

Bunsen Burner Safety and their use in a Biological Safety Cabinet

Bunsen burners present fire hazards. They produce an open flame and burn at a high temperature. As a result, there is potential for an accident to occur. For the safety of everyone working in the laboratory, it is important that laboratory personnel observe the following safety guidelines. In case of a fire, notify all lab personnel, evacuate the premises, activate the nearest fire alarm pull station, and call 9-1-1.

Bunsen burner safety guidelines:

- Place the Bunsen burner away from any overhead shelving, equipment or light fixtures.
- Remove all papers, notebooks, combustible materials and excess chemicals from the area.
- Tie back any long hair, dangling jewelry, or loose clothing.
- Inspect hose for cracks, holes, pinched points, or any other defect and ensure that the hose fits securely on the gas valve and the Bunsen burner.
- Replace all hoses found to have a defect before using.
- Notify others in the laboratory that the burner will be in use.
- Use a sparker / lighter with extended nozzle to ignite the Bunsen burner. Never use a match to ignite the burner.
- Have the sparker / lighter available before turning on gas.
- Adjust the flame by turning the collar to regulate air flow and produce an appropriate flame for the experiment (typically a blue flame).
- DO NOT leave open flames unattended and never leave laboratory while burner is on.
- Shut off gas when burner use is complete.
- Allow the burner to cool before handling. Ensure that the main gas valve is off before leaving the laboratory.

The use of gas and Bunsen burners in a Biological Safety Cabinet is not recommended by EHS. The Bunsen Burner flame, when used in a Biological Safety Cabinet, contributes to heat build-up in addition to creating turbulence and disrupting the pattern of air supplied to the work surface within the cabinet. If gas is necessary the appropriate safety measures must be taken. If gas is supplied to the BSC, an emergency gas shutoff valve must be placed just outside of the BSC on the gas supply line for quick accessibility in the event of an emergency. If use of a Bunsen burner within the cabinet is unavoidable, the burner should be placed to the rear of the workspace where it will have a minimal effect on air turbulence. It is also strongly recommended that Bunsen burners with on-demand ignition be used in lieu of constant flame gas burners.

Finally, the following is guidance provided by the NIH:

Modern microbiological techniques, equipment, and materials have made the need for gas service to a BSC a thing of the past. Proper use of the BSC and sterile disposable supplies obviates the need for flame sterilization in most experimental procedures. There is no longer a need for gas to be supplied to the BSCs. In the event that the research protocol dictates a need for gas, a Type B (ducted) BSC should be used. In areas that are already served by Type A (non-ducted) BSCs piped to receive gas, there is no need to replace them with a Type B BSC. A manual gas shutoff valve should be installed on the exterior of the cabinet, and gas shall be turned off when not in use. Requests for gas supply to Type A BSCs will be considered on a case-by-case basis.

Environmental Health and Safety (EHS) will provide assistance and training for Bunsen burner safety as requested. Please contact EHS at X1451 with any questions.