

Chapter 10: [Laser Safety](#)

Laser Pointer Requirements

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URL: <https://www-esh.slac.stanford.edu/eshmanual/references/laserReqLaserPointer.pdf>

1 Purpose

The purpose of these requirements is to prevent startle hazard, temporary flash-blindness, after images, glare responses, and permanent eye damage caused by unsafe use of laser pointers, which are hand-held battery-operated devices with a momentary on-off switch typically used as a pointing device during presentations.

They cover classifying, selecting, labeling, and using laser pointers, both personal and SLAC owned.

The requirements apply to anyone using a laser pointer at SLAC and the *laser safety officer (LSO)*.

2 Requirements

2.1 Classification, Selection, and Labeling

Laser pointers have a maximum power output of 5 milliwatts (mW) and create a low-power visible laser beam, with wavelengths between 400 to 700 nanometers (nm). These lasers are either Class 2 (<1 mW) or Class 3R (<5 mW).

Note Class 3R lasers were formerly designated as Class 3a lasers and may be labeled this way.

- When choosing a laser pointer it is the best practice to pick a Class 2 laser. Most commercially available laser pointers, however, are Class 3R.
- Laser pointers must be labeled with a CAUTION label (commercial Class 3a or 3R laser pointers may have a DANGER label, which is also acceptable).
- Green, blue/violet, and all non-red laser pointers should be evaluated by the LSO to verify that they do not exceed the Class 3R output limit.
- For a safety evaluation of a laser pointer or if you have questions on laser pointer safety, contact the LSO.

Warning Relatively inexpensive battery-operated hand-held laser “pointers” that are Class 3B (some Class 4) are now commercially available, which are well in excess of the 5 mW legal limit for laser pointers. These devices can be very dangerous; they may also incorrectly state the laser class on their label. Use of all Class 3B and Class 4 lasers at SLAC must be approved by the LSO; LSO approval for a Class 3B or Class 4 laser “pointer” will not be given.

Warning Some commercial non-red laser pointers have been observed to be missing an infrared (IR) filter, which results in dangerous emission of IR laser light that the user is unaware of. (Such laser pointers are not simple single-wavelength diode lasers but are a diode-pumped solid-state laser. A non-linear crystal is used to generate the visible wavelength and then an IR filter must be used to block invisible IR wavelengths.)

2.2 Use

- Never point a laser pointer at a person. Permanent damage is possible if the beam is stared into, but there is also the possibility of startle hazard, temporary flash-blindness, after images, and glare response.
- Only point at inanimate objects.
- Laser pointers are not toys. Children should not be allowed to use them unless adequately supervised.

3 Forms

The following forms and systems are required by these requirements:

- None

4 Recordkeeping

The following recordkeeping requirements apply for these requirements:

- None

5 References

[SLAC Environment, Safety, and Health Manual](#) (SLAC-I-720-0A29Z-001)

- [Chapter 10, “Laser Safety”](#)

Other Documents

- [Food and Drug Administration \(FDA\). Illuminating Facts About Laser Pointers](#)