

VU EHS Biosafety Guidelines: Maintaining, Moving & Transferring Class II Biological Safety Cabinets (BSCs)

This document is intended to provide Vanderbilt researchers with information about Class II biosafety cabinet (i.e., “BSC”) practices related to maintenance over their service life.

Acquiring a Class II biological safety cabinet (BSC)

There are several ways for a lab to acquire a biosafety cabinet but regardless of how it is acquired, there are some basic considerations to keep in mind:

- **If you need a Class II BSC, assure that you are getting a Class II BSC.** Laminar flow cabinets or “hoods” that blow air over the work surface and out into the room are not designed to provide personnel protection against hazards, and therefore are not Class II BSCs. If you need help in determining if a device is a Class II BSC, please contact [VU EHS Biosafety](#) for assistance.
- **If you are buying a used BSC, make sure it is in good repair.** Biosafety cabinets, especially older ones, are costly to repair and parts may be difficult to replace. Request service records and verification that the filters have been gas decontaminated after last use (if the filters are present) for the BSC before committing to purchase.
- **Place your BSC in a “dead space” in the lab to maximize performance.** A BSC does not pull as much air as a chemical fume hood. Sources of air turbulence such as opening/closing doors, busy walkways, air vents overhead, etc. will make it difficult for your BSC to function effectively.
- **Do not install a gas line unless you have consulted with VU EHS Biosafety.** Because of the recirculating air configuration of the BSC, a gas line inside a BSC can lead to explosions in the event of a leak. Contact a [VU EHS Biosafety Team](#) member to discuss your procedure needs and for assistance in identifying alternatives if you feel you need a gas line.
- **Get your BSC certified before using it.** BSC certification is a testing process that is used to determine that a BSC is functioning properly and that there are no leaks in any of the plenums that could lead to personnel or product contamination. Contract professionals are available who can perform BSC certifications and service. VU EHS Biosafety recommends that you use a contractor that is an NSF Accredited Class II Biosafety Cabinet Field Certifier. Accredited certifiers that serve Tennessee can be found at the following link: <http://www.nsf.org/Certified/Biosafety-Certifier/>. Also, you must receive a Purchase Order number from Vanderbilt Procurement Services (via requisition in Oracle) prior to getting your BSC certified. **NOTE:** If you “inherit” a biosafety cabinet with a lab space, you should assure that the BSC has been certified in the last 12 months before using it. Cabinet certifiers typically place a certification expiration sticker on the front panel of the BSC above the sash.

Maintaining a biological safety cabinet

Whether new or used, proper maintenance of your BSC will go a long way in assuring effective use of the containment device:

- **Maintain the certification schedule for your BSC.** Cabinets must be certified when first installed, at least annually thereafter. Additionally, cabinets must be recertified after filter replacement, and after being moved (unless the BSC is on wheels and moved only in the lab area). VU EHS Biosafety recommends that you use a contractor that is an NSF Accredited Class II Biosafety Cabinet Field Certifier. Accredited certifiers that serve Tennessee can be found at the following link: <http://www.nsf.org/Certified/Biosafety-Certifier/>. Also, you must receive a Purchase Order number from Vanderbilt Procurement Services (via requisition in Oracle) prior to getting your BSC certified.
- **Use surface-friendly disinfectants to avoid damaging BSC surfaces.** While 70% ethanol is surface-friendly, it is not EPA-rated for destruction of HIV & HBV and therefore cannot be used as a stand-alone disinfectant for use with human cells. While bleach solutions (1:10 to 1:100) are EPA-rated disinfectants, bleach residues will damage the cabinet unless removed after contact time. VU EHS Biosafety recommends that you select a product that is [EPA-rated for destruction of HIV & HBV](#), is pH neutral, and is formulated to be compatible with stainless steel.
- **Do not use flames in the BSC without completing a safety assessment with VU EHS Biosafety first.** Open flames will damage the HEPA filter and create turbulence in the workspace that can lead to migration of

contaminants into or out of the BSC. Contact a [VU EHS Biosafety Team](#) member to discuss your procedure needs and for assistance in identifying alternatives if you feel you need to use open flames.

- **Disassemble and clean the BSC on a routine basis to eliminate contaminated residue buildup.** All BSCs have a tray under the workspace where the return air passes on its way to the HEPA filter. Any debris present in the BSC will eventually be carried along with this air and may settle in this tray. Any spilled materials may also end up in this tray. Over time, the built-up of contaminants may start to “grow”, which could lead to product contamination. VU EHS Biosafety recommends that BSC workspaces be disassembled at least once per year to access and clean the tray. It is best to do this just prior to the scheduled BSC certification to minimize down time for the lab and also to assure that the BSC is thoroughly cleaned before the certifier is handling the device.

Relocating or disposing of a biological safety cabinet

Because of the size and weight of BSCs, there are specific considerations that apply to moving BSCs to assure that this is achieved safely and without spreading contaminants.

- **Gas decontamination is necessary under certain circumstances to prevent spread of infectious contaminants and protect personnel involved in BSC repair, moving, or disposal roles. These include:**
 - BSC HEPA filters need to be replaced or a repair is necessary that will require access to a contaminated plenum,
 - A BSC is being moved out for disposal (i.e., via demolition/reconstruction waste, [VU Surplus Program](#)),
 - A BSC that has been used for work with infectious agents (i.e., those that are considered Risk Group 2 or higher) is being moved from the current lab space to a different lab space,
 - A BSC is being moved to a different lab space and has an incomplete history of use for the currently installed HEPA filters.

NOTE: A copy of the BSC certifier’s decontamination report MUST be posted on the BSC or it CANNOT be moved! If you do not believe your BSC move situation fits in to one of these categories, contact a [VU EHS Biosafety Team](#) member to determine what actions are needed to safely move your BSC.

Gas decontamination procedures need to be performed by a contractor that is an NSF Accredited Class II Biosafety Cabinet Field Certifier for gas decontamination activities. Accredited certifiers that serve Tennessee can be found at the following link: <http://www.nsf.org/Certified/Biosafety-Certifier/>.



NOTICE: Gas decontamination involves inhalation hazards! When gas decontamination is needed, it must be scheduled at a time when no one is present in the lab area where the BSC is located. Please notify VU EHS Biosafety (615-343-8918) in advance of scheduled gas decontamination activities.

- **Do not try to move a BSC yourself!** A biosafety cabinet can weigh upward of 600 pounds. Moving a BSC without the proper equipment is unsafe for personnel and can damage the BSC. Coordinate through your department’s lab support unit or Facilities to use a mover with the proper equipment and training to support moving a BSC. If your cabinet has been gas decontaminated, the certifier will post a decontamination notice on the BSC. Leave this on the cabinet so that those moving it know that it is safe to handle. The BSC may not be used until the move is complete and the BSC is recertified.

Leaving a BSC behind?

- **Clean and disinfect all accessible surfaces of the BSC if leaving the cabinet behind in a lab space you are vacating.** All accessible surfaces (including the tray under the working surface) that may have been contaminated with biological materials must be thoroughly cleaned and disinfected before it is passed on to the new occupants of the space.
- **If you will be transferring ownership to someone else at Vanderbilt and they plan to move it to their lab space, follow the practices outlined under the previous section.**

For specific inquiries related to the content of this document, please contact the VU EHS Biosafety Team - vubiosafety@vanderbilt.edu.