

Working in a biological safety cabinet (BSC)





N° PON : PON-SST-BIO-05

Version number : 02

Revision : BHMMC

Approval: Pascal Daigle, Director, SPP

Reference program :
Biosafety management

Potential risks :	
Required training :	Laboratory safety training – Biosafety training
Personal protective equipment required :	  
Reference	PHAC – Biosafety training

- ⚠ **Only one person at a time may work in a BSC.**
- ⚠ **Limit the use of pricking or cutting materials at all times.**
- ⚠ **It is forbidden to use an open flame in a BSC (e.g., Bunsen burner). A Bacti-Cinerator-type device is recommended.**

Step 1 : Starting up the BSC

1. Make sure you have the required personal protective equipment.
2. Switch on the fan and light (Photo 1).



Photo 1

3. Adjust your chair and sash observation panel to the right height: the bottom of the observation panel should be at armpit level when seated (Photo 2).

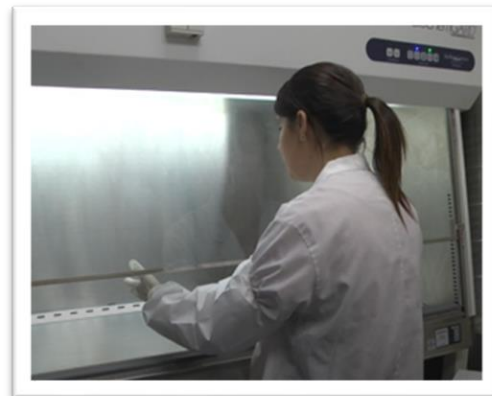


Photo 2

4. Check that the value indicated by the pressure gauge (Photo 3) corresponds to the value obtained during certification (Photo 4).

If the value varies by ± 0.5 , do not use the BSC and contact your laboratory supervisor. An external verification firm will be required.



Photo 3



Photo 4

5. Check that air is being drawn into the enclosure by holding a tissue to the edge of the panel in the middle of the enclosure (Photo 5).

If the following conditions are met, do not use the BSC and notify your laboratory supervisor.

- **Air is not drawn into the chamber.**
- **You can't hear the motor running.**
- **You hear an abnormal noise.**



Photo 5

6. Clean interior surfaces with a disinfectant effective against the biological material used (Photo 6).

The use of ultraviolet (UV) germicidal lamps is strongly discouraged due to their limited effectiveness in disinfecting the interior of BSCs.

7. If the risk of splashing or spattering is high, cover the work surface with an absorbent quilt or undersheet (Photo 7)

8. Install all handling equipment in the BSC, while ensuring that air intake and exhaust vents are unobstructed (Photo 8).

9. Place clean equipment on the left and containers for contaminated material on the right (Photo 9).

10. Place aerosol-producing equipment (e.g., Vortex) at the bottom of the BSC, without obstructing the rear grille.

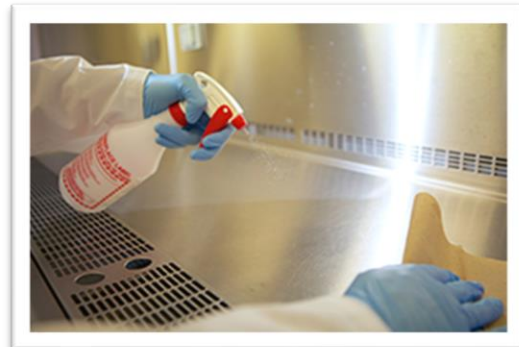


Photo 6



Photo 7



Photo 8



Photo 9

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11. Check that air intake and exhaust grille are unobstructed (Photo 10).

12. After installing the material in the BSC, allow sufficient time for the airflow to stabilize before starting work. This time-lapse is usually 3 to 5 minutes and is indicated in your BSC manufacturer's instructions.



Photo 10

Step 2 : Starting work in a BSC

13. Once the air in the chamber has been stabilized and all the required equipment is in place in the chamber, work can begin.

14. All manipulations should be carried out slowly, without sudden movements, to avoid disturbing the airflow.

15. The arms should be slid in or out of the enclosure perpendicular to the front glass, avoiding contact with the grid or work surface (Photo 11).

