

Not Rocket Science: A JHU Safety Note

INTRODUCTION TO FUME HOODS AND BIOLOGICAL SAFETY CABINETS

Chemical fume hoods and biological safety cabinets (BSCs) are important engineering controls for the laboratory. BSCs and fume hoods control air flow; contain vapors, dusts, gases, fumes, and other contaminants; and shield researchers from splashes, fires, and minor explosions. Fume hoods and biological safety cabinets can make the difference between a safe and a hazardous lab environment.

Fume Hood or Biological Safety Cabinet Failure

A failed fume hood or BSC may exhibit:

1. No airflow;
2. Airflow alarm sounding; or
3. Odors or vapors escaping the cabinet.

If your fume hood or BSC has failed:

1. Stop working in the hood or BSC **immediately**. Close all containers and stop all experiments. Continuing to work will expose you to hazardous chemical or biological agents.
2. Close the sash to prevent contaminants from entering the lab and leave it closed unless you are clearing the hood for service.
3. Report the problem to Facilities at 410-516-8060. Be certain to tell Facilities that the hood repair is urgent and should be prioritized.
4. Remove all chemicals and apparatus from the hood or BSC so that technicians can work safely. Clean all possibly-contaminated surfaces with detergent and water. Use appropriate personal protective equipment while working. If you cannot clean the hood without exposing yourself to hazardous materials, contact the Department of Health, Safety, and Environment at 410-516-8798 for assistance.

Contact Dr. Dan Kuespert, Laboratory Safety Advocate,
at 410-516-5525 or dkuespert@jhu.edu for
more information about this JHU Safety Note.

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5. Facilities will contact Health, Safety, and Environment to approve the hood or BSC for service. HSE will visit your lab to check that the hood or BSC is empty and uncontaminated, close the sash, and post a work permit. **Facilities will not fix your hood or BSC without this permit.**
6. When the hood or BSC is functional again, remove the permit and resume using it.

Insufficient Air Flow

1. If your fume hood or BSC does not get enough airflow, try:
2. Removing unnecessary materials and equipment from the hood or cabinet;
3. Checking the baffles at the rear of the hood (and the front of a BSC) for obstructions; and
4. Elevating large items (ovens, etc.) to allow airflow underneath.



Figure 1: Appropriately used fume hood. Note the elevation of most of the equipment and the fact that only relevant equipment is present. Additionally, the sash is most of the way down.

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Figure 2 Poorly managed fume hood. Note the clutter and lack of elevation above the fume hood surface preventing adequate airflow. Additionally, the sash has been left up.

Additional Information

See [this](#) reference for the formal procedures and rules on hood and BSC failure.

DISCUSSION QUESTIONS

- Do any of your fume hoods or BSCs have impaired airflow?
- Do we do any work that might require additional precautions working in fume hoods or BSCs? When?
- What experiments could cause serious problems if the hood failed mid-experiment? How could we address that?

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