



Fundamentals of Working Safely in a Biological Safety Cabinet (BSC)

Please click on a chapter tab above or the next arrow to continue...



The videos and photos used in this course are for demonstration purposes only. For specific safety procedures used in your laboratory, refer to your Standard Operating Procedures (SOPs) or speak with your supervisor or safety and occupational health manager.





BIOLOGICAL SAFETY CABINETS OVERVIEW

MAJOR COMPONENTS OF A CLASS II BSC (1 of 2)

Here are the major parts of a Class II BSC. They will be mentioned throughout the course. Look at the definitions below and click on the name of each part to see where it is located.

Alarm switch: the alarm on/off switch. The alarm will sound when the sash is raised above the height designated on the BSC.

Cabinet blower switch: the on/off switch for the blower motor. The blower motor controls airflow in the BSC.

Canopy (also called thimble): a connection to the building exhaust system on top of a BSC with one or more openings or gaps.

Direct-duct (also called hard duct): a connection to the building exhaust system on top of a BSC that is air tight with no openings or gaps.

Drain spillage trough (catch basin): large pan below work surface to retain spillage from work area.

Drain valve: the open/close drain for liquid under work surface from the drain spillage trough.

Front grille: the air vent in the work surface at the front opening of the BSC.



A Biological Safety Cabinet





BIOLOGICAL SAFETY CABINETS OVERVIEW

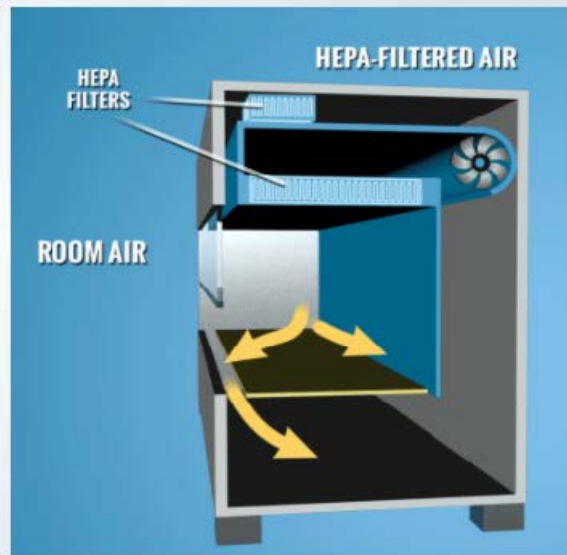
CLASS II BSC - TYPES A1 AND A2

In Class II BSCs, Type A1 and Type A2, air is drawn into the front grille then passed through HEPA filters.

- The **supply** HEPA filter, located near the work surface, supplies HEPA-filtered air downward to the work surface.
- The **exhaust** HEPA filter, located near the top of the BSC, exhausts HEPA-filtered air back into the laboratory (as shown in the graphic on the right) or to the outdoors through a canopy connection to the building exhaust system.

The airflow in a Type A1 BSC is similar to a Type A2 BSC, however Type A1 BSCs should not be used for working with volatile chemicals or radionuclides.

Type A2 BSCs have greater intake air [face velocity](#) and when canopy connected, they can be used to work with small quantities of volatile chemicals or radionuclides.



Type A2 BSC





SAFE USE OF A BSC

KNOWLEDGE CHECK QUESTION 5

Use the knowledge you have gained about behaviors to avoid while working in the BSC and identify what is wrong with the following picture.

- ☐ The front grille of the BSC is blocked with laboratory documents.
- ☐ A biohazard bag is taped on the outside of the BSC for waste disposal.
- ☐ A box of pipette tips is blocking the rear grille.
- ☐ The BSC is overloaded with large pieces of equipment.

SUBMIT ANSWER





EMERGENCY PROCEDURES

EXAMPLE 1 - BUILDING EVACUATION

Here is an example of what to do if there is an event such as a fire or power outage which would require a building evacuation while you are working in the BSC. Make sure you have an SOP developed and on file in your laboratory.

