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	Version	
	Issue per	
	Effective per	
	Pages	
	Author	
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SOPs For USE OF BIOSAFETY CABINET Class III	Approved By	

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Changes in this version compared to previous version:

To be done after revision as per international accreditation guidelines

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Purpose:

This SOP is written to establish guidelines for the safe operation of biological safety cabinet class III (BSC-III) in PACP_ADL to ensure the highest degree of personnel and environmental protection from infectious aerosols.

Scope:

Biosafety cabinet class III (CRUMA Virus-3), have three High-Efficiency Particulate Air (HEPA) filters, the cabinet ensures maximum safety for the user and the environment, better fit for working with high containment required infectious samples.

Responsibility:

PACP Advanced Diagnostic Lab Staff working in BSL-III LAB

Aim:

The aim is to outline general procedures that to work best with risk group 4 microorganisms. The gas-tight enclosure (also named as Gloveboxes) ensures the safety of the environment and the worker from the infectious specimen that is being studied.

Settings Required

- HVAC installed Lab
- BSC III/ Glove box instrument

Materials supplemented with BSC III

- State of the art microprocessor control system
- Main switch with removable key
- Soft touch keyboard
- Bar graph for exhaust air flow conditions ;permanent display
- Alarms for low air flow
- Sloped front for the most comfortable access
- Front and side access for filter maintenance and service
- C-shaped support stand for easy one main installation procedure
- Transfer hatch with interlocked doors (right or left positioned)
- UV Source

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Procedure

NOTE: see Annexure I before start working with BSC III for proper PPEs.

- **Step 1.** Switch on the BSC with switch on button/key present on the front of BSC.
- **Step 2. Ready the work area:** Operate the cabinet blowers for five minutes before starting work to allow the cabinet to purge or remove particulates from the cabinet.
- **Step 3. Disinfect the work area:** Wipe the work surface, interior walls and surface of the window with a suitable disinfectant (Firstly disinfect with 5-10% Sodium Hypochlorite solution followed by second wipe with 70% ethanol soaked absorbent),
- **Step 4. Assemble material.** Introduce only those items that are required to perform the procedures and arrange in an appropriate order. Each item should be wiped with a disinfectant prior to placing it into the cabinet in order to reduce the introduction of contaminants. The flow of work should proceed across the work surface from clean to contaminated areas. Similarly, pipette tip discard trays containing disinfectant, biohazard bags, sharps containers, etc., should be placed to one side inside the BSC.
- **Step 5. Wear protective clothing.** Laboratory coats or solid front gowns should be worn over street clothing and long-cuffed latex or other appropriate gloves (e.g., nitrile, vinyl) should be worn for hand protection. The cuffs of the gloves should be pulled up and over the cuffs of the coat sleeves.
- In BSC III a complete and airtight sealed chamber is present for working with infectious samples. The long butyl gloves are attached to the ports of the cabinet in a way that permits their changing without the risk of contamination. These gloves are specially designed in a way that prevents the direct contact of the specimen with the user's skin. After inserting the hands in these gloves first open the sample lid carefully take the volume sample as required in protocol and close the sample with screw cap.
- The pass box is a feature of the BSC which ensures the safe movement of the materials from and into the working compartment. The pass box has two doors with electromechanical locks and with a penetrable pullout tabletop which makes it easier to move items into and out of the chamber. All the materials that are required for performing samples to be brought into the chamber are transferred through a pass box.

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- Perform procedures slowly by moving items in and out of the cabinet using a straight in and out motion and avoiding side to side motions. Avoid rapid movements. After placing arms/hands inside the BSC III, manipulations should be delayed to permit the cabinet to stabilize and allow the flow of air to remove surface contaminants from your arms/hands.

Note: Don't place any flammable item inside the cabinet. It can damage the interior of the cabinet as well as the HEPA filters.

When work is completed all items within the cabinet should be wiped down with disinfectant and removed from the cabinet. Do not use the interior of the BSC as a storage area since stray organisms may become "trapped" and contaminate future experiments. The interior surfaces of the cabinet should also be cleaned with a disinfectant. Let the blowers operate for five minutes with no activity inside the cabinet for decontamination.

- Investigators should remove their gowns and gloves and thoroughly wash their hands before exiting the bio safety level III facility.

Use of UV Light in a Biosafety Cabinet

If UV lights are used, they must be tested yearly to ensure that the appropriate wavelength for decontamination is emitted (254nm). Please note that dust particles on the light and on the surface of the biosafety cabinet will inhibit decontamination. If not used properly, UV light can also cause serious eye and skin injury. We recommend that biosafety cabinets be disinfected with the appropriate disinfectant (i.e., 70% ethanol), instead of using a UV light.

Reference:

http://chem.winthrop.edu/faculty/hurlbert/link_to_webpages/personal/SOPS/Standard%20Operating%20Procedure%20for%20Biological%20Safety%20Cabinet%20Operation.doc

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Annexure

Annexure I:

PPEs:

Wear following PPEs before working in BSC III

- Safety glasses
- Disposable nitrile gloves,
- Lab coat,
- closed shoes,
- long pants,
- long skirt or equivalent leg covering

Annexure II:

4.1 Biosafety Cabinet Annual Certification

All Biosafety cabinets at the PACP-ADL must be certified annually by an authorized contractor.

The certifications follow the NSF-49 Safety Standard for Biosafety cabinets level III. The contractor will test down flow and inflow velocities, air flow patterns, the HEPA filter and perform a cabinet leak test to ensure that the BSC III is working properly.

Guidelines for when a Biosafety Cabinet certification must be performed:

1. Before initial use
2. After moving a BSC from one location to another
3. After replacement of high efficiency particulate air (HEPA) filter(s)
4. At least annually

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5. After possible contamination
6. Following a large spill or accident inside the BSC
7. When requested by the Biosafety Officer