# Colgate University
## Institutional Biosafety Committee

**Colgate Institutional Biosafety Committee (IBC) Recommended Guidelines for the Safe Use of Biosafety Cabinets**

Biological Safety Cabinets (BSCs), aka Biosafety Hoods or Tissue Culture Hoods, are designed to provide a sterile environment for working with biological cultures that are prone to contamination (generally mammalian cell cultures). BSCs that are installed, certified, and used correctly provide protection to the user and the product.

The IBC expects PIs to ensure appropriate training for all potential users of a BSC to alert users to, and prevent, potential exposure and other risks.

All new BSCs at Colgate University must be purchased with consultation from the IBC, installed in accordance with NSF/ANSI 49 standards, and must be certified after installation (and annually thereafter).

- BSCs **are not** designed for use with volatile solvents or radioisotopes; for procedures involving these chemicals, use of a chemical fume hood is required.
- BSCs should always be used with appropriate personal protective equipment (PPE), to prevent contamination and potential exposure hazards. PPE includes gloves and lab coat; additional PPE should be used as recommended for the level of biohazard being handled.
- Vacuum flasks are recommended for disposal of liquid waste; all waste should be decontaminated appropriately prior to disposal.
- Open flames are **not recommended** for use in BSCs for the following reasons:
    - Open flames are not required for sterility, as the appropriate use of the BSC should guarantee a sterile work space. Surfaces may be decontaminated with appropriate solutions, generally 70% ethanol applied via wipes.
    - Open flames can compromise the sterility of the BSC; the heating of air from flames causes up-flow air that mixes with the down-flowing air in the cabinet to produce turbulence and recirculation of air within the BSC. This may lead to the generation of aerosols which can potentially contaminate cultures or create a risk of exposure to the BSC worker.
    - Excessive heat build-up may also damage the HEPA filter of the BSC, leading to decreased effectiveness and possible loss of containment.
    - The use of open flames in the BSC will inactivate any manufacturer's warranty, and automatically voids UL (Underwriter's Laboratories Inc.) approval.
    - Sources of open flames, particularly Bunsen burners, present a potential fire or explosion hazard; electrical components of the BSC, such as the fan motor, lights, and electrical outlets are not designed to operate in flammable atmosphere, where a spark could ignite a flash fire.
    - For inoculating bacterial cultures, sterile disposable loops or pipette tips are preferred; alternatively micro-burners or electric "furnaces" may be used.
    - If deemed **absolutely necessary** for the work to be performed, PIs may petition the IBC to use a pilotless burner or safety touch-plate microburner, as an alternative to a Bunsen burner.

In the end, for ensuring sterility, the BSC is only as effective as its user. Best practices include:

- Maintaining annual certification of the hood
- Operating cabinet blowers for at least 3-5 minutes prior to opening the sash to allow the BSC to purge particulates
- Using alcohol to clean the work surface of the BSC and to sterilize any glass being used; the amount of alcohol stored in the BSC should be for no more than one day's work.
- When working in the hood, moving arms in and out slowly, perpendicular to the face opening to reduce disruption of the air curtain.
- Do not cover the air intake vents (i.e. with paper, lab notebooks, etc.) during use.
- Perform all operations at least 4 inches from the front grille on the work surface.
- Do not bring potentially contaminated materials out of the cabinet until they have been surface decontaminated.
- UV light is not recommended as the sole means of decontaminating a BSC and should only be used in ways that minimize direct UV exposure to room occupants (i.e. by maintaining sash closure during UV use or by brief use while the room is not occupied).