

Environment, Health and Safety

Biosafety Update

UCSF Policy for Use of Open Flame Devices in Laboratories

Revised 04/26/2017



UCSF

Due to several recent incidents of fires occurring in biosafety cabinets, use of open flames (Bunsen burners) inside Biosafety cabinets (BSCs) will no longer be permitted at UCSF effective on 12/01/2016. Prohibition of open flame is intended to prevent fires or explosion within BSCs and prevent workplace injuries and illnesses for all UCSF employees. EH&S also highly recommends replacing all open flame Bunsen burners with alternatives (listed below) for open bench procedures.

The Bunsen burner was once a part of every microbiology laboratory and is still widely used today. As modern technology has advanced with the introduction of biological safety cabinets and sterile disposable items, the need for open flame use has become nearly obsolete. The CDC has stated that “open flames are not required in the near microbe-free environment of a biological safety cabinet and create turbulence which disrupts the pattern of air supplied to the work surface jeopardizing the sterility of the work area and safety of the worker.” Many institutions across the country, the major BSC manufacturers and the WHO also strongly discourage the practice.

UCSF does not permit the use of open flame Bunsen burner in the BSC for the following reasons:

- Airflow in the BSC can be seriously disrupted, compromising the protection of the worker and the product.
- Bunsen burners cause excessive heat buildup within the cabinet which may damage the cabinet HEPA filter or melt the adhesive holding the filter together, compromising cabinet integrity.
- Heat and fire present a potential fire or explosion hazard in the cabinet (pictured).
- Flammable gasses may recirculate and build up to the Lower Explosive Level and cause an explosion or fire.
- Use of flame and heat inactivates the manufacturer’s warranties on the cabinet and automatically voids the UL approval.



Only these approved alternatives for maintaining sterile conditions inside Biosafety cabinets (BSCs) are permitted by EH&S:

- Use disposable sterile loops and lab supplies.
- Autoclave tools and equipment.
- Replace Bunsen burners with Glass Bead Sterilizer or electrical incinerators as following.

1) Glass Bead Sterilizer: The glass beads in the well are maintained at 250 °C for quick sterilization of microorganisms and spores.



2) Bacti-cinerator: Utilizes infrared heat to incinerate organic material deep within the ceramic funnel.



EH&S recommends the following alternatives to open flame Bunsen burners for sterilization on open bench procedures:

- Use touch-plate microburner to provide flame on demand.
- Use touch-free gas burner.

1) Touch-O-Matic Bunsen Burner



2) Safety Lab Gas Burner



Safety enhanced laboratory gas burner with "Touch Free" IR-Sensor and button function