Environmental Health and Safety

Safe Biosafety Cabinet Use

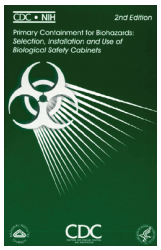
All Biological Safety Cabinets (BSCs) are designed to provide worker protection from biologically hazardous materials handled within the cabinet when appropriate practices and procedures are followed. They may also be referred to as tissue culture hoods. There are three main classes of cabinets:

- Class I – Protects worker with 100% inward airflow. Exhausts outside or through HEPA (High Efficiency Particulate Air) filter.
- Class II – Protects worker, product, and environment by creating aerodynamically separated work zones of HEPA filtered air. (Most common at Stony Brook University)
- Class III – Protects worker, product, and environment by physically separating work zones. They are totally closed ventilated cabinets. An example of a Class III BSC is a sealed glove box.

While HEPA filters are effective for trapping particulates and infectious agents, these filters will not capture volatile chemicals or gases. Work with hazardous chemicals should be performed in a chemical fume hood or in a BSC **only** after a careful assessment of the hazards and risks of doing so.

BSCs should not be confused with other laminar flow devices or "clean benches"; in particular, horizontal flow cabinets which direct air towards the operator should never be used for handling infectious, toxic or sensitizing materials.

To ensure that BSCs are operating properly and their HEPA filters are not compromised, units must be recertified annually by a qualified contractor. BSCs must also be recertified after they are moved.



For more detailed information on Biosafety Cabinets see the CDC – NIH publication “Primary Containment for Biohazards: Selection, Installation and Use of Biological Safety Cabinets” at > http://www.cdc.gov/od/ohs/biosfty/bsc/bsc.htm

See reverse side for Biosafety Cabinet—Safe Work Practices and Procedures

Environmental Health and Safety

Safe Biosafety Cabinet Use

Work Practices & Procedures:

Class II Biosafety Cabinets operate by aerodynamically separating the work area from the room. It is possible to breach this separation by creating turbulence in the air flow into and within the BSC. Safe work practices are designed to minimize turbulence and maintaining this aerodynamic separation.

1. Turn off any Ultraviolet (UV) lights upon entering the room.
2. Cabinet blowers should be operated at least 3-5 minutes before beginning work to allow the BSC to "purge" particulates and establish laminar flow.
3. Place only necessary materials in the BSC before beginning work. For new operations a written check list is helpful. Extra supplies (gloves, plates, media, etc.) should be stored outside the BSC: material placed inside the BSC may cause turbulence and disruption to the airflow.
4. Before beginning work, adjust the stool height so your face is above the cabinet's front opening.
5. Ensure that BSC drain valves are closed before work begins. If spilled liquid enters through the front or rear grilles, pour disinfectant into the drain pans. After suitable contact time, based on the agent and disinfectant, collect the liquid with paper towels.
6. Move arms in and out of the BSC slowly, perpendicular to the opening to reduce disruption of the "air curtain".
7. Don appropriate personal protective equipment. Lab coats must be buttoned. Gloves should be pulled over the wrists of the lab coat, not worn inside the coat. Consider using sleeve covers.
8. Interior walls, interior surface of the window, and the surfaces of all materials to be placed in the BSC should be wiped with 70% ethanol or other appropriate disinfectant before use.
9. Manipulation of materials should be delayed 1 minute after placing hands/arms inside the BSC to allow air to stabilize and "air sweep" them to remove surface microbial contaminants.
10. Do not rest arms on the front grille. This allows room air to flow directly into the work area rather than being drawn through the front grille. Work with arms raised slightly.
11. Do not block front grille with papers or other materials.
12. All operations should be performed at least 4 inches from the front grille on the work surface.
13. Plastic backed absorbent toweling can be placed on the work surface (but not on the front grille) to aid in cleanup and spill containment.
14. Place all materials as far back in the BSC as practical.
15. Active work should flow from a clean to a dirty (contaminated) area across the work surface.
16. To minimize frequent in/out arm movement, place contaminated wastes into containers within the BSC. Place used pipettes in horizontal trays containing disinfectant within the BSC.
17. **Potentially contaminated materials must not be brought out of the BSC until they have been surface decontaminated with disinfectant.**
18. Always work to minimize the creation of aerosols and splatter of viable materials.
19. Open flames must not be used in a BSC as they create turbulence which can breach the air curtain. Use sterile disposable loops and other equipment in place of flame sterilzation. If absolutely necessary, electric furnaces are available that produce manageable disruption to BSC air flow. Ensure all ignition sources are off when flammable disinfectants are used.
20. Aspirator bottles or suction flasks should be connected to an overflow collection flask containing an appropriate disinfectant, and to an in-line HEPA filter. Use plastic or coated flasks or tape glassware that is under vacuum to protect from glass shards in the event that the container implodes.
21. At the end of the work shift, the BSC should be surface decontaminated with 70% ethanol or other suitable disinfectant. (As ethanol evaporates quickly, be sure to use a sufficient amount and wipe the surface with paper towels. Without wiping, 70% ethanol may not be completely effective.)

For additional information refer to the EH&S Website at > http://www.stonybrook.edu/ehs

See reverse side for BSC Safety Overview.