

Biosafety Cabinet (BSC) Use

This SOP applies to personnel working in or around biosafety cabinets. Class II biosafety cabinets (BSCs) provide aerosol containment of biohazardous materials to protect users and the environment and a microbe-free work environment to protect materials handled inside. Protection is provided by an air curtain, directed airflow and a high-efficiency particulate air (HEPA) filter. BSCs must be used correctly to ensure that the protective measures function.

Procedure:

1. Check that the BSC was certified within the past year
2. Lift the sash to the recommended height
3. Turn on the BSC at least 5 minutes before beginning work to allow air exchange
4. Decontaminate BSC surfaces (three walls, work surface, inside of sash). Do not clean the HEPA filter (ceiling)
5. Bring in all materials needed for the procedure, keeping the front and rear exhaust grilles clear
6. Conduct the procedure, keeping in mind the following:
 - a. Practice aseptic technique
 - b. Use slow movements
 - c. Move in and out perpendicular to the BSC
 - d. Work from clean to dirty (left to right if you are right-handed) see **Figure 1** below
7. Dispose of waste following waste handling SOPs for solids, liquids and sharps
8. Decontaminate equipment and supplies, and remove them from the BSC.
9. Decontaminate BSC surfaces (three walls, work surface, inside of sash). Do not clean the HEPA filter (ceiling)
10. Close the sash and leave the BSC running if possible or shut off after a final 5-minute purge

Cautions & Considerations

- BSCs are designed for one person to work in at a time

- BSCs must be certified by a licensed technician annually and when new, repaired or relocated
- BSCs must be decontaminated by a certified professional before relocation or disposal
- A vacuum flask system is required to provide protection for the building vacuum system or vacuum pump and to personnel who service the equipment. Figure 2.
- Use eye protection (safety glasses or goggles) when moving materials into or out of the BSC
- Locate BSC's away from fixtures or equipment that could disrupt the airflow (e.g., doors, windows, supply air vents, incubators, high-traffic areas)
- Minimize movement around BSCs when in use
- Place a biohazard waste container inside the BSC for use during procedures
- Dispose of porous materials used during the procedure as biohazardous waste
- UV light is not recommended by the CDC or NIH and must not be turned on when the room is occupied
- Open flames are not encouraged in the BSC because they can damage the HEPA filter and lead to explosions
- If bleach is used as the primary disinfectant, follow decontamination by wiping with 70% ethanol or sterile water to remove any corrosive bleach residue
- All BSC' have a tray under the work space 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 out in this tray. Any spilled materials may also end up in this tray. Over time, the built up contaminants may start to "grow", which could lead to product contamination. Figure 3.



Figure 1

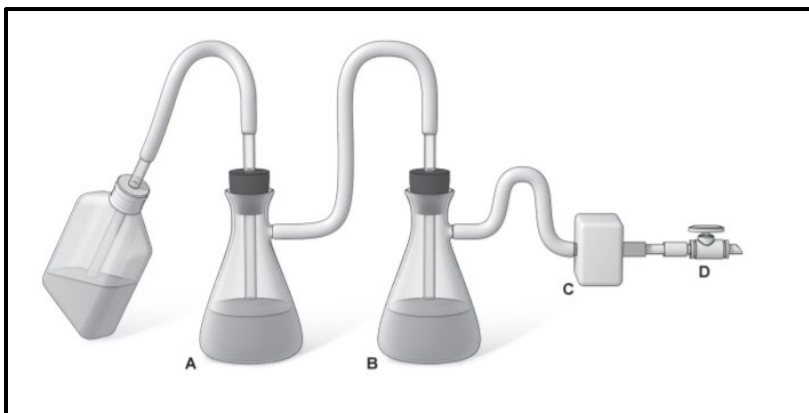


Figure 2



Figure 3

Resources

- UMass Amherst [Biosafety Manual](#)
- [BMBL 5th Edition](#)