Ultraviolet (UV) radiation is a form of electromagnetic radiation similar to visible light, but cannot be observed by the human eye. It ranges in wavelength from 10 nm to 400 nm and is divided into three sections: UVA (black light) 315 nm to 400 nm; UVB (erythemal) 280 nm to 315 nm; and UVC (germicidal) 100 nm to 280 nm.

**What injuries may occur from UV radiation sources?**
UV radiation is strongly absorbed by proteins and DNA. It does not penetrate deeply into tissue, but it greatly impacts the skin and the eyes (see figure below).

Acute exposure may cause erythema (redness of the skin) and photokeratitis (a feeling of sand in the eyes). Chronic exposure to UV radiation can cause cataracts, skin aging, skin or eye cancer, and/or immunosuppression (see table below). The International Agency for Research on Cancer (IARC) has classified UV, including the UVA, UVB, and UVC bands, as a Group 1 human carcinogen.

**What I need to do...**
- Enclose or orient UV source to contain or direct UV radiation away from the skin or eyes.
- Select eyewear that protects against UV radiation. NOTE: Polycarbonate safety glasses do not protect against high energy UV devices. Specialized safety glasses are needed.
- Keep sashes of BSCs and fume hoods equipped with UV lamps down during operation.
- Contact labsafety@usc.edu for more information.

Ozone generation without proper ventilation could reach lethal concentrations. Short-arc UV lamps are potential explosion hazards because their internal gas/plasma is under elevated pressure when operated.

**What are common sources of UV radiation at USC?**
Common UV sources at USC include: germicidal lamps in biosafety cabinets (BSC), clinics, and laboratories; hand-held UV devices (e.g., Woods Lamp); mercury vapor lights; curing lamps; UV lasers; ultraviolet light-emitting diodes (ULEDs); UV photolithography; welding and plasma arcs; and xenon lights.

**Are there any UV radiation standards?**
NIOSH recommends that exposure to 254 nanometers not exceed one minute at 100 microwatts per square centimeter. When averaged over an eight-hour work day, this value is 0.2 microwatts per square centimeter.

**References**
AIHA Non Ionization Radiation Committee
AIHA - Ultraviolet Radiation Quick Reference Sheet
National Institute for Occupational Safety and Health (NIOSH)
University of Rochester - UV Light