

BIOSAFETY CABINET POLICY

1.0 PURPOSE

- 1.1 To establish minimum UIC standards for the installation, utilization, maintenance and certified inspection of biosafety cabinets.

2.0 SCOPE

- 2.1 The following requirements shall apply and be followed by all UIC Departments and personnel utilizing biosafety cabinets.

3.0 REFERENCES

- 3.1 *Biosafety in Microbiological and Biomedical Laboratories 4th Edition*
1998 BSL2 D7, BLS3 D12
- 3.2 *Primary Containment for Biohazards: Selection, Installation, and use of Biological Safety Cabinets 2nd edition* September 2000
- 3.3 National Sanitation Foundation (NSF) 2003. Standard 49, Class II (Laminar Flow) Biohazard Cabinetry
- 3.4 UIC *Biosafety Program Manual* (EHSO website)

4.0 DEFINITIONS

- 4.1 **Biosafety Cabinet (BSC)** – A device enclosed (except for necessary exhaust purposes) on three sides, top, and bottom, designed to draw air inward by means of mechanical ventilation, operated with insertion of only the hands and arms of the user, and in which virulent pathogens are used.
- 4.2 **Biosafety Cabinet Certification** – The yearly or twice annual process of testing the performance and integrity of the biosafety cabinet by an NSF certified technician, following NSF 49 standards for biosafety cabinets
- 4.3 **Biosafety Officer** - A UIC EHSO staff person who is responsible for advising on the technical aspects of biological safety on the UIC campus.
- 4.4 **Magnehelic Gauge** – measures pressure differential across filter elements, serving as a useful tool to determine when filters must be changed.
- 4.5 **UV Lights** – Ultraviolet lights

5.0 PROCEDURE

5.1 Applications

- 5.1.1 Biosafety Cabinets will be used for work in Biological Risk Groups 2, 3, and 4 organisms for procedures that may produce aerosols.
- 5.1.2 Biosafety Cabinets will be used for work with tissue cultures, particularly non-human primate and human tissue and organ cultures.
- 5.1.3 Biosafety Cabinets will be used for work with antineoplastic drug processing.

5.2 Installation

- 5.2.1 The Biosafety cabinet unit should be installed as far as possible, from ventilation, doors, high traffic areas, fume hoods, and windows that may be opened.
- 5.2.2 The BSC must be certified immediately after installation or movement to a different location.
- 5.2.3 The BSC must be decontaminated prior to initial use.
- 5.2.4 Natural gas lines are not to be installed in new BSC's
- 5.2.5 Installation of UV lights within a BSC is not recommended.
- 5.2.6 Installation of a BSC should be on a stable surface or a floor in good repair.
- 5.2.7 Independent electrical circuit systems are required.
- 5.2.8 A proper ceiling height of 12 to 14 inches above the top of the biosafety cabinet is required.
- 5.2.9 Proper ventilation configuration per NSF 49 guidelines is required for ducted BSC's.
- 5.2.10 Professionally installed vacuum line plumbing is required if house vacuum is to be used within a BSC.

- 5.3 Maintenance
 - 5.3.1 Operative BSC's must be cleaned and decontaminated when a spill within has occurred (see UIC Biosafety Manual)
 - 5.3.2 Operative BSC's must be cleaned and decontaminated after every shift.
 - 5.3.3 A minimum of annual certification of an operative BSC is required, but may be twice annual depending upon usage or organism risk. Consult UIC Biosafety Officer to determine if an annual or twice annual certification is required
 - 5.3.4 Magnehelic gauge readings must be logged after 5 minutes of initial startup.
 - 5.3.4.1 If a deviation in readings is observed either a blockage or a tear in the filter has occurred.
 - 5.3.4.2 Work must not progress in the BSC until a certifier has corrected the problem.
 - 5.3.5 For proper vacuum line set-up, place dual aspirator flasks in series with an in-line HEPA filter between the vacuum trap and the source valve.
 - 5.3.6 The heat sterilizing system of choice in a BSC is a ceramic biological incinerator (as an example the Bactincinerator brand)
- 5.4 Use
 - 5.4.1 Unblock front opening grate of the BSC
 - 5.4.2 Work in a BSC from the clean side to the contaminated side.
 - 5.4.3 The UIC Biosafety Officer or certifier must approve any modifications to a BSC.
 - 5.4.4 No chemical manipulation is permitted in a Class I or a Class II A Biosafety cabinet.
 - 5.4.5 Limited chemical manipulation is allowed in a Class II B (vented) Biosafety Cabinets.

- 5.4.6 If radionuclides are to be manipulated in a Class II Biosafety Cabinet, the Radiation Safety Section must be informed at 996-7429.
- 5.4.7 The use of any devices or activity that results in aerosol production such as: blenders, cell disrupting, lyophilizers, ampule opening, ultrasonic disrupters, and grinding equipment, should be performed in a BSC.
- 5.4.8 Bunsen burners are not to be used, but short, on-demand gas burners are acceptable.
- 5.5 Training
 - 5.5.1 Documented and proper training is required prior to initial work within a Biosafety Cabinet.
 - 5.5.2 A copy of the training lesson plan must be submitted to the UIC EHSO.
 - 5.5.3 BSC training must be repeated annually and be documented.
 - 5.5.4 Written procedures covering the use and maintenance of a BSC must be provided.

6.0 DOCUMENTATION

- 6.1 NSF 49 certification verification
- 6.2 Biosafety Cabinet training log
- 6.3 Magnehelic gauge log
- 6.4 Annual BSC certification receipt
- 6.5 Written BSC procedures

7.0 RESPONSIBILITIES

- 7.1 Department Heads and Principal Investigators are responsible for disseminating and reinforcing this procedure to all employees that utilize a Biosafety Cabinet

- 7.2 The certifier of a biosafety cabinet shall have an active NSF 49 certification. No other person or company shall certify BSC's on the UIC Campus. Contact the EHSO for a list of NSF 49 certified companies.
- 7.3 The department that purchases, receives or has ownership of a biosafety cabinet is responsible for reporting its ownership to the Environmental Health and Safety Office and shall update the yearly status of those cabinets.
- 7.4 The EHSO is responsible for periodic updating of this policy and for consultation to BSC users.

8.0 Approvals

- 8.1 Director of Environmental Health and Safety (signature on file)
- 8.2 UIC Biosafety Officer (signature on file)