

Chapter 10: [Laser Safety](#)

Core Laser Safety Practices

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

1 Purpose

The purpose of these requirements is to avoid harmful exposure to lasers.

They cover using Class 3B or Class 4 lasers.

They apply to *qualified laser operators (QLOs)* and *laser controlled area (LCA) workers*.

Note For a poster version of this information, see the [Core Laser Safety Practices Poster](#) on the [Laser Safety Program Site](#) (SharePoint) > Signs and Labels.

2 Requirements

Item	Requirement
1	- Select proper eyewear; check condition and ensure proper fit before each use - Ensure all personnel present wear correct eyewear
2	Be knowledgeable of all safety controls and equipment safety features
3	Remove or cover jewelry, watches, et cetera if the objects may be near the beam path
4	Communicate: alert others prior to turning on laser, opening shutters, or creating new beam paths
5	Exclude unnecessary personnel during alignment
6	- Have good diagnostics available for indirect viewing of the laser beam such as fluorescent cards, charged-couple device (CCD) cameras, or infrared (IR) viewers - Consider implementing remote viewing with cameras and monitors
7	- Keep primary and stray beams in horizontal plane below eye level when possible - Avoid bringing eyes near plane in which the laser propagates
8	- Check for and block stray beams. - When placing a new optical component in the beam, locate and block all stray reflections before proceeding to next step
9	- Use beam blocks, in particular if inserting or removing optics - Block the beam upstream until beam is needed - Place a block downbeam of optic path being aligned
10	Use special caution when using periscopes, beam-splitting polarizers, and other optics that may generate out-of-plane beams: secure appropriate beam blocks to contain possible stray beams

Item	Requirement
11	▪ Use <i>Class 1 enclosures</i> to eliminate laser hazards when possible ▪ Use barriers, beam tubes, and table enclosures or side shields when possible
12	▪ Use irises to aid in alignment
13	▪ Use minimum intensity needed ▪ Use low-power alignment lasers when possible
14	▪ Secure all optics to table ▪ Practice good housekeeping
15	▪ Perform <i>zero energy verification</i> when disabling a laser hazard such that laser eyewear can be removed, in accordance with the <i>standard operating procedure (SOP)</i>

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”](#)
 - [Laser Safety: Class 3B and Class 4 Laser Operation Requirements](#) (SLAC-I-730-0A05S-004)
 - [Laser Safety: Class 3B and Class 4 Laser Eyewear Protection Requirements](#) (SLAC-I-730-0A05S-007)
 - [Laser Safety: Class 3B and Class 4 UV Laser Operation Requirements](#) (SLAC-I-730-0A05S-012)
 - [Core Laser Safety Practices Poster](#), available from [Laser Safety Program Site](#) (SharePoint) > Signs and Labels