University of South Carolina

Radiation Safety Office
New and Current User / Ancillary Personnel Laser Training Documentation
Class 3B and 4 lasers / Class 1 and 2 lasers utilized with optical aids for research or teaching

Instructions and Training Content

1. The purpose of this training form is to provide guidance to Principal Investigator(s) for the documentation needed to ensure all users of hazardous lasers, and ancillary personnel within a controlled area where hazardous laser energy is located, understand the controls and procedures needed to protect themselves from primary and reflected beam hazards.

2. The American National Standards Institute (ANSI) promulgates guidelines for the safe use of lasers in ANSI safety series Z136.1; American National Standard for the Safe Use of Lasers. ANSI also promulgates supplemental guidance for conducting laser hazard evaluations; ANSI Z136.4, the American National Standard Recommended Practice for Laser Safety Measurements for Hazard Evaluation; and guidance for operators and ancillary personnel for hazardous laser(s) use in a research, development or testing environment (ANSI Z136.8) that relaxes more stringent requirements in ANSI Z136.1 while still maintaining controls and protections. These guidelines are strictly copyright controlled and available for purchase from the Laser Institute of America (http://www.lia.org), the secretariat to the ANSI laser safety guidance documents.

3. The University's Radiation Safety staff has current copies of ANSI Z136.1, Z136.4 and Z136.8 and can provide assistance with hazard evaluation and recommended controls at the request of the Principal Investigator. The Principal Investigator is ultimately responsible for deciding on the required hazard controls. Email radsafe@mailbox.sc.edu to request assistance.

4. Topics recommended for coverage in initial an annual re-training include, but are not limited to:

    a. Nominal Hazard Zone (NHZ): The nominal hazard zone must be clearly defined in a proper hazard evaluation and must include all potentials for a reflected beam.
    b. Alterations made to the hazardous laser to limit the NHZ; including enclosures around the laser action points where the beam is exposed.
    c. Signage to warn university faculty, staff, students and the general public where the NHZ is located (for instance, a lab door entrance) and the requirements to ensure that the warnings are operated appropriately (for example, turning on the illumination of a laser hazard sign at the entrance when a hazardous laser in the lab is operated).
    d. The appropriate laser protective eyewear that the hazard evaluation determines must be worn if a direct or reflected beam could be exposed in the NHZ that has the potential to strike the eye of an operator or ancillary personnel in the area of the NHZ, including the laser wavelength required for protection and the optical density (O.D.) of the eyewear required to reduce the beam energy to those safe for the eye where the cornea or retina cannot be damaged.
    e. If a laser classed as 3B or 4 by the manufacturer has been modified internally at the university so that the laser can be re-classed to a Class 1 system (interlocked enclosure around the laser, for example); procedures for normal operation need to be reviewed including maintaining the interlocks during normal operation.
        - If the interlocks to a Class 1 system, containing an internal Class 3B or 4 laser, are modified for any purpose including laser alignment or maintenance, an NHZ must be declared and full controls for all personnel within the NHZ (appropriate eyewear, etc.) while interlocks are defeated must be maintained. The NHZ must be posted (warning signs at the lab entrance) during maintenance or repair.
    f. All current written procedures maintained by the Principal Investigator for operation of all lasers within their laboratories must be reviewed; with users and ancillary personnel within the NHZ signing this form that they understand all requirements for protection from hazardous forms of laser energy as designated by the Principal Investigator.
    g. If multiple lasers are on a light table; the hazard evaluation needs to include all lasers and optical paths on the table with an understanding of protections needed from direct and reflected beams.

If the Principal Investigator uses this form; please submit a copy of this form to Radiation Safety whenever a new user is added or when annual in-laboratory retraining is completed for all current users and ancillary personnel within the NHZ.

The ARSO – electronic products will email all known Principal Investigators utilizing hazardous lasers in January of each year to remind them of the initial and annual retraining guidance promulgated by ANSI.

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If using this form, please fax or email updates or annual in-lab training documentation to Radiation Safety at 803-777-5275 or radsafe@mailbox.sc.edu.

Training Record

PI:	**DEPARTMENT:**

BUILDING :	**LABORATORY ROOM:**
Laser Equipment manufacturer:	**Laser Model / Serial #:**
Laser Class or Classes:	**Trainer Signature and Date:**

Note: If multiple lasers, on a light table for example, are included together, list the laser information for each individual laser on the back of this form and provide a sketch of the light table with the location of the lasers and optics.

By signing below you hereby certify that you have received and understand the hazard evaluation conducted for lasers operated within the nominal hazard zone by the Principal Investigator, and the methods you need to use to protect your eyes and/or skin from the direct and/or potentially reflected beams.

	Signature	First Name Last Name (Please Print)	Title	Operator (O) or Ancillary Personnel (A)	Date
1					
2					
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Add a continuation page if needed.