

TITLE: Biological Safety Cabinets (BSCs)

SCOPE: Biomedical Research Personnel

RESPONSIBILITY: Facility In-charge, Head of the Department and Biosafety Officer

PURPOSE: To outline the proper procedures for the use and maintenance of Biological Safety Cabinets (BSCs)

I. PURPOSE

This procedure outlines the use and maintenance of BSC to obtain the optimum control over product quality while reducing the potential for exposure of both product and personnel to airborne biological or particulate chemical agents in low to moderate risk-hazard research and product operations.

II. RESPONSIBILITY

1. The Facility in charge / Principal Investigator ensures that all equipment is appropriately cleaned, maintained in good working order, and available for research personnel as requested.
2. It is the responsibility of the Biosafety officer to ensure that all research and technical staff using this equipment are adequately trained and experienced in the use of the BSC.
3. It is the responsibility of the Researchers (students) and technical staff using a BSC to read, understand, and follow the procedures outlined below.

III. EQUIPMENT APPLICATION

The Biosafety cabinet is a product resulting from the development of the “laminar flow” principle and the application of environmental control as required in the field of biological research and chemical containment.

IV. Before Beginning of the work.

Recommended minimum attire includes a lab coat, gloves, and safety glasses. Additional PPE and procedures may be required based work/procedure to be carried out.

V. EQUIPMENT USE/ OPERATION PROTOCOL

1. Turn on the cabinet blower and lights and check the air intake and exhaust portals of the cabinet to make sure they are unobstructed.
2. Allow the blower to operate for a minimum of **FIVE** minutes before starting the aseptic manipulations within the biosafety cabinet. **As per the manufacturer's instructions.**

3. Disinfect all interior work surfaces by wiping them down with 70% ethanol. This practice eliminates the need for UV lights, whose primary purpose is to inactivate surface contamination.
4. Place only the necessary materials onto the cabinet work surface.
- 5. Do not place any items over front to rear intake grills. Ensure that all activities are conducted at least 4 inches within the air curtain of the biosafety cabinet (i.e., greater than the height of a cage card holder).**
6. Make sure the viewing window is set to the recommended working height before initiating any procedures. Audible and visual alarms are present on some models to warn the user of the inappropriate window height.
7. Separate contaminated materials on the cabinet work surface to minimize movement.
8. Allow 2-3 minutes after the apparatus and materials are placed into the cabinet.
9. Minimize movement within the BSC and within the room to reduce airflow and use the proper aseptic technique.
10. Allow 2-3 minutes before removing materials from the cabinet.
11. Do not use constant flame gas burners or any flammable substances inside the biosafety cabinets.
12. Disinfect all interior work surfaces by spraying and wiping down with 70% ethanol
13. Note: Specific disinfectants may be required for decontamination of specific biological agents. Refer to biohazard signage or MSDS to determine which chemical disinfectant to use.
14. Chlorinated disinfectants (bleach) use can cause corrosion of equipment and must be followed with a final rinse/wipe with 70% alcohol.
15. Turn off blowers and lights.

VI. MAINTENANCE

1. Inspect the condition of the unit and electrical cord/plug to ensure safe operation. Equipment determined to be unsafe will be removed from service immediately.
2. Perform the weekly disassembly, cleaning, and disinfection of the BSC as per the manufacturer's instructions and **record in the logbook.**
3. Annual routine maintenance with an authorized/experienced person as per the manufacturer's instructions.
4. Any additional maintenance/service should be performed by authorized personnel and the unit re-certified in writing.
5. Certification is documented by labelling the equipment with the date of certification and the date when certification is due.

6. The facility in charge is responsible for maintaining current records of division-owned equipment inspections, calibrations, maintenance, non-routine repairs, and current inventory for their facility on the Division's Equipment Maintenance Logs.

VII. Special precautions for ultraviolet (UV) lamps

- Post a warning sign on the front of the BSC indicating the presence of UV light hazards.
- The sign must say CAUTION: Turn off the UV light before working.

Take precautions during work:

- Turn off UV lamps while the lab is occupied. The stainless-steel interior of the BSC can reflect potentially hazardous illumination out of the opening of the cabinet.
- Never have the UV lamp on while an operator is working in the cabinet.

Maintenance:

Because UV lamp intensity (its destructive power) decreases with time, proper maintenance is critical for decontamination purposes.

- Follow the manufacturer's instructions for the periodical replacement of bulbs and cleaning.
- Before replacing bulbs, clear the BSC of equipment and material, disinfect it with 10% bleach and then clean it with 70% ethanol.
- Install the bulb with gloved hands to prevent oil buildup.
- Disinfect lamp bulbs before disposal as universal waste.
- Check lamp efficiency monthly with a UV meter or monitoring strip.

VIII. REFERENCES

Refer to the manufacturer's manual for additional information.