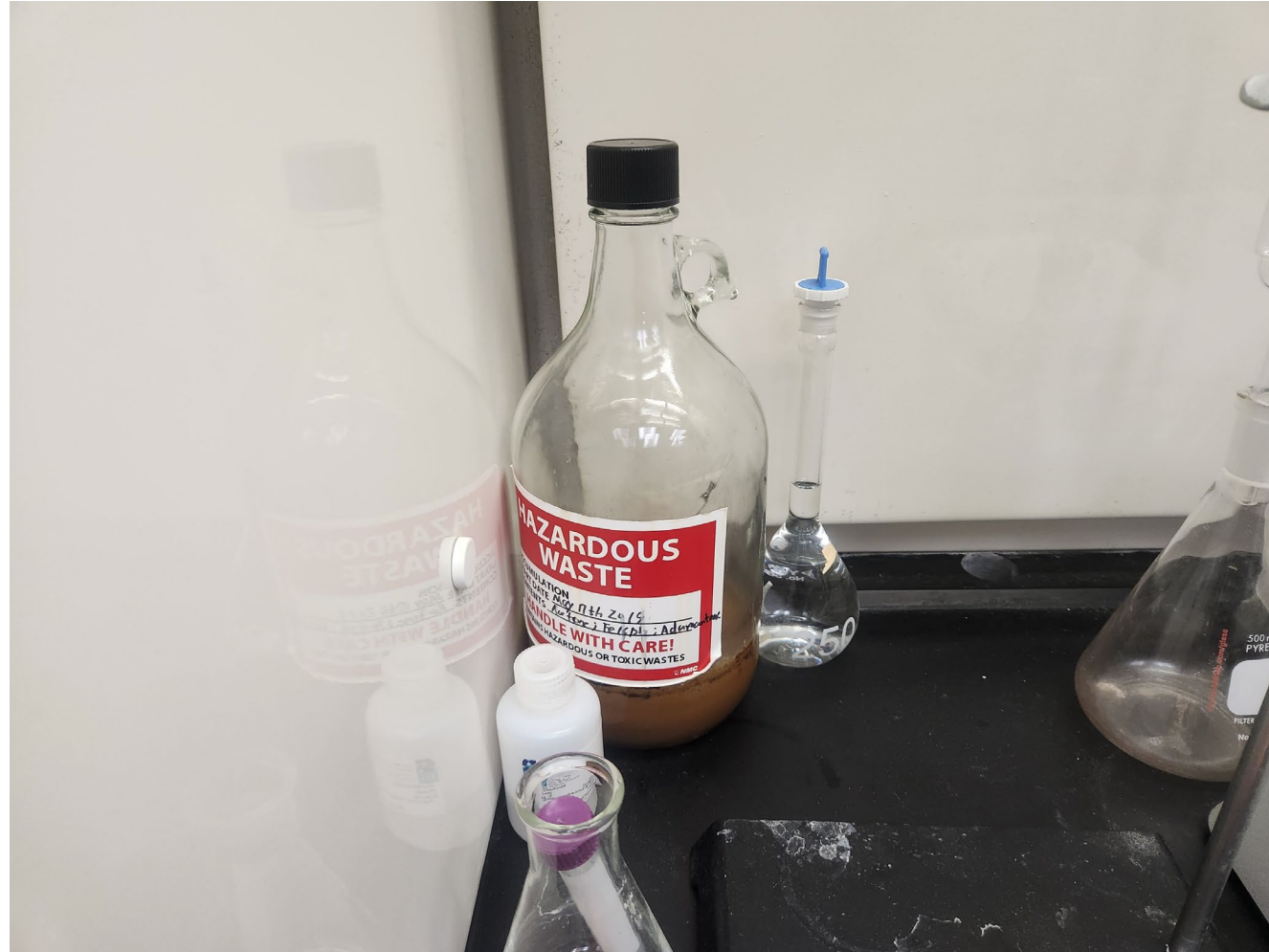


Galaxy S24 Ultra

Chemicals at the edge



Waste being stored



Missing parts or general failure



1) To maintain proper airflow while working in a fume hood, what position should the sash be kept?

- a) All the way up
- b) In between the test height (7" -15")
- c) As low as practical
- d) 6 inches high

2) While working in a fume hood, what factor may negatively impact proper airflow?

- a) Sash height at the test mark (7" -15")
- b) Taking arms out of the fume hood perpendicular to the fume hood face and slowly
- c) Placing chemicals 6 inches from the front opening
- d) A person walking by closely to you and the fume hood

3) You should continue to work when there is a loss of power.

True or False

4) Before using a fume hood, you need to be sure the inspection sticker is signed by EHS office.

True or False

5) After finishing work in a fume hood, which of the following should you do?

- a) Return chemical to proper storage cabinets/locations
- b) Store the hazardous chemicals in the fume hood
- c) Allow chemical waste to evaporate safely in the hood

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Thank you!!!