FactSheet Biosafety Cabinets

A class II biosafety cabinet (BSC), sometimes referred to as a tissue culture hood, is an engineering control used in biological research that provides primary containment from infectious microorganisms. Used properly, a BSC protects the worker, the environment, and the material that is being used.

How does a biosafety cabinet work?

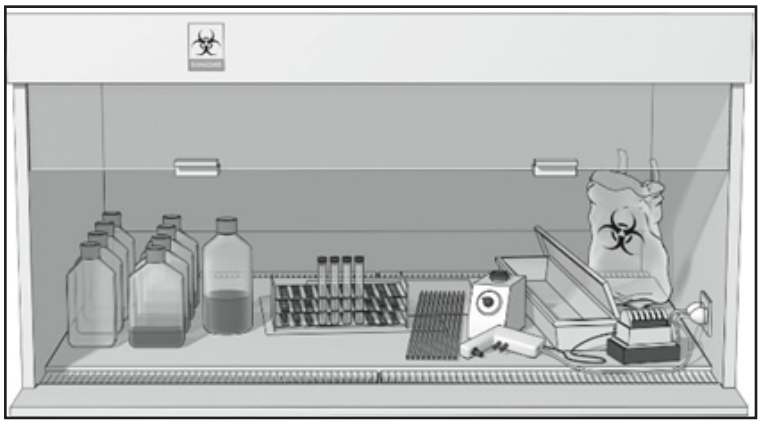
The BSC uses High Efficiency Particulate Air (HEPA) filtered vertical laminar airflow to create a barrier to airborne particles, such as microorganisms. The sheet of filtered air protects the material inside the cabinet.

When should I use a biosafety cabinet?

BSCs are always required for manipulations of airborne transmitted pathogens (e.g., influenza virus), biological materials that are likely to create aerosols, and when working with high concentrations of infectious agents.

How do I properly use a biosafety cabinet?

- Set up the workflow from "clean to dirty"
- Limit movement of "dirty" items over "clean" ones
- Place materials 3-5 inches away from front and back grills; set sash at 8-10 inches above base
- Minimize hand movements inside the cabinet



How do I clean and disinfect a biosafety cabinet?

- Use 10% bleach for a contact time of 10 minutes
- Wipe up bleach with water since it will oxidize stainless steel and cause pitting
- Use a final rinse of 70% EtOH to remove the water and any residual bleach

May I use open flames in a biosafety cabinet?

NEVER use an open flame in a BSC. It disrupts air flow, compromising protection of both the worker and the work.

What Can I Do?

- Use a risk assessment to determine if a BSC is required. Contact the IBC or Biosafety Office for assistance
- Blocking the front and back grills and/or creating turbulence (loading the cabinet with too many items or moving hands around or in and out of the cabinet) diminishes the efficiency of the cabinet
- ALL BSCs must be decontaminated prior to being moved. No exceptions.

An open flame may ignite flammable liquids and materials close by. Alternative methods such as electric incinerators or disposable inoculating loops are recommended.

Do ultraviolet lights provide decontamination in a biosafety cabinet?

Ultraviolet (UV) light is an extra precaution in keeping the work area decontaminated between uses. To optimize its effectiveness make sure you clean, maintain, and monitor it periodically. Running a BSC for 30 minutes before use may be as effective as keeping a UV light on during periods of non-use.

Why is BSC certification required?

BSCs must be tested and certified on site to ensure that they are providing adequate personnel and environmental protection. BSCs are certified: (a) at the time of installation, (b) at least annually thereafter, and (c) at any time the BSC is moved.

Principal Investigators are responsible to ensure that the BSC used in their laboratories are certified annually and must pay for the certification, maintenance and repair.

