

TITLE:	IBC02-Biological Safety Cabinet Certification
OVERVIEW:	All biological safety cabinets must be certified at the time of installation and at least annually thereafter.
APPLIES TO:	All users of biological safety cabinets.
DEFINITION(S):	<p>HEPA filtration - (High efficiency particulate air) - part of the cabinet design to remove particles equal to and greater than 0.3 μm, which essentially includes all bacteria, spores, and viruses, with an efficiency of 99.97%.</p> <p>Biological safety cabinets - (BSC) - ventilated cabinet which uses directional airflow to provide personnel, environmental, and product protection.</p> <p>Class II, A1 BSC - 70% of the air is recirculated to the cabinet work area through HEPA filtration and 30% is exhausted through HEPA filters back into the room. (cannot be used for volatile toxic chemicals and radionuclides and only minute amounts of nonvolatile toxic chemicals and radio nuclides)</p> <p>Class II, B2 BSC - 100% HEPA-filtered air is exhausted through a hard-ducted dedicated exhaust system. (can be used for small amounts of volatile and nonvolatile toxic chemicals and radio nuclides)</p> <p>Class II, A2 BSC - (formerly Class II, B3), same as Class II, A1 except the exhaust air is thimble-ducted to the outside through a HEPA filter. (can be used for minute amounts of volatile and small amounts of nonvolatile toxic chemicals and radio nuclides)</p> <p>Class II, B1 BSC- Model NCB-C. This cabinet can be used with biological agents as well as low levels of volatile chemicals and radio-nucleotides. Approximately 45% of the air passes through the work area through internal HEPA filters. Approx. 55% of the air is exhausted through HEPA filter. All exhaust air is captured through a hard ducted exhaust system.</p> <p>NSF 49- (National Sanitation Foundation Standard No. 49), the accepted standard for biological safety cabinet's certification which establishes performance criteria and provides the minimum requirements that are accepted in the US for BSC certification. Procedures for field testing are contained in the NSF / ANSI49-2002, Annex F of the Standard.</p>
PROCEDURES:	The following physical tests are conducted on-site for a certification to

	<p>be considered for the statement “Field Certified According to NSF Standards.”</p> <ol style="list-style-type: none"><li data-bbox="526 268 1411 373">1. Downflow velocity profile test Measures the velocity of air moving through the cabinet workspace 4 inches above the bottom edge of the sash window.<li data-bbox="526 415 1411 520">2. Inflow velocity (face velocity) test Determines the measured and calculated in-flow velocity through the work access opening.<li data-bbox="526 562 1411 772">3. Airflow smoke patterns test Determines that the airflow along the entire perimeter of the work access opening is inward, airflow with the work area is downward with no dead spots or refluxing, ambient air does not pass on or over the work surface, and there is no escape to the outside of the cabinet at the sides and top of the window.<li data-bbox="526 814 1411 919">4. HEPA filter leak test Determines the integrity of down-flow and exhausts HEPA filters, filter housings, and filter mounting frames.<li data-bbox="526 961 1411 1066">5. Pressure decay / soap bubble test Performed to determine if exterior surfaces of all plenums, welds, gaskets, and plenum penetrations or seals are free of leaks.<li data-bbox="526 1108 1411 1213">6. Site installation assessment test Performed to verify that the biosafety cabinet is integrated properly into the facility.<li data-bbox="526 1255 1411 1360">7. Electrical leakage and ground circuit resistance and polarity tests Performed on all new cabinets to determine that they comply with the UL 3101-1 coding.<li data-bbox="526 1402 1411 1507">8. Light intensity test To measure the light intensity on the work surface of the cabinet in foot-candles as an aid in minimizing cabinet operator’s fatigue.<li data-bbox="526 1549 1411 1717">9. Vibration test To determine the amount of vibration in an operating cabinet as a guide to satisfactory mechanical performance and as an aid in minimizing cabinet operator’s fatigue and to prevent damage to delicate tissue culture specimens.<li data-bbox="526 1780 1411 1837">10. Noise level tests To measure the noise levels produced by the cabinet as a guide to
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	<p>satisfactory mechanical performance and as an aid in minimizing cabinet operator's fatigue.</p> <p>11. UV light Although not necessary for the function of the BSC, if present, the UV light should be tested for radiation intensity using a UV monitoring device.</p>
RECORD KEEPING:	All records of testing will be maintained on file in Facilities Management and Planning.
OTHER INFORMATION:	<p>A cabinet that has met all the field test criteria listed in procedures shall have the following information posted on the front of the cabinet in a location readily visible to the user:</p> <ul style="list-style-type: none"> -date of certification -date cabinet should be recertified certifier's report number name, address, and telephone number of certifying company -initials of person who performed the field certification tests. <p>Cabinets requiring maintenance e.g., HEPA filter removal, must first undergo decontamination using an accepted decontamination process.</p> <p>Facilities Management and Planning administers a program for annual certification of all biological safety cabinets at UNMC with no cost to the user. The cost of certification of cabinets that have been moved will be incurred by the user. For additional information concerning this program, contact FMP at 559-4100.</p>
REFERENCES:	CDC/NIH. 2000. Primary Containment for Biohazards: Selection, Installation, and Use of Biological Safety Cabinets, 2nd Edition, US Government Printing Office, Washington, DC.
STATUS:	Updated: March 24, 2015