



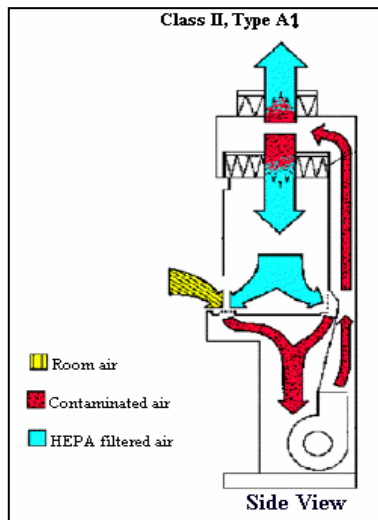
What is a Biosafety Cabinet?

Biosafety cabinets (BSCs), otherwise known as tissue culture hoods, are essential pieces of safety equipment designed to provide personal, product, and environmental protection from potentially infectious materials and human pathogens.



How Do Biosafety Cabinets Work?

Class II BSCs, the type most commonly used inside research laboratories, rely on air being drawn into the front grill of the BSC to create a protective air curtain for the user and to supply filtered air. BSCs utilize high efficiency particulate air (HEPA) filters to remove airborne particulates, including microorganisms. HEPA filters do not remove volatile chemicals or gases.



Generally, BSCs either exhaust 100% of the air that is drawn into the units (Class II, B2) or recirculate some portion of the air (Class II, A1, A2, or B1). For more information on types of BSCs, please see Centers for Disease Control and Prevention-National Institutes of Health (CDC-NIH) Biosafety in Microbiological and Biomedical Laboratories (BMBL) Fifth Edition [Appendix A](#).

Certification

BSCs must be certified annually, or when they are moved, to ensure they are working properly.

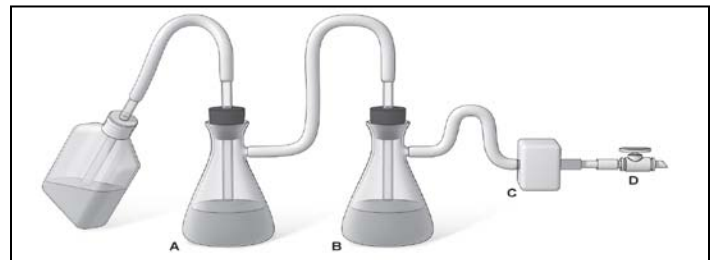
Safe and Effective Work Procedures

Disinfect—Use a disinfectant appropriate for the biological material being used. If using bleach or vesphene, it is helpful to follow up with a 70% ethanol rinse to help the disinfectant evaporate cleanly.

Avoid Clutter—All operations should be performed on the work surface at least four (4) inches from the inside edge of the front grill. Covering the grill can compromise the BSC's airflow and lead to product contamination and personal exposures.

Dirty to Clean—Organize your supplies so that you can segregate your work from the clean side of the cabinet to the dirty side. To prevent cross-contamination, avoid moving dirty items over clean ones.

Protect Vacuum Lines—Use a HEPA filter and inline disinfectant flasks to protect your vacuum system from contamination. The left suction flask (A) is used to collect the contaminated fluids into a suitable decontamination solution; the right flask (B) serves as a fluid overflow collection vessel. An in-line HEPA filter (C) is used to protect the vacuum system (D) from aerosolized microorganisms.



Avoid Open Flames—Open flames create turbulence that disrupts the airflow in the BSC, which can lead to product contamination and personal exposures. The use of gas-fueled Bunsen burners can lead to high concentrations of gas in the BSC due to recirculation of BSC air. Any ignition source, including the fan motor, can result in a serious explosion. For alternative products or methods, contact Harvard Institutes of Medicine/New Research Building (HIM/NRB) Environmental Health & Safety (EH&S) Office.

Collect Waste Materials—Collect infectious wastes inside the cabinet. Repeatedly moving arms in and out of the cabinet to deposit waste in a container outside of the BSC will compromise the air flow and containment provided by the BSC. For examples of waste containers, contact HIM/NRB EH&S Office.

Also See...

- [Fact Sheet](#) on Working at Biosafety Level 2
- [Fact Sheet](#) on Working with Lentiviral Vector Systems
- [HIM/NRB Biosafety Manual](#)