

POLICY FOR THE USE OF BIOSAFETY CABINETS

A. Purpose

Engineering controls are devices and equipment that isolate and contain a hazard. The best engineering controls function with a minimum of user input and may to a degree, compensate for human error. Biosafety cabinets (BSC) are the primary engineering control for the minimization of exposure to potentially infectious, aerosolized materials.

B. Applicability/scope

A risk assessment must be performed to determine what procedures and manipulations of materials must be performed inside a BSC. The use of a BSC is a cornerstone of Biosafety Level 2 (BSL2) operations, and should be used for any open manipulations, or any aerosol generating procedures involving potentially infectious materials.

C. Responsibilities

Principal Investigators (PI) are responsible for ensuring that BSC used to manipulate potentially infectious materials are certified at least annually [by a qualified vendor](#). An active BSC is a primary containment device and must be routinely inspected and tested to verify that it is working properly (see section E. Procedures). PIs must establish written standard operating procedures (SOPs) for any work with infectious materials that involves a BSC, and ensure that all users adhere to these procedures. The PI is responsible for ensuring that personnel receive all applicable training with Environmental Health and Safety (see [EH&S training webpage](#)). The PI must ensure that personnel working with infectious materials are properly trained in, and have demonstrated competency in any applicable microbiological techniques. RASCAL course TC3550 is required for anyone using a biosafety cabinet at Biosafety level 2 (BSL-2) or greater. EH&S is available to assist with risk assessments if needed.

D. Definitions

A detailed explanation of terminology and different classes of BSC may be found in the [Columbia University Biosafety Manual](#).

E. Procedures for Effective Use of Biosafety Cabinets

BSC must be used as primary containment for work with potentially infectious agents if a risk assessment shows that the failure to use a biosafety cabinet could pose an infection risk. EH&S is available to provide or assist with risk assessments and to advise on the effective use of biosafety cabinets.

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**Procedure: 2.3
Version: 1.1**

Effective: 09/06/2016

Cabinets **must be certified** under the following conditions:

- Annually
- Following relocation (including within-room). BSC on castors may be moved carefully without subsequent recertification.
- Following HEPA filter change
- Following service that may have affected containment ability.
- Semi-annual certification is recommended when cabinets are used for work with airborne-transmitted organisms or other high risk agents, e.g. *M. tuberculosis*.
- If the airflow, indicated by magnehelic gauges falls out of an established range.

A list of qualified vendors can be found on EH&S's web site:

<http://www.ehs.columbia.edu/bscert.html>.

Prior to disposal or moving of any BSC, the equipment must be professionally decontaminated by a qualified vendor and cleared by EH&S. Vendors that provide **BSC certification services** are typically able to perform this service as well.

Heat from a Bunsen burner may disrupt the protective airflow pattern, damage HEPA filters, and present a significant fire risk when ethanol is used in the biosafety cabinet. The use of sterile disposable inoculating supplies, combined with the sterile atmosphere of the BSC, should eliminate the need for heat decontamination throughout the procedure. When heat sterilization is necessary, use a microincinerator; a small electric furnace that eliminates the need for an open flame. Microincinerators are available from lab supply vendors.

Additional guidance on the effective use of BSC may be found in the [Columbia University Biosafety Manual](#).

F. Emergency contacts

Accidents, exposures and illnesses require immediate attention. Such incidents must be reported immediately to the campus' **appropriate emergency contact** and the laboratory supervisor and/or PI. All emergencies involving personal exposure or illness must be reported using the [Columbia University Accident Report Form](#). Personnel are strongly encouraged to visit Workforce Health & Safety or Student Health Services, as applicable, following an exposure (for after-hours exposures visit New York Presbyterian Hospital Emergency room at CUMC, or St. Luke's Hospital Emergency Room at Morningside).

G. Medical Surveillance

Principal investigators and their personnel should refer to the [Columbia University Medical Surveillance Policy & Procedure](#) before beginning work with potentially infectious materials.

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BSC used to manipulate potentially infectious materials must display evidence of certification. This is usually provided by the vendor providing the certification service in the form of a sticker affixed to the front of the BSC showing the certification date and the date on which recertification is due.

Protocols involving the use of recombinant DNA or infectious agents that are submitted to the Institutional Animal Care and Use Committee (IACUC) or Institutional Biosafety Committee (IBC) must include evidence of current biosafety cabinet certification in order to receive approval.

As with all laboratory equipment that is used with hazardous materials, biosafety cabinets must be cleared by EH&S prior to disposal or moving. For any biosafety cabinets that are used to manipulate infectious materials, the equipment must first undergo a professional decontamination by a [qualified vendor](#) using a gaseous or vaporized disinfectant.

I. Appendices

N/A

J. Forms

N/A

K. References

Biosafety in Microbiological and Biomedical Laboratories (BMBL) 5th Edition, 2009, Centers for Disease Control and Prevention and National Institutes of Health,
<http://www.cdc.gov/biosafety/publications/bmb15/index.htm>

Biological Safety Manual, 2.3: Engineering controls, Columbia University Environmental Health and Safety, <http://ehs.columbia.edu/Policy2.3.html>.