



Ultraviolet (UV) Light Use in the Biosafety Cabinets (BSC) at JABSOM Kaka’ako

The NIH, CDC, NSF agree that the use of UV is neither recommended nor necessary in BSCs.

- Users should understand the proper use and limitations of UV germicidal lights if installed and used.
- UV lamps must be cleaned weekly to remove any dust/dirt/film that may inhibit the germicidal effectiveness of the ultraviolet light. Do not clean a UV bulb when it is on or hot; turn it off and allow it to come to room temperature. Do not touch the UV bulb with ungloved hands as oils from your hands can soil the bulb.
- The intensity of the UV light diminishes over time. The lamps should be checked periodically with a UV meter to ensure the appropriate UV intensity. When lights are left on for extended periods of time (e.g. overnight may be much longer than necessary), this will decrease the effective life span of the lamp.
- UV lamps pose health hazards. UV lamps must be turned off when the room is occupied to protect eyes and skin from UV exposure. The BSC sash must be closed when the UV lamp is on. If there is an open area below the sash when the UV lamp is on, the room may not be occupied. Some units in the BSB are interlocked so that the sash must be closed before the UV light will go on, but some are not.
- UV light may damage materials stored within the BSC, including plastics and rubber materials, e.g. aspirator tubing (although it is recommended by the NIH/CDC that materials not be stored in the BSC when not in use).

UV germicidal light limitations:

- **Penetration:** UV light does not penetrate soil or dust. Microorganisms beneath dust particles or beneath the work surface are not affected by the UV radiation. Areas hidden or shadowed from the light are not disinfected.
- **Relative Humidity:** Humidity decreases the effectiveness of UV light. Antimicrobial effects of UV light drops off precipitously above 70% relative humidity. This is generally not a major factor considering the labs in the BSB are air conditioned and the relative humidity is usually around 50%.
- **Temperature and Air Movement:** Optimum temperature for UV light output is 77 to 80°F. Temperatures below this optimum temperature result in reduced output of the antimicrobial wavelength. Moving air tends to cool the lamp below its optimum operating temperature and results in reduced output, therefore the blower should be off when the UV light is on. Some BSCs in the BSB are interlocked so that the UV lights will not turn on unless the blower is off and the sash is closed.
- **Lamp Cleanliness:** Dust and dirt can block the germicidal effectiveness of UV lights. UV lamps need to be cleaned weekly with an alcohol and water mixture.
- **Lamp Age:** The intensity of UV light emitted from UV lamps decreases with age, and bulb ratings (hours of use) may vary by manufacturer. UV lamps need to be checked periodically to ensure the intensity of UV light needed for germicidal activity is being emitted.

References:

- <http://dohs.ors.od.nih.gov/decontamination.htm>
- Biosafety in Microbiological and Biomedical Laboratories, 5th Edition, Appendix A – Primary Containment for Biohazards: Selection, Installation and Use of Biological Safety Cabinets. www.cdc.gov/biosafety/publications/bmbl5/BMML5_appendixA.pdf
- Use of Ultraviolet Lights in Biological Safety Cabinets: A Contrarian View; ABSA 2006. <http://www.absa.org/abj/abj/061104meechan.pdf>
- Position Paper on the Use of Ultraviolet Lights in Biological Safety Cabinets; ABSA 2006. <http://www.absa.org/abj/abj/061104burgener.pdf>