



STANDARD OPERATING PROCEDURE: Biological Safety Cabinet (BSC) Use

1. Purpose:

To provide step by step guidance on how to safely use a Biological Safety Cabinet (BSC).

2. Scope:

Applies to all authorized Principal Investigators (PIs) and authorized laboratory personnel who use a BSC in a Lash Miller CL1-CL2 laboratory.

3. Prerequisites:

You are an authorized user of DB440 and are either included in your PI's permit or you possess a CL2 permit for DB440.

4. Responsibilities:

It is the responsibility of all faculty, staff and students to follow the procedures described in this SOP.

5. Personal Protection Equipment (PPE)

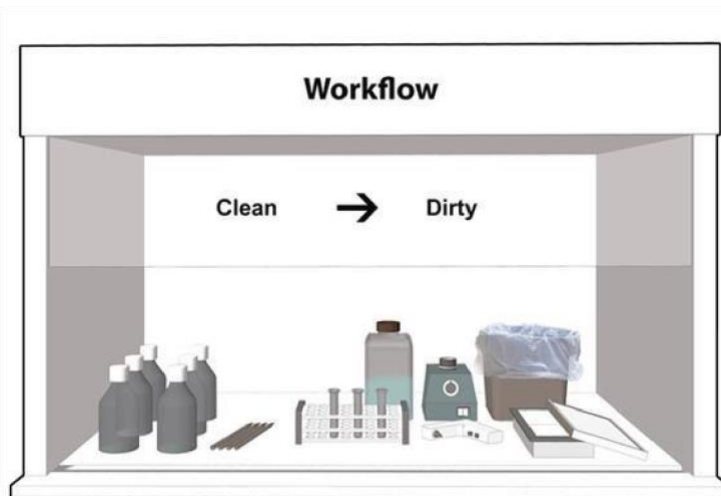


6. Procedure

[Watch this video on working in a BSC](#)

Before you begin work in the BSC:

- Plan ahead, schedule uninterrupted work times by using the [BSC Booked Scheduler](#).
People walking or doors opening disturb airflow in the cabinet
- Check that the BSC has been certified to NSF/ANSI 49 within the same year you are using it.
- Open the sash to the appropriate height (10 inches) and ensure that the stool height is set so that your underarms are at the same height to the bottom of the sash position.
- Turn on the BSC's power switch (located on the top of the right-hand side), the light, and then the blower switch. o NOTE: Ensure that the intake and exhaust grilles are not blocked before turning the blower switch on.
- While waiting for the BSC to purge the inside air, creating a laminar flow of HEPA filtered air (10 min), disinfect the work surface of the BSC with 70% ethanol.
- Hold a tissue at the middle of the edge of the sash and ensure that it is drawn in.
- Gather all materials you will be loading into the BSC and wipe them with 70% ethanol before bringing them inside the BSC. o NOTE: Do not load paper, writing utensils, and other contaminated objects in the BSC.
- Arrange materials to minimize movement within the cabinet. Segregate clean items from dirty items (see diagram below).
- Place aerosol-generating equipment (e.g. Vortex) closer to the back of the BSC (see diagram below).



- ****Never block the grilles at the front or rear of the cabinet**** Doing so will disrupt the laminar flow and could potentially result in personal exposure and/or sample contamination.
- After loading all materials, wait an extra 5 minutes for the air to purge in the BSC, before starting work.

Working in the BSC:

- Wash hands thoroughly with soap and water before and after procedures.
- Avoid rapid movements during procedures.
- Minimize entering and exiting the BSC, therefore as feasible, try to keep all biohazardous waste within the BSC until work is completed.
 - 1) Wear sterile gloves. Consider double gloving.
 - 2) Move hands and arms straight (perpendicular) into and out of the BSC.
- Avoid resting your elbows/arms on the work surface and front grille.
- While performing procedures, separate non-contaminated and contaminated items (see diagram above) in the BSC. This will then dictate your workflow, which should be from the clean to the dirty area. Following this best practice will help prevent sample contamination.
- UV lamps are not recommended nor required in BSCs. Proper cleaning and disinfection using liquid disinfectant negates the need for use of UV lamps.
- **DO NOT use open flames** (e.g. Bunsen Burners), on-demand open flames, natural gas, and propane inside the BSC. Use non-flame alternatives instead. For more information about these options, consult chem.safety@utoronto.ca
 - DO NOT use equipment which create air movements (e.g. Centrifuge).
 - DO NOT overflow the collection flask.

