UC RIVERSIDE | Environmental Health & Safety

Biological Safety Cabinet (BSC) Relocation and Placement Guidance

A biological safety cabinet (BSC) is a primary engineering control used to protect personnel against biohazardous or infectious agents. The BSCs have high efficiency particulate air (HEPA) filters that are designed to capture particulates and aerosols. To ensure the proper operation of a BSC and maximize protection, the following guidelines should be used for relocation and placement.

Relocation of existing BSCs

Since the primary purpose of a BSC is to capture particulates and aerosols from biohazardous or infectious agents, existing BSCs must be decontaminated prior to being moved. Note that the term decontamination in this case refers to fumigation methodologies and not surface decontamination. Fumigation ensures that HEPA filters and internal components of the BSC are fully decontaminated and not just surfaces. Currently, there are three acceptable methods to fumigate a BSC: formaldehyde gas, chlorine dioxide gas, and hydrogen peroxide vapor.

Comparison of fumigation methodologies

	Formaldehyde	Chlorine Dioxide	Hydrogen Peroxide
Material compatibility	Good	Can be corrosive to certain stainless steel (304) leading to rusting	Excessive condensation can damage metal surfaces and coatings
Carcinogenic	Yes	No	No
Permissible exposure level (PEL)*	0.75 ppm	0.1 ppm	1 ppm
Inactivation time **	6-12 hours	60-85 min	30-110 min
Clean-up step	Necessary to wipe surfaces to remove formaldehyde residue	Generally no but best to wipe surfaces to minimize corrosion	No
Duration of BSC down time	18-24 hours	~3 hours	2-3 hours

* https://www.dir.ca.gov/title8/5155table_ac1.html
**dependent upon generator type and method used

Relocation Steps:

1. Personnel contact vendor to schedule a BSC decontamination and submit a relocation clearance request to EH&S.
2. Prior to vendor's arrival, laboratory personnel should remove all materials from the BSC and perform a surface decontamination of interior workspace of the BSC with an appropriate disinfectant.
3. Vendor performs fumigation procedure. Once complete, vendor places a decontamination sticker on the BSC.
4. EH&S will place a clearance tag on the BSC and then the BSC can be moved.

5. Once the BSC has been relocated and placed in its new location, the BSC should be re-certified.
6. The certification report should be forwarded to ehsbiosafety@ucr.edu.

When should a BSC be certified?

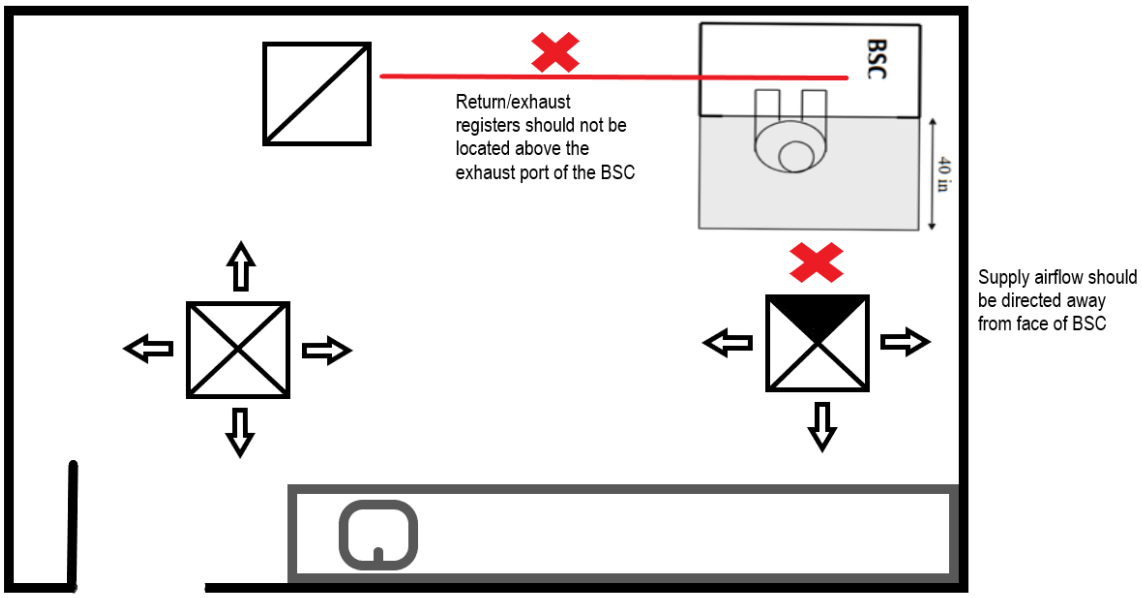
- At start-up/installation after purchase
- After repairs such as change of HEPA filters or replacement of blower motor
- Annually per NSF/ANSI 49
- After relocation (except BSCs on manufacturer installed wheels and moved only within the same lab area)

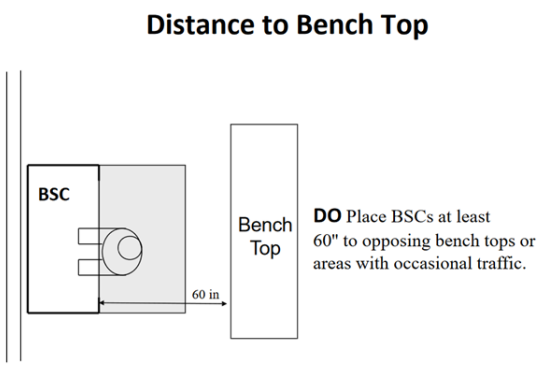
Placement of BSCs[1]