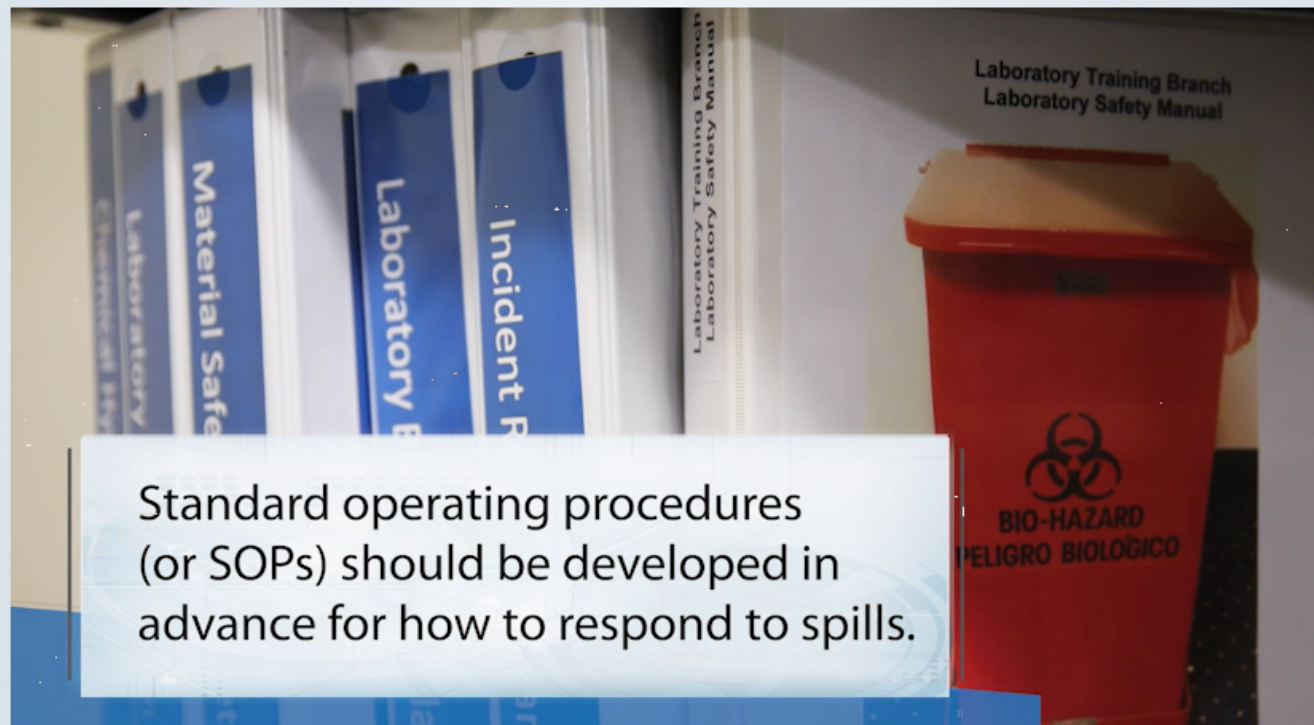
Include the following steps in your SOP:

- Do not turn the blower motor off. Leave the cabinet blower switch in the "on" position.
- Close all containers of infectious materials and leave them in the BSC. If working with biological select agents and toxins, and time permits, remove these materials from the BSC and secure them.
- Remove PPE according to the lab SOP and wash your hands.
- Evacuate the building.
- Upon the safe-to-return command, return to lab, and resume work.





VIDEO DEMONSTRATION: HOW TO CLEAN UP SPILLS IN A BSC



Standard operating procedures (or SOPs) should be developed in advance for how to respond to spills.



00:25 | 02:37



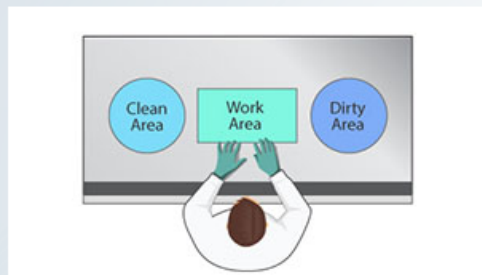


BSC EXERCISE SCENARIOS

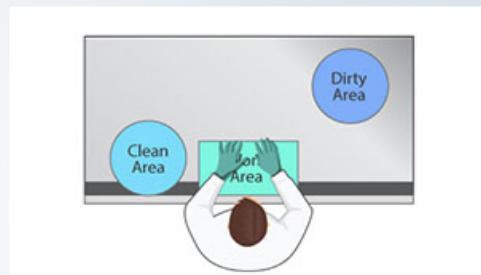
EXERCISE 1

Click the image that shows the correct way to set up your workbench:

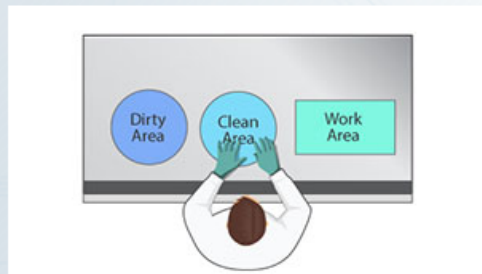
A)



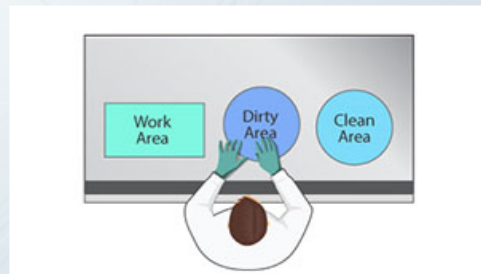
B)



C)



D)



Thank you!