Quick Reference:

Hazards of Ultraviolet Radiation

Penn EHRS
Environmental Health & Radiation Safety

ULTRAVIOLET RADIATION

2 Levels of UV Radiation

- Non-ionizing: ranges from 40-400 nanometers and is the most common form of UV radiation being used in biomedical and microbiological research labs.
- Ionizing: ranges from 100-280 nanometers and is more concentrated then natural occurring UV, which poses a greater threat to personnel. Can be emitted from some types of lab equipment.

Exposure Hazards of UV

- Exposure to UV light can injure both eyes and skin
- Photokeratitis: inflammation of the cornea (outer protective coating of the eye). Can with very brief exposure or just a flash of UV light.
- Eryhema: sunburn of the skin. Can occur within a few seconds of exposure to UV. Prolonged exposure can cause premature aging and cancer of the skin

Safety Practices and Precautions

- Minimize eye and skin exposure by following best practices
- Always wear personal protective equipment (PPE) including gloves, face shields, and lab coat
- Never occupy BSC while UV lamp is activated.
- Do not work in a room where a UV light is active.
- Use Transilluminators ONLY with protective shield in place.
- Do not use Crosslinkers if the door safety interlocking mechanism is not working.

ADDITIONAL INFORMATION

Additional information and references can be found in Section 4.1 of the Biosafety Manual and on the EHRS website.

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LIMITS OF UV FOR STERILIZATION

- Germicidal lamp has **limited penetrating power** and **does not penetrate soil, dust, or solid objects**.
- The dynamic air stream in the BSC decreases the efficacy of the UV.
- **Intensity of lamp diminishes over time**, decreasing germicidal activity.
- **Humidity levels** above 70% decrese the germicidal effect of UV.
- **Temperatures** below 77°F reduce the output of the germicidal wavelength.
- EHRS does not recommend the use of UV for decontamination