



## Eye and Skin Hazards

Hazardous effects can occur to various parts of the eye depending on the wavelength of the laser radiation. The injuries can vary due to the variance in how tissues absorb energy. The following are some examples of hazards that can affect the eye:

- Radiation at the visible and near-infrared wavelengths is absorbed and can have hazardous effects on the retina.
- Radiation at the near-ultraviolet and middle infrared wavelengths is absorbed and can injure the lens.
- Corneal absorption and associated effects can occur with far-infrared and middle-ultraviolet wavelengths.
- Corneal lesions and retinal lesions can occur from the heat resulting from the energy absorption and from photochemical reactions.
- Some transitional wavelength zones can result in both corneal and retinal damages.

## Associated Hazards

Although less frequent, the potential for injuries resulting from skin exposure to a laser beam should be treated just as strictly as the potential for eye injuries. In certain situations where eye protection is worn, skin exposure could represent a high level of danger.

Although eye and skin exposure to laser radiation represent the primary hazard associated with laser use, ancillary hazards associated with the use of lasers can be significant. Electrical shock, fire, injuries from cryogenics and chemicals are all potential hazards associated with laser use.

### **Electrical Hazards~**

Next to skin and eye exposure, electrical shock represents the highest potential for injuries from laser use, especially with the newer, high-powered lasers. The potential for electrical hazards most commonly results from inappropriate electrical installation, grounding, or handling of the high voltage associated with many lasers. Any Company unit responsible for the operation of any laser shall ensure the necessary protective electrical circuit design. The laser resonator and electro-optical elements should also be designed so that no exposed metallic element is above ground potential. All electrical installations must comply with NEC.











