UC Davis Institutional Biosafety Committee (IBC) Policy on Biological Safety Cabinet Use, Acquisition, Installation, Certification, Repair, Training, and Decontamination

I. PURPOSE
A. Background and policy rationale: The biological safety cabinet is the most commonly used containment device for work with biohazardous agents or materials. Biological safety cabinets that are installed, certified, and used correctly offer user, environmental, and product protection from biohazards, but much of this protection is lost if the cabinet is installed or used incorrectly. Because of this potential hazard and because NIH recommends that each institute develop policies for required uses and acceptable installation parameters for biological safety cabinets, the UC Davis Institutional Biosafety Committee has adopted the following policy pertaining to all aspects of biological safety cabinet acquisition, installation, and use at UC Davis and UCDHS. For the purposes of this policy, “biological safety cabinet” means containment devices classified under NSF/ANSI Standard 49, 2002 nomenclature, as Class II Types A1, A2, B1, or B2 cabinets. NSF Class I and Class III containment devices such as glove boxes are excluded from this definition and may be covered under separate IBC policy.

II. POLICY
A. Required use of biological safety cabinets
Biological safety cabinets must be used for:
1. All operations involving infectious agent manipulation at Biosafety Level 3 (BSL3)
2. Aerosol-generating procedures at Biosafety Level 2 (BSL2)
3. Manipulation of recombinant viral vectors in cell culture at BSL2 or BSL3
4. Cage changing laboratory rodents at Animal BSL3 (ABS3)
5. Opening shipping packages containing human biohazardous agents or materials
6. Any operation where biological safety cabinet use is required by an outside regulatory agency
7. Other operations as specified on a case-by-case basis by the IBC

B. Biological safety cabinet acquisition
   1. The IBC recommends that principal investigators consult with the biological safety office before purchasing any biological safety cabinet.
   2. All Class II biological safety cabinet purchases and all cabinet-type containment device purchases including Class I and Class III devices require direct EH&S approval
      a. Only biological safety cabinets that are registered with the National Sanitation Foundation and meet NSF/ANSI Standard 49 specifications will be approved for purchase at UC Davis or UCDHS including field facilities
      b. Biological safety cabinet width should be appropriate to the experiments to be conducted.
   3. Previously owned or new biological safety cabinets brought by investigators moving to UC Davis or UCDHS must meet criteria specified above in II.B.2.a.

C. Biological safety cabinet installation
   1. Biological safety cabinets must be installed in compliance with the provisions of NSF/ANSI Standard 49 (2002 and later)
   2. Biological safety cabinets should be moved or installed only by individuals tasked or contracted by UC Davis with moving and installing this type of equipment
   3. Biological safety cabinets should be installed away from openable windows and doors, entryways, air supply and ventilation registers, and away from high foot traffic areas.
   4. Non-recirculating biological safety cabinets must be ducted and ventilated in accordance with NSF/ANSI Standard 49 specifications
   5. New or relocated biological safety cabinets will not be connected or reconnected to laboratory gas lines

D. Biological safety cabinet certification and repair
   1. All biological safety cabinets used at UC Davis must be certified after installation and before first use, annually thereafter, whenever the biological safety cabinet has been moved, and whenever the biological safety cabinet has been repaired internally (e.g., when a fan has been serviced or a HEPA filter has been replaced).
   2. Except as provided in D.3 below, biological safety cabinet certification expires after one year.
   3. The IBC may require a six-month certification interval for biological safety cabinets that are used for high hazard work or for biological safety cabinets with a history of frequent certification failures
   4. No biological safety cabinet may be used for any purpose if its certification has expired or if the cabinet requires repair
   5. Biological safety cabinets must be certified by technicians accredited under NSF/ANSI standard 49
6. A current vendor certification label must be affixed to the cabinet and must include the following minimum information:
   a. Certifier and vendor names
   b. Vendor contact information
   c. Certification standard (e.g., NSF/ANSI 49)
   d. Biological safety cabinet manufacturer, model number, and serial number
   e. Certification date
   f. Average Inflow (face) air velocity at certification
   g. Certification differential pressure gauge value (w. g.) (except Class II Type B2 biological safety cabinets)

7. Biological safety cabinets can be serviced or repaired only by individuals accredited under NSF/ANSI Standard 49 to certify and service biological safety cabinets.

