SOP - BSC Standard Operating Procedures for Safe Operation of Biological Safety Cabinets

Date: September 19, 2016

# Purpose:

To detail the safe operation of biological safety cabinet (BSC) use in IRIC laboratories and to ensure adequate containment of biological materials. Biological safety cabinets shall be used for all activities/experiments that demand a microbe-free work environment necessary for cell culture propagation and handling of any infectious organisms. All users of IRIC BSCs shall be familiar with the procedures described below.

# Safety Precautions:

* All operators must receive training on the safe operation of the BSC prior to using the equipment.

Training may be delegated to a qualified individual, but it remains the responsibility of the Principle Investigator (PI) to ensure their personnel are adequately trained. If there is any question on how to operate BSC safely, contact IRIC Facility Manager.

* Don the required PPE, which may include: lab coat, gloves, eye/face protection and respirator.
* Ensure work area is unobstructed. If materials must be stored in the BSC, place items adjacent to the side wall.
* Always work at least 6” (15 cm) in from the front lip of the BSC.
* Keep sashes fully closed when not in use.
* Keep sashes as low as possible when working in the BSC.
* Do not obstruct the grills in the cabinet with objects or by resting arms on them.

# Ultraviolet Light use:

* If installed, UV lamps must be cleaned weekly to remove any dust and dirt that may block the germicidal effectiveness of the ultraviolet light.
* UV lamps must be turned off when the room is occupied to protect eyes and skin from UV exposure, which can burn the cornea and cause skin cancer.
* If the cabinet has a sliding sash, close the sash when operating the UV lamp.
* All items must be removed from the cabinet for a UV light to be effective.
* UV bulbs should be replaced at minimum of annually to maintain optimal efficacy.

# Other Considerations:

* If a BSC is malfunctioning, do not attempt to use it. Post a sign indicating the cabinet is out of service and report the equipment problem to the IRIC Facility Manager.
* Always close the sash on the BSCs in your lab when they are not in use.
* Keep BSCs clean. Clean up any minor spills as they occur, and periodically clean inside of the cabinet.
* If an experiment will be left unattended inside a BSC, post a sign with indicating what the experiment is and whom to contact.

# Inspection/Certification:

Biological Safety Cabinets are certified annually and certification tags are posted on the equipment. Do not use a BSC unless certification is up to date. Certification of BSC will be performed by ENV Services and will be coordinated by IRIC Facility Manager. Contact IRIC Facility Manager if BSC certification is not up to date or cabinet not functioning correctly.

# Procedure:

## Preparation

* If it is your first time working with a material, or if you are unfamiliar with the hazards, review the applicable Safety Data Sheets or Pathogen Data Sheets, and your laboratory specific Biosafety Manual. Note any precautions regarding the use of the chemical or microorganism in the BSC.
* If cabinet has an ultraviolet light, turn on for 20 minutes prior to using the cabinet for experiments.
* While ultraviolet light is on, lift the cabinet sash to recommended height, and turn on the BSC blower fan for five-fifteen minutes (depending on manufacturer’s recommendations) to allow the cabinet to purge or remove particulates from the cabinet.
* Turn off ultraviolet light before actual work begins.
* Disinfect the work area **before use.** Wipe the work surface, interior walls and surface of window with a suitable disinfectant, as defined in your laboratory specific Biosafety Manual, or 70% ETOH.
* Don the required PPE, which may include: lab coat, gloves, eye/face protection and respirator. If cabinet is equipped with an alarm, test the alarm and switch it to the “ON” position.
* Use a Kimwipe to confirm inward air flow at the middle of the BSC.
* Do not work in a BSC while a warning light or alarm is signaling. If this occurs, post a sign indicating the cabinet is out of service and report the equipment problem to the IRIC Facility Manager promptly.

## Operation

* Active work should flow from clean to contaminated areas across the work surface.
* Arms should be moved in and out slowly, perpendicular to the front opening to minimize disruption of the air curtain and laminar flow.
* Work as far to the back as possible, but within comfortable reach.
* Only one person should work within the BSC at a time.
* Always use mechanical pipetting aids. Mouth pipetting is strictly prohibited.
* Heat sources such as Bunsen burners/open flames are strictly prohibited inside the BSCs as they greatly disrupt the laminar flow of air and can cause damage to cabinet interior as well as the HEPA filters.
* To sterilize bacteriological loops, micro-burners or electric “furnaces” may be used. Use of disposable loops is highly recommended in BSC.
* Locate liquid waste traps inside cabinet and use an in-line HEPA filter to protect the vacuum line. If traps must be located on the floor, place them in a secondary container (such as a durable plastic tray or box) to prevent breakage.
* When work is completed, disinfect the work area**.** Wipe the work surface, interior walls and surface of window with a suitable disinfectant, as defined in your laboratory specific Biosafety Manual, or 70% ethanol. Let blowers operate for five minutes with no activity inside the cabinet to purge the cabinet of contaminants.