



Boston University Environmental Health & Safety

## Bunsen Burners in Biological Safety Cabinets

During a recent visit from the Boston Fire Department there was concern over the use of hard lined natural gas to Bunsen burners in Biological Safety Cabinets. These items were a large topic of both identification and discussion. Many manufacture specifications also consider this to void the UL listing on their equipment. Please take a moment to evaluate the risks involved as well as the possible alternatives.

- ▶ **Are Bunsen Burners needed?** According to the BMBL open flames are not required in the near microbe-free environment of a biological safety cabinet. On an open bench flaming the neck of a culture vessel will create an upward air current that prevents microorganisms from falling into the tube or flask
- ▶ **How could this affect your work?** An open flame in a BSC creates turbulence that disrupts the pattern of HEPA-filtered air being supplied to the work surface. Increase the potential for recirculation of natural gas in the lab. Heat buildup may damage media, vitamins and amino acids. Expensive replacements for HEPA filters that are damaged due to heat.
- ▶ **are there risks involved?** Potential buildup of flammable/explosive gasses if not turned off properly, flammable disinfectants used in the cabinet, damage to HEPA filters from heat/flames. The use of Bunsen Burners may also cause the user to void a manufacturer specifications, UL approval and cause the BSC to not function as designed often these are designated by the warning on the biological safety cabinets:

### CAUTION

Use of toxic, explosive or flammable substances in this cabinet should be evaluated by your appropriate safety personnel.

## Process Alternatives and Suggested Actions

- ▶ **If the use of Bunsen Burners is unavoidable:** Do you have an emergency shut off valve that is accessible to the user? Is there an SOP in place for the user to ensure that is shut off between uses? Does your Bunsen burner have a dimmer switch? Please contact EHS for an evaluation.
- ▶ **Are there alternatives available?** Touch-plate micro burners equipped with a pilot light to provide a flame on demand may be used. Internal cabinet air disturbance and heat buildup will be minimized. Small electric “furnaces” are available for decontaminating bacteriological loops and needles and are preferable to an open flame inside the BSC. Disposable or recyclable sterile loops should be used whenever possible. EHS can assist in the search process
- ▶ **Gas lines to BSCs.** If it is determined by your evaluation that your lab does not require the natural gas line, we can request that the valve be closed. Please make EHS aware if you would like to close your gas lines.

*More information can be found in Appendix A – Primary Containment for Biohazards: Selection, Installation and Use of Biological Safety Cabinets of the Biosafety and Microbiological and Biomedical Practices. The use of open flames is discussed on page 35 of the Boston University Biological Safety Manual.*

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