



Subject: **BIOLOGICAL SAFETY CABINETS**

Policy No. 111

APPLICATION

All New York University Academic and Research Facilities.

PURPOSE

To outline procedures for biological safety cabinet usage in order to minimize employee exposure to biohazardous materials.

POLICY AND GENERAL INFORMATION

1.0 Training

1.1 All persons using biological safety cabinets shall be trained by their supervisor prior to operating the cabinets. Manufacturer's instructions shall be strictly adhered to.

2.0 Definition of Biohazardous Materials

2.1 A biohazardous material is defined as an infectious agent, or part thereof, presenting a real or potential risk to the well-being of humans, other animals or plants, either directly through infection or exposure, or indirectly through disruption of the environment.

3.0 Biosafety Cabinet Certification

3.1 Biosafety cabinets shall be certified when installed, at least annually and when moved from one laboratory to another. A certification card is posted on the cabinet by the vendor performing the certification. Certification shall be coordinated with the New York University Environmental Health & Safety Department.

4.0 Safety Equipment

4.1 Personal Protective Equipment

4.1.1 Specialized clothing, such as lab coats, gloves, and eye and face protection, shall be worn by personnel handling biohazardous materials/potentially infectious materials. Long sleeve laboratory coats are recommended to minimize skin shedding and to prevent potential contamination to the user. Personal protective equipment shall be readily available through the department in which the persons are employed.

4.2 Warning Signs/Labels

ISSUE DATE	REPLACES	ORIGINATOR
10/05	11/95	ENVIRONMENTAL HEALTH & SAFETY

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4.2.1 Warning signs shall be placed on doors to laboratories and rooms where experiments involving biohazardous materials/potentially infectious materials are conducted. Warning signs shall be placed on refrigerators/freezers where infectious materials are stored and on biosafety cabinets as well.

5.0 Biosafety Levels - The manual, *Biosafety in Microbiological and Biomedical Laboratories*, published by the Center for Disease Control-National Institute of Health, shall be referred to for detailed procedures and recommendations.

5.1 Biosafety Level 1 - suitable for work involving agents of no known or of minimal potential hazard to laboratory personnel and the environment. Laboratory personnel shall have specific training in the procedures conducted in the laboratory. No special containment (e.g. a biosafety cabinet) is recommended but not required.

5.2 Biosafety Level 2 - suitable for work involving moderate potential hazard to laboratory personnel and the environment. Laboratory personnel shall have specific training in handling pathogenic agents and be supervised by competent scientists. Biosafety cabinets (Class I or II) are required when procedures involve a high potential for creating infectious aerosols (e.g., grinding, centrifuging, blending, vigorous shaking, opening pressurized containers, etc.) or when high concentrations or large volumes of infectious agents are used.

5.3 Biosafety Level 3 - applicable in clinical, diagnostic, teaching, or research facilities where experiments with exotic agents may cause potentially lethal disease as a result of exposure by inhalation. Laboratory personnel shall have specific training in handling pathogenic and potentially lethal agents and be supervised by competent scientists. Class I, II or III biological safety cabinets are required when performing such experiments.

5.4 Biosafety Level 4 – Applicable for work with dangerous and exotic agents which pose a high individual risk of life threatening disease. Laboratory staff is required to have extensive training in handling extremely hazardous infectious agents. Class III biological safety cabinets or Class I/II biological safety cabinets used in conjunction with one-piece positive pressure personnel suits ventilated by a live support system are required.

6.0 Biosafety Cabinet Usage Procedures

6.1 Activity in a room housing a biosafety cabinet should be kept to a minimum. Activity may cause disruptive air currents in the room and inside the cabinet, and opening/closing doors to the room may change the pressure inside the room. In addition, operating a centrifuge inside a cabinet causes air disruption inside the cabinet. Centrifuges should only be operated inside a cabinet when using the cabinet for protection against biohazardous materials.

6.2 After turning on a Biosafety Cabinet, the working surface should be disinfected with a 70% alcohol solution.

6.3 Materials for the experiment should be placed inside the cabinet prior to the start of the experiment. All materials/equipment should be disinfected with 70% ethanol prior to placing in the hood. Overloading of material in the cabinet should be avoided because materials may obstruct optimal airflow.

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- 6.4 Allow three to five minutes of purge time after placing materials in the cabinet.
 - 6.5 Operate the sash at the cabinet manufacturer's design criteria, i.e. 8" or 10".
 - 6.6 When performing an experiment, materials should be kept away from the front air intake and rear exhaust. Transfer of viable materials should be performed as deeply into the cabinet as possible. The use of an open flame is discouraged since it creates turbulence which disrupts the pattern of HEPA-filtered air supplied to the work surface. When deemed absolutely necessary, touch-plate microburners equipped with a pilot light to provide a flame on demand may be used. Internal cabinet air disturbance and heat buildup will be minimized. The burner must be turned off when work is completed. Small electric furnaces are available for decontaminating bacteriological loops and needles and are preferable to an open flame inside the BSC. Disposable sterile loops may also be used.
 - 6.7 Vacuum traps with disinfectant and in-line HEPA filters should be used to eliminate contamination to in-house systems.
 - 6.8 Following completion of the experiment, the cabinet should be allowed to purge itself for about two to three minutes.
 - 6.9 No materials should be removed from the cabinet without first being decontaminated with a 70% alcohol solution or being placed in a clean receptacle. Following removal of all materials from the cabinet, the working surface should be decontaminated with the 70% alcohol solution.
 - 6.10 All waste shall be disposed of in accordance with Policy #103, Regulated Medical Waste.
 - 6.11 The cabinet should be turned off after usage. Some Biological Safety Cabinets come equipped with UV lights. Turn off UV light when the room is occupied - UV exposure can burn corneas and cause skin cancer.
- 7.0 Miscellaneous Precautions
- 7.1 At no time shall eating or drinking be allowed in facilities where experiments involving biohazardous/potentially infectious materials are being conducted.
 - 7.2 Proper personal hygiene practices shall be used after handling Biohazardous/Potentially Infectious Materials. Hands should be washed following handling of such material.
 - 7.3 Non-disposable personal protective equipment shall not leave the work area. Home laundering of lab coats is prohibited. Any disposable personal protective equipment shall be disposed of as waste.
 - 7.4 Should there be a lapse of time between the generation and pick-up of waste, refrigeration or freezing is recommended for animal carcasses, tissues, organs, and other waste.
 - 7.5 Any questions regarding biosafety cabinets, biohazardous/ potentially infectious materials should be directed to the New York University Environmental Health and Safety Department at extension 81450.