

FREQUENTLY ASKED QUESTIONS

BIOLOGICAL SAFETY CABINETS/LAMINAR FLOW CABINETS

WHAT IS A BIOLOGICAL SAFETY CABINET?

A biological safety cabinet (BSC) is a ventilated cabinet which uses a combination of HEPA filtration, laminar air flow and containment to provide personnel, product or environmental protection from biohazardous agents. This is accomplished by air intake and recirculation that is filtered prior to exhausting to the cabinet exterior. It is distinguished from a chemical fume hood by the presence of HEPA filtration and the laminar nature of the air flow.

WHAT IS A LAMINAR FLOW CABINET?

A laminar flow cabinet or laminar flow hood or tissue culture hood is a carefully enclosed bench designed to prevent contamination of semiconductor wafers, biological samples, or any particle sensitive device. Air is drawn through a High Efficiency Particulate Air (HEPA) filter and blown in a very smooth, laminar flow towards the user or towards the work surface. The cabinet is usually made of stainless steel with no gaps or joints where spores might collect.

Laminar flow cabinets do not protect the user or the environment and cannot be used with infectious material.

WHAT IS A HEPA FILTER?

HEPA stands for **H**igh **E**fficiency **P**articulate **A**ir filter and is capable of removing microscopic organisms with an efficiency of at least 99.97%. These filters help protect the user, the product in the workspace and the environment, but must be checked annually to ensure that they are functioning properly.

WHAT DO I NEED TO DO TO GET A NEW BSC?

New cabinets are purchased with departmental funds. Please contact RMS for vendor information or when a cabinet is purchased. New cabinets must be recertified after they are installed in the new location.

WHAT IF I NEED TO MOVE A BSC/LFC?

Risk Management and Safety must be informed before a biological safety cabinet is relocated. This will involve decontamination before the cabinet is moved and recertification after relocation as required in NSF Standard 49. BSCs must also be recertified if moved to a different spot within the same room.

If a cabinet is to be relocated to a laboratory at AU from a laboratory at another institution, documentation will be required by the Biosafety Officer to prove decontamination at the previous location before the cabinet can be moved to a laboratory at AU. Recertification will then be required at AU after the cabinet is installed.

Laminar Flow Hoods do not usually require decontamination prior to relocation. However, please inform RMS when a cabinet is moved so that we can maintain proper records.

HOW OFTEN SHOULD MY BSC/LFC BE CERTIFIED?

In accordance with **29 CFR 1910.1030(e)(2)(iii)(B)**, all BSCs are certified on an **annual** basis and any time the cabinet is **moved** or **undergoes repairs**. It is recommended that all LFCs are certified annually. Certification costs are the responsibility of the department and are managed through RMS.

WHOM DO I CALL FOR CERTIFICATION?

Jessica Powell with RMS at 334-707-2835 or email jap0057@auburn.edu.

WHAT DOES THE ORANGE (DO NOT USE) TAG MEAN?

The orange tag means that the cabinet has not been certified and may not be used until it is certified.

WHAT DO I DO IF MY BSC/LFC IS MAKING A STRANGE NOISE OR QUILTS WORKING?

Stop work, use an appropriate decontamination method to clean the cabinet, and call Jessica Powell at 334-707-2835 or email jap0057@auburn.edu.

HOW DO I PROPERLY CLEAN/DISINFECT MY BSC/LFC?

Appropriate decontamination methods are based on the materials being used in the cabinet. If you are not sure how to decontaminate your cabinet, please contact your lab supervisor or principle investigator for assistance.

WHAT IF I NEED TO DISPOSE OF A BSC/LFC?

Please remove the filters from Laminar Flow Cabinets prior to sending to Surplus Property. RMS requires that BSCs must be decontaminated and filters removed prior to sending to surplus. Decontamination is conducted by an outside provider and is the fiscal responsibility of the department. Contact Jessica Powell with RMS at 334-707-2835 or email jap0057@auburn.edu to schedule decontamination.

SHOULD I RUN MY BSC/LFC CONTINUOUSLY?

The BSC/LFC should be running at all times when someone is working in it. Usually, it may be powered down after work is finished and the workspace is decontaminated but please check with the lab supervisor regarding proper operation. Some cabinets that are hard ducted may not be turned off by the user as they are integral to the laboratory exhaust system.

IS THE BSC READY AS SOON AS I TURN IT ON?

