NATIONAL ACCELERATOR LABORATORY

ENVIRONMENT, SAFETY & HEALTH DIVISION

Chapter 10: Laser Safety

Core Laser Safety Practices

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URL: https://www-group.slac.stanford.edu/esh/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*.

2 Requirements

Item	Requirement
1	▪ Select proper eyewear; check condition before each use ▪ Ensure all personnel are wearing appropriate 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
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: 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
11	▪ Use *Class 1 enclosures* 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, and use low-power alignment lasers when possible
14	▪ Secure all optics to table ▪ Practice good housekeeping
15	▪ Perform *zero energy verification* when disabling a laser hazard such that laser eyewear can be removed, in accordance with the *standard operating procedure (SOP)*

3 Forms

The following are forms 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)