

EH&S Fast Facts

LASER WARNING SIGNS & LABELLING



Principal Investigators who use lasers are responsible for ensuring that all lasers are appropriately labeled and warning signs are conspicuously posted.

Classes of Lasers

- **Class 2 & 2a laser:** A visible laser beam (400nm- 740nm) considered eye safe due to the eye blink reflex of 0.25 seconds, may be viewed up to 1000 sec. without injury
- **Class 3a laser:** A typical laser pointer, momentary viewing is safe, but acute viewing with an optical instrument is a hazard (power range is 1- 5 mW)
- **Class 3b laser:** Can be an eye hazard if viewed directly or if reflected from a mirror-like surface (specular reflection). Power ranges for continuous lasers are from 5- 500 mW, pulsed lasers are less than the blink of an eye (0.25 sec.)
- **Class 4 lasers:** Presents a hazard from specular and diffuse reflection to the eyes, skin, and can start fires in the lab. Power ranges for continuous waves are above 500 mW while the power range in a pulsed laser is greater than 125 mJ in 0.25 sec.

Requirements for Labeling & Posting

- **"CAUTION"** must be used with all signs and labels associated with class 2 and 3a lasers
- A class 2a laser must be labeled with the warning "Avoid Long Term Viewing of Direct Laser Radiation." Label does not need the warning symbol, but must be visible during operation and bear the designation "Class 2a Laser"
- **"DANGER"** must be used with all signs and labels associated with class 3b and 4 lasers
- Appropriate space must be left on all signs/ labels to allow significant information (included during the printing of the sign/ label or handwritten in a legible manner)
 1. Above the tail of the sunburst, the following special precautionary instructions or protective actions required for individuals entering the area
 - a. For class 2 - **"CAUTION - Laser Radiation - Do Not Stare Into Beam"**
 - b. For class 3a - **"DANGER - Laser Radiation - Do Not Stare Into Beam or View Directly with Optical Instruments"**
 - c. For class 3b - **"DANGER - Laser Radiation - Avoid Direct Exposure to Beam"**
 - d. For class 4 - **"DANGER - Laser Radiation - Avoid Eye or Skin Exposure to Direct or Scattered Radiation"**
 2. Above the tail of the sunburst, precautionary instructions or protective actions to be taken by the reader, such as "invisible beam", "knock before entering", "Do not enter when light is on", "Restricted Area"...
 3. Below the tail of the sunburst, the type of laser (Ruby, Helium-Neon) or emitted wavelength, the pulse duration if appropriate, and the maximum output
 4. At the lower right, the class of the laser

Visit www.ehs.ucr.edu for additional information or call EH&S at 827-5528 if you have any questions.