If you need to fetch additional equipment from outside the enclosure, remove and dispose of your gloves inside the enclosure.



Photo 11

16. During manipulation, it is important to separate contaminated ("dirty") items from non-contaminated ("clean") items, and always work from the "clean" side to the "dirty" side (Photo 12).

17. Material must be disposed of in a waste container located at the rear of the enclosure work surface.



Photo 12

Step 3 : Once work is completed in the BSC

18. Close all containers.
19. Decontaminate all equipment before removing it from the enclosure, including waste bags and containers (Photo 13).



Photo 13

20. Remove contaminated gloves and dispose of them in a container inside the enclosure (Photo 14). Refer to PON-SST-BIO-002 - Personal Protective Equipment (PPE) In Containment Zone 2 for proper removal of gloves without contamination.
21. Put on clean gloves.
22. Remove all equipment, including waste bags and containers, from the enclosure.



Photo 14

23. Clean interior surfaces with a disinfectant effective against the biological material used (Photo 15).

The use of ultraviolet (UV) germicidal lamps is strongly discouraged due to their limited effectiveness in disinfecting the inside of BSCs.

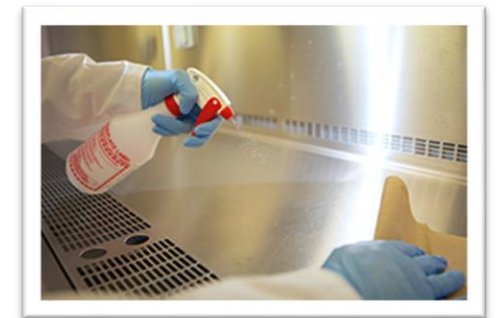


Photo 15

24. Depending on how often the BSC is used, regularly remove the work surface and disinfect under the grill (Photo 16).



Photo 16

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25. Remove gloves and dispose of them in a biohazard container. Proceed with hand-washing.
26. Switch off the BSE fan if you are not working with a BSE that requires continuous operation.



Use and care of ultraviolet (UV) lighting

The Biosafety and Hazardous Materials Management Committee (BHMMC) follows the recommendations of the Canadian Biosafety Guide and discourage the use of ultraviolet germicidal lamps.

If you still wish to use it, the BHMMC recommends using the UV (Photo 17) at the start of manipulation **ONLY**, and for a maximum period of 15–30 minutes.

Maintenance of UV germicidal lamps:

- The UV lamps maintenance is the laboratory supervisor's responsibility.
- UV bulbs should be disinfected regularly with ethanol. The bulb must be switched off and cold when wiped.
- UV lamp operation and bulb replacement must be carried out in accordance with the manufacturer's instructions.



Photo 17

Disposal of biological waste

Solid contaminated waste should be placed in a bag at the back of the work surface of the enclosure. It must not be disposed of in containers outside the enclosure while the BSE is in use. Liquid waste must be collected in an airtight container. Please refer to [PON-SST-BIO-003 - Biomedical waste management](#) if necessary.

Emergency measures

For a containment breach or spill in a BSC, please refer to [PON-SST-BIO-001 - Emergency measures with biological materials](#).

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Maintenance

In addition to an annual certification, a BSC must be certified:

- on initial installation;
- when moving from one laboratory to another;
- when the BSC is moved within the same premises;
- when maintenance work is carried out on internal equipment components;
- when changing filters.

Replacement of the ultraviolet lamp can be done in-house. Certifications, repairs, filter changes and maintenance on internal components of BSC are carried out by a specialized external firm.

⚠ It is the responsibility of the laboratory manager to empty and clean the BSC before any scheduled maintenance by outside firms can be done, or prior to UV lamp changes by UQTR employees.

Annual BSC certification services are provided by the Prevention and Protection Service. For information on BSC certification, please contact gmd@uqtr.ca.

History of changes and approvals

Created by	Marie-Eve Ducharme	Date	2023 /01/19 <small>AAAA/MM/JJ</small>
Date of change	Description of the change		
/ / <small>AAAA/MM/JJ</small>		Prepared by :	
		Validated by :	
		Approved by :	
/ / <small>AAAA/MM/JJ</small>		Prepared by :	
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