USC Environmental Health & Safety

University Park Campus
3434 South Grand Ave, CAL 120
Los Angeles, CA 90089-2815

Health Sciences Campus
2001 N Soto St, SBA 329
Los Angeles, CA 90032

323.442.2200
labsafety@usc.edu
http://adminopsnet.usc.edu

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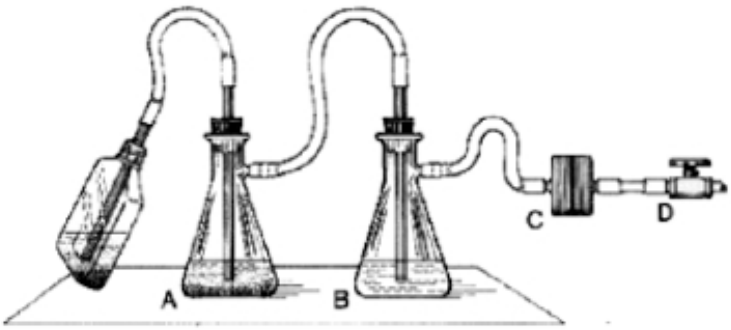
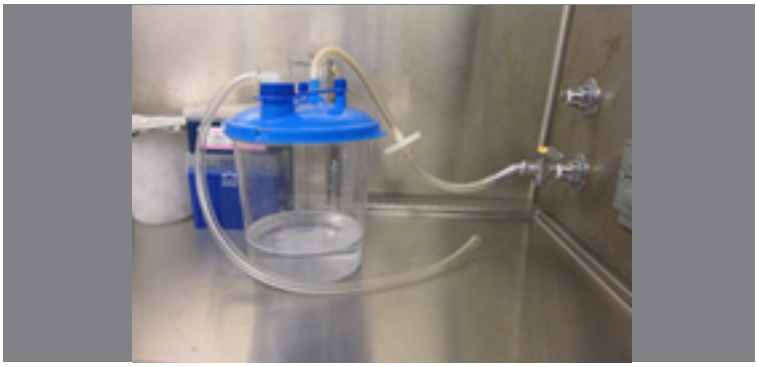
How do I set up a filter aspirator to protect the house vacuum?

To keep liquid infectious materials out of the house vacuum, use an aspiration set up in which A is the collection flask, B is the overflow flask, C is the HEPA filter and D is the house vacuum nozzle. All flasks should be placed in secondary containment.



Alternatively, a commercially available vacuum trap, such as the Guardian canister in this photo can be used.



Are there different types of BSCs?

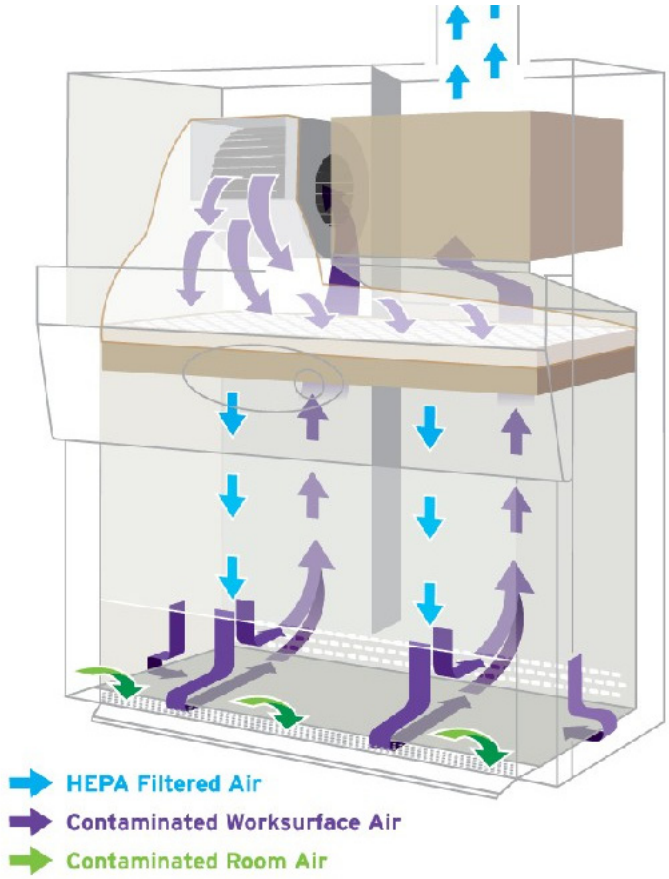
There are two types of BSC in use in USC research labs: Type II A2 and Type II B2. The **Type II A2**: is free-standing (or canopy-connected); is not compatible with use of volatile, toxic, or flammable chemicals in it; and provides 100 lfm face velocity.

The **Type II B2**: is hard-ducted; compatible with use of small amounts of chemicals that are not flammable; exhausts 100% of the air; has a 100 lfm face velocity; and is not spark-proof like the electrical systems of fume hoods.

How does a BSC differ from a chemical fume hood?

The biosafety cabinet: (a) provides HEPA filtration of air at intake and exhaust ports, (b) recirculates filtered air into the laboratory (some models exhaust 100% outside), and (c) is utilized to ensure sterility (e.g. cell culture) and containment of infectious work.

Biosafety Cabinet (BSC)



The chemical fume hood: (a) exhausts 100% of laboratory air to the outside, (b) does not filter air internally, (c) is suitable for chemicals and non-sterile work.

Chemical Fume Hood