No, allow at least 5 minutes after powering up before beginning work in the BSC to ensure that the recirculated air has been filtered properly.

It is also recommended to delay manipulation of materials inside of the cabinet at least one minute after placing hands/arms inside the cabinet to allow the cabinet to stabilize, allow for air sweeping of hands and arms, and to allow time for turbulence reduction. (Source: BMBL 6th edition)

CAN I WORK WITH HAZARDOUS CHEMICALS INSIDE THE BSC?

Always consider the type of BSC and the amount and concentration of the chemicals being used inside of the BSC as part of your risk assessment. Flammable chemical use inside of ductless cabinets presents a fire hazard due to vapor buildup. The electrical systems of Class II BSCs are not spark-proof; therefore, a chemical concentration approaching the lower explosive limits of the compound must be prohibited. When possible, work with hazardous or volatile chemicals should be performed in a chemical fume hood as long as the biological contaminate is not needed. (Source: BMBL 6th edition)

CAN I USE GAS IN MY BSC?

Gas burners (natural or propane) are **NOT PERMITTED** for use inside a Class II biological safety cabinet because gas may build up inside the cabinet resulting in an explosive atmosphere. The heat from the flame will also disrupt the laminar air flow pattern and may result in escape of microbial agents from the work space into the laboratory and also allow contaminants to enter the sterile work space. If it is deemed absolutely necessary for the work being done, a small alcohol burner in a metal (not glass) container containing only enough alcohol for one day's work, or a touch-plate micro burner, providing a flame on demand (e.g. Touch-O-Matic) may be used.

Recommended Alternatives to Bunsen burners and open flames:

- Alternative technology such as electric incinerators, glass bead sterilizers
- Disposable loops, spreaders, and other instruments
- Pre-sterilized packs of instruments such as tweezers, scissors and scalpels

MY BSC IS SMALL; CAN I USE THE FRONT GRILL FOR EXTRA SPACE?

NO. Placing items on the grill will disrupt airflow and could lead to contamination of the workspace, user and/or the environment. In fact, items should be kept **at least 4 inches** behind the front grill to ensure containment.

WHERE SHOULD I PLACE MY EQUIPMENT INSIDE THE BSC?

Always place aerosol-generating equipment (e.g., vortex mixers, tabletop centrifuges) toward the rear of the cabinet.

WHAT TYPE OF CHAIR CAN I USE WHILE WORKING INSIDE OF THE BSC?

Laboratory seating should be upholstered with vinyl or be constructed of solid materials such as plastic or wood that has been sealed to render it non-porous. Finishes shall be as resistant as possible to the corrosive chemical activity of disinfectants and other chemicals used in the laboratory. Natural or synthetic fabric upholstery is not acceptable for use in a laboratory. (Source: BMBL 6th edition)

USE OF UV LIGHT INSIDE THE BSC:

- UV light is effective only when it directly hits a microbial cell; therefore, UV lamps must be cleaned regularly to remove any dust and dirt that may block its germicidal effectiveness. Turn off the light and wipe it with 70% ethanol every two weeks.
- UV lamps need to be replaced periodically. The length of time a lamp will be effective depends on the number of hours it is in use. Lamps should be checked periodically with a meter to ensure that the appropriate intensity of UV light is being emitted.
- UV light does not penetrate cracks or seams, so it will not disinfect the spill area under the work surface.
- UV exposure can burn corneas and cause skin cancer; therefore, the UV light must be turned off when the room is occupied.
- Be aware that UV lights can cause gas line tubing to deteriorate and present a gas leak hazard.
- Unwanted UV lamps should be disposed of as universal waste through Chematix.

WHERE CAN I LEARN MORE ABOUT BIOSAFETY CABINET OPERATION?

Biosafety in Microbiological and Biomedical Laboratories (BMBL) 6th Edition (Appendix A)

https://www.cdc.gov/labs/pdf/SF_19_308133-A_BMBL6_00-BOOK-WEB-final-3.pdf

CONTACT INFORMATION

Jessica Powell Laboratory Safety Specialist 334-707-2835 jap0057@auburn.edu	Deepika Suresh Biological Safety Officer 334-750-8040 dzs0023@auburn.edu	Catherine Situma Laboratory Safety Program Manager 334-740-9711 cns0013@auburn.edu	RMS Main 334-844-4870 aurms@auburn.edu
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