

Evaluation of Use of Natural Gas and Bunsen Burners Inside Biological Safety Cabinets

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Applies To: Researchers needing an alternative to using a constant flame or natural gas inside a biological safety cabinet.

Environment, Health & Safety (EHS) has performed a risk assessment on the use of constant flame and natural gas inside a biological safety cabinet (BSC) and determined this is not an acceptable practice due to risk; fire, disruption of airflow, and potential risk of gas leaks/gas recirculation. A disruption of airflow inside of the BSC can affect the operation of the BSC in terms of safety. The University of Michigan has had several incidents involving fire within BSCs related to the use of natural gas and/or Bunsen burners. The approval and use of natural gas will be evaluated by the EHS Biological Safety group in rare cases where no other alternatives are available. Manufacturers, as well as the CDC, have addressed this issue. A technical bulletin from Nuair is available at the following link [Technical Bulletin](#).

Modern methods and practices have circumvented the need for flame within BSCs. Aseptic techniques have demonstrated to be effective in maintaining sterility and minimizing contamination.

For alternative methods for standard Bunsen burners please see below.

Alternative Method with Use of Intermittent Flame

The alternative method **must** be assessed and approved by EHS Biosafety.

Examples:

- Argos FireStar™ XT Bunsen Burners
- Argos FireStar™ ST Bunsen Burners
- Available at: [Fisher*](#)



- Flame is not constant but controlled by the operator. This feature minimizes airflow disruption.
- Additional safety features can include; monitored burn time, gas consumption, zero pressure shut off, over-heat alarm, automatic gas valve shut-off if flame extinguishes, overheating protection and burner head control that detect faulty, clogged or missing burner heads

*Alternatives from other vendors may also be used.

EHS Biosafety Approved Flameless Alternatives**

<p>Micro incinerator Available at: VWR, Fisher*</p> 	<p>Quickly and Safely Sterilizes Metal Loops and Needles Protects from dangerous gases, flames and splatter</p>
<p>Disposable loops and inoculating needles Available at: Fisher*</p> 	<p>For use in microbiology applications as alternative to flame Plating, scraping, inoculation of bacteria</p>
<p>Sterile filter systems Available at: Fisher, Thomas Scientific*</p> 	<p>Ideal for filtration of tissue culture media and components, biological fluids, bacterial or virus preps, and other solutions Sterile method for decanting large volumes</p>

*Alternatives from other vendors may also be used.

**This list is not inclusive, additional alternatives may be available. For questions contact EHS Biosafety