E. Biological safety cabinet use training requirement
   1. Anyone at UC Davis who owns or will use a biological safety cabinet must complete the EH&S training class “Safe Use of Biological Safety Cabinets.” The class may be completed online.
   2. Annual refresher training must be provided, either by repeating the class referenced in E.1 or by completing retraining within the laboratory. Laboratory based training must be documented to include training date, names of persons trained and persons providing the training, and training materials used.

F. Biological safety cabinet use rules
   1. Only one person at a time may use a biological safety cabinet regardless of cabinet width
   2. Small quantities of volatile chemicals may be used in Class II Type A1 or A2 biological safety cabinets but only as specified in an IBC-approved Biological Use Authorization. Larger experimental quantities of volatile chemicals may be used in conjunction with microbiological work in Class II Type B2 biological safety cabinets or in Class II Type B1 cabinets if the user is specially trained. 70% ethanol may be used freely for surface disinfection in all biological safety cabinets.
   3. Volatile radionuclides may not be used in any biological safety cabinet without IBC and Radiation Safety Committee approvals. Non-volatile radionuclides that the Radiation Safety Committee allows to be used on the bench top may also be used in Class II biological safety cabinets, if properly shielded.
   4. Continuous open flame is not allowed in a biological safety cabinet without IBC permission. The IBC recommends microincinerators, disposables, and intermittent flame sources to supplant the need for continuous open flame.
   5. The UC Davis IBC discourages the use of ultraviolet (UV) light to disinfect the interior cabinet surfaces, because the UV light is of questionable effectiveness for this purpose and it is a significant hazard to laboratory occupants. UV light may also damage synthetic materials in HEPA filter frames and mounting assemblies and cause contaminated air leakage. If the UV light is used, the following rules apply:
a. The light may only be used when the biological safety cabinet sash is fully closed. If the sash cannot be closed the light can only be used when no one is in the laboratory. Under those circumstances anyone entering the laboratory must shut off the UV light immediately.

b. All items in the biological safety cabinet must be disinfected with 70% ethanol, 10% bleach, or other appropriate disinfectant and removed before energizing the UV light.

c. The light tube must be removed from the biological safety cabinet weekly and cleaned with a 70% ethanol solution.

d. The light tube must be replaced with a new tube annually.

e. Activities II.F.5.c and II.F.5.d must be documented in an equipment use log.

G. Biological safety cabinet decontamination and salvage

1. The interior surfaces of biological safety cabinets used for work involving human biological hazards at BSL2 or BSL3 must be decontaminated with an appropriate chemical disinfectant at the end of each work session. Likewise, all items removed from a biological safety cabinet must first be decontaminated with an appropriate chemical disinfectant. Examples of appropriate chemical disinfectants for both purposes include 70% ethanol in water or 10% household bleach in water. If bleach solutions are used on stainless steel or aluminum surfaces they should be followed by a 70% ethanol or water rinse.

2. The interior and exterior surfaces of biological safety cabinets used for work at BSL2, other than culture of infectious agents, must be decontaminated with an appropriate chemical disinfectant before being certified, serviced, or moved. Examples of appropriate chemical disinfectants include 70% ethanol in water or 10% household bleach in water. If bleach solutions are used they should be followed by a 70% ethanol or water rinse.

3. All biological safety cabinets must be gas or VHP (vaporized hydrogen peroxide) decontaminated before being transferred to a new owner in place or in another location (including Bargain Barn), decommissioned, or salvaged.

4. Biological safety cabinets used for infectious agent culture at BSL2 or for diagnostic work involving Risk Group 3 agents such as *Mycobacterium tuberculosis* or *Coccidioides* sp. must be gas or VHP decontaminated before being moved or serviced.

5. Biological safety cabinets used for work at BSL3 must be gas or VHP decontaminated before being certified, serviced, moved, transferred to a new owner or project in place, or decommissioned and salvaged.

6. Gas or VHP decontamination must be conducted by an individual accredited under NSF/ANSI Standard 49 to field-service biological safety cabinets. Biological indicators must be used to verify biological safety cabinet decontamination.

7. After decontamination by an approved method, all biohazard symbols and warnings must be removed from the biological safety cabinet, the sash must be closed if possible, and a sign with the following wording must be affixed to the sash or to the face above the sash: “This biological safety cabinet was decontaminated by (person’s or vendor’s name) on (date), using (name of chemical).” Exception: it is not necessary to deface or remove biohazard
symbols and warnings from biological safety cabinets that have been decontaminated for annual certification, but the sign attesting to cabinet decontamination must be posted prominently on the cabinet face.

Adopted by the UC Davis Institutional Biosafety Committee on March 21, 2011

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IBC Chair                                Biological Safety Officer