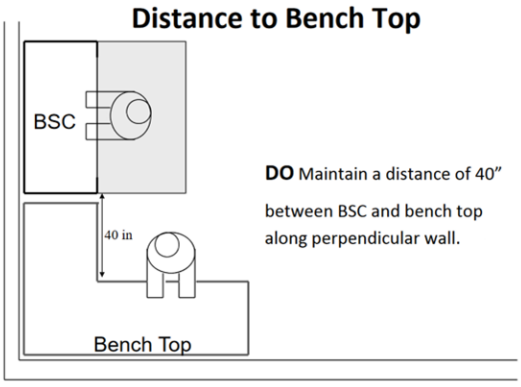
To ensure proper function of a BSC, the cabinet should be located out of the traffic pattern and away from room air currents that could disrupt the airflow both at the front face of the cabinet and its exhaust opening.

Critical minimum clearances when placing a BSC:

- 3 inches on each side
- 1.5 inches behind
- 3 inches from top of cabinet and ceiling

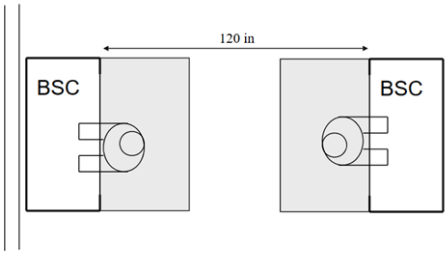






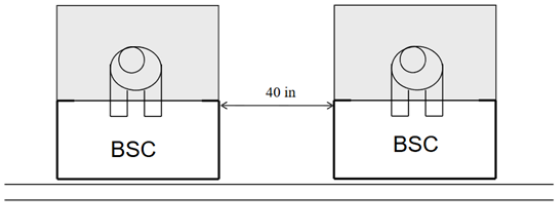
BSC Placement Along Opposing Walls

DO Maintain a distance of 120" between opposing BSCs.



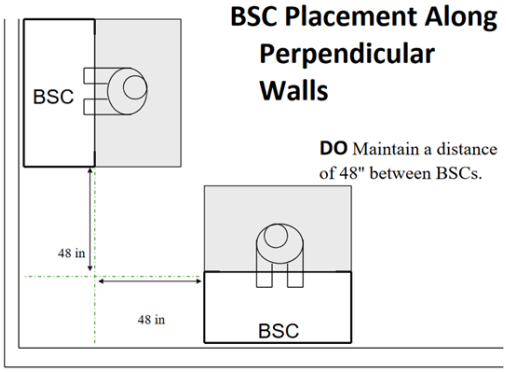
BSC Placement Along Same Wall

DO Maintain a distance of 40" between BSCs along same wall.



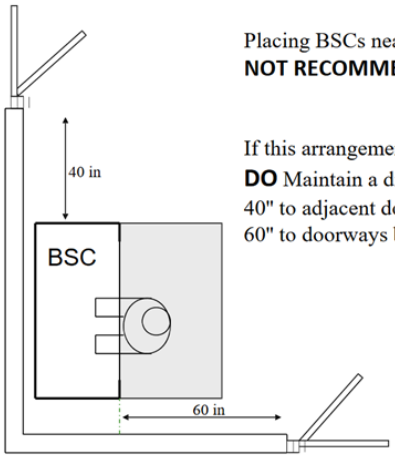
BSC Placement Along Perpendicular Walls

DO Maintain a distance of 48" between BSCs.



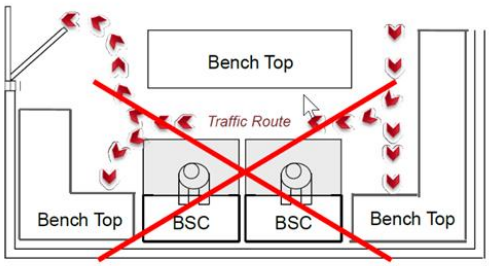
Placing BSCs near two entryways is **NOT RECOMMENDED.**

If this arrangement is absolutely necessary:
DO Maintain a distance of
40" to adjacent doorways and
60" to doorways behind workspace.



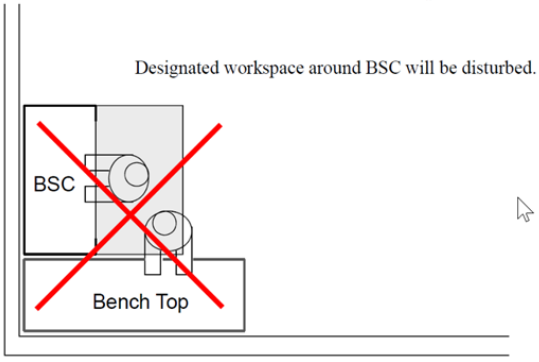
DO NOT Crowd together bench tops and BSCs.

Too much traffic produces dangerous disturbances to BSC airflow.



DO NOT Place BSCs directly near bench tops.

Designated workspace around BSC will be disturbed.



[1] Excerpted from NIH - https://www.orf.od.nih.gov/TechnicalResources/Bioenvironmental/Documents/BiosafetyCabinetBSCPlacementRequirements_508.pdf