

Bunsen Burners Standard Operating Procedure

Revision: May 11, 2022

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This standard operating procedure (SOP) outlines the handling and use of Bunsen burners. Review this document and supply the information required in order to make it specific to your laboratory. In accordance with this document, laboratories should use appropriate controls and personal protective equipment when using Bunsen burners.

Description [Provide additional information as it pertains to your research protocol]

Bunsen burners produce a single open flame by burning a continuous stream of flammable gas used for heating, sterilization, and combustion.

Process [Write the steps for using the Bunsen burner in your research protocol]

Potential Hazards [Provide additional information as it pertains to your research protocol]

Bunsen burners present burn and fire hazards due to the high-temperature open flame that is produced.

Engineering Controls [Provide additional information as it pertains to your research protocol]

Biological safety cabinets (BSC) and disposable sterile items obviate the need for open flames when aseptic conditions are needed. The use of a Bunsen burner in a BSC creates thermodynamic instabilities that interfere with the function of the unit, reducing its ability to provide the sterile field. Additionally, recirculated concentrations of flammable gases within the BSC pose a risk of fire/explosion if the flame goes out, there is a leak, or the gas valve is not shut off completely. In place of a Bunsen burner consider using pre-sterilized disposable loops and spreaders, a shielded electric incinerator or hot bead sterilizer. When suitable alternatives are not possible, touch-plate micro-burners that have a pilot light to provide a flame on demand may be used. If an open flame absolutely must be used in a BSC, contact the Biosafety office (EHSBiosafety@umich.edu) for a risk assessment.

Work Practice Controls [Provide additional information as it pertains to your research protocol]

Bunsen burner safety – best practice:

- **PLACE** the Bunsen burner away from any overhead shelving, equipment, or light fixtures.
- **REMOVE** all papers, notebooks, combustible materials, flammable chemicals 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 burner will be in use.
- **UTILIZE** a sparker/lighter with extended nozzle to ignite the Bunsen burner. Never use a match to ignite a 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 medium blue flame).
- **DO NOT** leave open flames unattended and never leave laboratory while burner is on.
- **SHUT-OFF** gas when its use is complete.
- **ALLOW** the burner to cool before handling.
- **ENSURE** that the main gas valve is off before leaving the laboratory.

Additional Precautions:

- Do not use a Bunsen burner in biological safety cabinet.
- Do not use a constant flame Bunsen burner to create a sterile field. Biosafety cabinets and laminar flow hoods create a sterile field while eliminating the need to have an open flame.
- For small fires, attempt to extinguish fire *if you have been trained in fire extinguisher use and are comfortable doing so.*
- In case of a large fire, activate the fire alarm, evacuate the building and alert authorities.

Personal Protective Equipment [Provide additional information as it pertains to your research protocol]

Wear standard laboratory attire including a 100% cotton or flame-resistant lab coat and safety glasses. Avoid wearing synthetic clothing.

Training of Personnel

All personnel shall read and fully adhere to this SOP when working with Bunsen burners.

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Revision History (Do not print as part of SOP)

05/11/2022	Partial Revision	Removed section on Exposures/Unintended Consequences (LGS)
04/14/2022	Annual Revision	Reviewed and updated links (LGS)
05/15/2020	Annual Revision	Updated editing rights to headings (RSH)
03/04/2019	Annual Revision	Reviewed and updated.
09/13/2018	Annual Revision	EHS name and logo were added, updated the formatting, and revised the content under Exposure/Unintended Content (AKJ).