See [“Using BVC Pro Aspiration System SOP”](#) for instructions on how to use the aspiration system

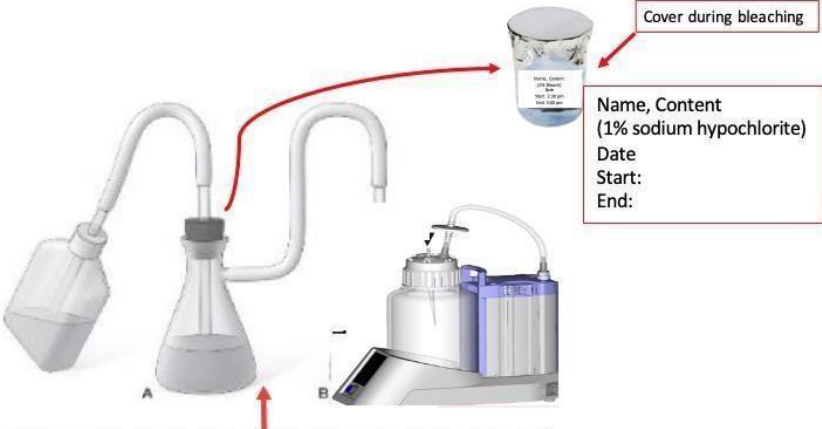
After completing work in the BSC:

- Wipe the exterior of all materials with 70% ethanol before unloading them from the BSC. ○
NOTE: Materials and equipment cannot be stored inside the BSC.
- Remove and dispose biohazardous waste (follow [“Biohazard Waste Disposal SOP”](#)).
- Remove liquid waste as per [Appendix 1](#) or by following the [“Biohazard Waste Disposal” SOP](#).
- Remove and throw away your contaminated gloves into the Bio waste pail and wash your hands.
- Put on new gloves and disinfect the interior surfaces of the BSC with 70% ethanol.
- Turn off the lights, blower, and the power of the BSC. Once done, close the sash.
- Remove and dispose your gloves, wash your hands at the sink.
- Follow the [“Entry and Exit Procedures” SOP](#) to leave the room.

In Case of BSC Failure or Alarm:

- 1) Remain calm. Immediately stop work.
- 2) Close all primary containers if not working with biohazardous materials, surface decontaminate items, remove them from BSC, post “Do Not Use” signage found in [Appendix 2](#), and report problem to supervisor.
- 3) If working with biohazardous materials, continue to follow instruction below:
 - Remove gloves and discard in BSC waste
 - Turn off BSC and close sash
 - Wash hands
 - Post “Do Not Use” signage
 - After 30 minutes, don clean PPE, surface decontaminate, then remove items in BSC
 - Decontaminate work surface, close sash, leave “Do Not Use” signage on BSC
 - Report problem to supervisor

Appendix 1: Liquid waste removal using the vacuum line in the BSC (from “Biohazard Waste Disposal” SOP)



Once you finish work:

- Estimate volume of liquid waste in flask A.
- Measure volume of sodium hypochlorite needed for final cc of 1% in a tube
- Suck up the estimated volume of sodium hypochlorite using the aspiration system
- Transfer content to beaker or flask, cover it, and let it stand for 30 min

CAUTION

**DO NOT USE THIS BSC UNTIL REPAIRS ARE
MADE AND PROPER FUNCTION IS VERIFIED**

DATE:.....

- **CLOSE CHEMICALS & STORE THEM AWAY**
- **CLOSE SASH**
- **IF AN EXPERIMENT IS IN PROGRESS, KEEP THE SASH CLOSED •**
CALL 8-3000 & ALWAYS CONTACT THE CAO:
grace.flock@utoronto.ca

- **If you do not see a note from Facilities and Services (proof that they have attended to the issue) within 24 hours, please contact the CAO**
- **If a resolution is not achieved within 72 hours, please contact the CAO**
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