

**Class II/Type A2 (Formally Designated as A/B3)
Biological Safety Cabinet Ordering Criteria for the
National Institutes of Health**

This document provides guidelines for the design and installation of Class II, Type A2 Biological Safety Cabinets (BSCs) at National Institutes of Health facilities. Before purchasing any BSC for installation in an NIH facility, contact the Division of Occupational Health and Safety (DOHS) for plan reviews, work reviews, and approval at 301-496-3457. Ordering criteria for a Class II, Type A2 BSC purchased for the NIH is as follows:

1. The BSC must be National Sanitation Foundation (NSF Standard 49) certified for Class II Biological Safety Cabinets and bear the NSF seal.
2. The BSC must be a bench top model.
3. Ultraviolet (UV) lamps.
 - 3.1. Installation of Ultraviolet (UV) lamps is **not permitted** in BSCs at the NIH. The NIH, CDC, NSF/ANSI, and the American Biological Safety Association all agree that ultraviolet (UV) lamps are not recommended nor are they necessary. NSF Standard 49, the industry testing standard for all biohazard cabinetry, does not provide any performance criteria for UV lighting and specifically states in Section 4.24.2 "UV lighting is not recommended in Class II (laminar flow) biohazard cabinetry." Numerous factors affect the activity of the germicidal effect of UV light, which require regular cleaning, maintenance and monitoring to ensure germicidal activity. In addition, there are safety hazards associated with UV light exposure, which include cornea burns and skin cancer.
4. Hose Cocks.
 - 4.1. Two hose cocks on each side wall labeled for vacuum in the four and six foot models.
 - 4.2. Two hose cocks on one side wall or back wall and labeled vacuum in the three foot model.
 - 4.3. No gas cocks can be installed. Open flames disrupt the laminar flow in BSCs and therefore NIH does not recommend the use of gas. If it is determined by Division of Occupational Health and Safety (DOHS) that gas must be used in a BSC, then a shut-off valve must be installed immediately outside of the BSC so that the gas can be shut-off in the event of a fire.
5. Power Receptacles
 - 5.1. One 115 volt, 50 Hertz, AC, three prong convenience duplex receptacle for grounded plugs installed in each side wall in the four and six foot models.
 - 5.2. One 115 volt, 50 Hertz, AC, three prong convenience duplex receptacle for grounded plugs installed on the work area back wall or side wall in the three foot model.
 - 5.3. Five (5) amp breakers shall be utilized on the A2 cabinet.

6. Hinged or sliding front window with audible and visual alarms which indicate window is not at the correct position for sliding window models.
7. A front access opening of eight (8) inches or ten (10) inches.
8. Standard size HEPA filters with keyed, sealed gaskets and are readily available from any of the major filter manufacturers.
9. Designed so service can be performed (including decontamination) without disconnecting utility services and/or moving the cabinet.
10. The BSC shall be ergonomically designed for maximum user comfort and adjustability.
11. As shipped, can pass through a standard doorway (6' 7" high x 2' 11" wide) or removable top mounted parts are removed before shipping and labeled with the NIH purchase order number and the manufacturer's serial number, even if parts are shipped on the same pallet.
12. Two copies of instruction/use booklets furnished with each cabinet and listing:
 - 12.1. Instructions for installing, operating and performing preventative maintenance on the cabinet.
 - 12.2. Identification of service parts with manufacturer's part number, and quantify required for preventative maintenance purposes.
 - 12.3. The fan performance curve for the integral fan(s).
 - 12.4. Results of the required NSF tests for each cabinet purchased.
 - 12.5. Results of all the production quality control tests on each cabinet.
13. A standard stand made by the same cabinet manufacturer that can be securely fastened to the cabinet shall be ordered for each cabinet, unless otherwise requested by the end user. The cabinet and stand combination (referred to as a console by NSF) must have passed the NSF "tip test" portion when mounted on the stand to be used with the cabinet, in order to be acceptable to the NIH.
14. **Venting Class II, Type A2 BSCs is not permitted in NIH facilities. If a ducted cabinet is necessary for conducting research for the use of toxic chemicals in quantities that could result in an explosion and the use of radionuclides, then a Class II Type B1 or B2 BSC should be purchased. Contact DOHS at 301 496-3457 to discuss which cabinet is necessary for the research.**

Locating the Biological Safety Cabinet

- Locate the Class II BSC out of the traffic pattern and away from room air currents that could disrupt the air barrier at the work access opening.
- Do not locate the BSC where room supply air inlets blow across the front opening or onto the cabinet's exhaust filter.

- Provide a minimum of 4 inches clearance on the rear and the non-utility side, and 6 inches clearance on the utility side of all BSCs and locate the power receptacle high on the wall so that the unit may easily be unplugged for servicing. Ideal clearance would be a 12 to 14 inches if possible.
- To help assure that the 6-inch clearance provides enough space for utility connection, use flexible gas connections.
- Seismically secure all cabinets using a connection that may easily be disconnected for servicing and relocating.

Please contact the Division of Occupational Health and Safety at 301 496-3457 in Building 13 Room 3K04 or Consult NSF International Standard/American National Standard 49-2002 if you have further questions.

Figure 2a. Class II, Type A Biological Safety Cabinet.

