

Chapter 2: Authorization to Use Lasers

AUTHORIZED USERS

Although no license is required for laser possession and use, the University authorizes the use of lasers in accordance with ANSI Z136.1 and 21 CFR. The USC laser safety program is based on these standards and regulations.

The Laser Safety Officer is responsible for ensuring that only qualified persons are authorized to use lasers and other laser-related devices.

A. Principal Authorized Laser Operators

Those faculty members who, because of their training and experience, have been designed by the Laser Safety Officer as being qualified to use laser equipment at USC are referred to as ***PRINCIPAL AUTHORIZED LASER OPERATORS (PALOs)***.

B. Authorized Laser Operators

All individuals other than the PALO who use lasers (e.g., graduate students post doctoral fellows, laboratory technicians, etc.) are referred to as ***AUTHORIZED LASER OPERATORS (ALOs)***. They shall:

- Meet all applicable training requirements before operating the laser.
- Operate lasers safely and in a manner consistent with safe laser practices, requirements, written SOPs (if required), and guidance from the PALO.

RESPONSIBILITIES OF AUTHORIZED USERS

A. Responsibilities of Principal Authorized Laser Operators

The Principal Authorized Laser Operator is directly responsible for all aspects of laser safety associated with their possession and use of laser systems. This responsibility includes:

- Complying with ANSI Z136.1 and 21 CFR regulations on safe laser usage.
- Complying with the USC Laser Safety Manual and policies of the Laboratory Safety Office.

- Assurance that only Authorized Laser Operators will use the laser and ensure that all laser operators complete laser safety training and medical surveillance requirements before they operate any laser.
- Providing standard operating procedures (SOP) for each different laser and procedure.
- Providing instructions on safe and proper laser practices to all persons working within the facilities of the PALO. These rules must be prominently posted in the laboratory area(s).
- Providing emergency procedures for laboratory personnel. These procedures must include the names and telephone numbers of key lab personnel as well as the Laser Safety Officer, to be contacted in case of an emergency. These procedures shall be prominently posted in work areas where laser systems and devices are used.
- Maintaining adequate control of the laser system to ensure that areas beyond the PALO's control are not adversely affected by its use.
- Providing necessary equipment for safe work with lasers and dyes.
- Properly labeling all lasers according to Class and Type.
- Notifying the Laser Safety Officer of any accident or abnormal incident involving or suspected of involving lasers or laser components.
- Informing the Laboratory Safety Office of any changes in personnel and any significant changes in lab design or procedures.
- Ensuring that each laser is stored securely and safely when not in use so that it is not useable by unauthorized personnel or under unauthorized conditions.

B. Responsibilities of Authorized Laser Operators

The ALO is responsible for:

- Being aware of and complying with the requirements outlined in this manual.
- Being aware of emergency procedures.
- Being aware of all standard operating procedures for safe laser use.
- Working with laser systems only after receiving adequate instructions about laser safety.
- Reporting any unsafe practices to the PALO and the Laser Safety Officer.
- Notifying Laboratory Safety of any accident or incident involving or suspected of involving a laser or non-ionizing radiation producing device.

C. **Absence of an Principal Authorized Laser User**

If the Principal Authorized Laser User is to be absent from the University for an interval of time:

- Less than four weeks:
 - Either:** Ensure that use of all lasers will be under the supervision of a qualified technical staff member (see “Training Requirements” in this Chapter.
 - Or:** Comply with rules for absence greater than four weeks.
- Greater than four weeks:
 - Either:** Suspend the use of all laser systems and ensure safe storage for the duration of the absence.
 - OR:** Submit to the Laser Safety Officer the name of a qualified individual who will assume responsibility for the safe use of the laser system (This individual must be an approved Authorized Laser Operator).

Principle Authorized Laser Operators leaving USC for visiting professorship at another institution and desiring to have lasers or laser components transferred there should refer to “Transfer of Laser Systems/Components” in Chapter 3.

D. Resignation of Principal Authorized Laser Operator

The following steps must be followed when a Principal Authorized Laser User leaves the University or resigns this position.

STEPS	PROCEDURE
1	Notify the Laser Safety Officer at least two weeks in advance of the departure
2	Complete transfer forms if the laser is to be moved.
3	Return to Laboratory Safety all Laser Safety Manuals issued to the Principal Authorized Laser Operator.
4	Return any personal protective devices issued to the Principal Authorized Laser Operator.
5	Ensure proper disposition of all laser equipment/devices and material: IF Laser devices are not to be used again... THEN Dispose of all of them by following routine disposal procedures according to the laser safety program. IF Lasers are going to another USC PALO. THEN Transfer them: (See "Transfer Laser Systems" in Chapter 3) IF Lasers are going to the Operator's new location... THEN Notify the Laser Safety Officer.
6	Make arrangements to have a post-operational eye exam. Laboratory Safety can provide approved clinics that perform this testing.

PERMIT TO USE LASERS AND LASER EQUIPMENT

A. Application for Permits

Any faculty member who wishes to become authorized to use lasers must contact the Laser Safety Officer and:

- Demonstrate experience and training in laser safety
- Have the facilities inspected by the LSO and correct any deficiencies
- Indicate the laser type, classification and power
- Describe the research project and probable frequency of laser operation
- Indicate waste disposal methods of dyes and laser-related chemicals
- Develop procedures for control of dyes, gases, electricity and general beam exposures
- Indicate waste disposal methods of dyes and laser related chemicals

No application or permit is required to operate a laser, but a laser registration form (Form LSP_C.1, Appendix C) must be submitted to and approved by the Laser Safety Officer prior to using a laser.

B. Area and Laboratory Inspections

The Laboratory Safety staff conducts bi-annual inspections for compliance in all areas authorized for storage and use of laser devices, chemicals and systems.

The PALO is notified a week before the inspection. Results will be discussed verbally with the PALO immediately after the inspection. A written report will be provided within 5 days of the inspection. Corrective items will be verified within fifteen days of the inspection.

TRAINING REQUIREMENTS FOR PERSONNEL WORKING WITH LASER SYSTEMS

A. Introduction

Laser safety training is mandatory for all Class 3 and 4 laser users. Any individual working with or around these lasers is required to receive pertinent training regardless of his/her position. The University has an obligation to its employees and students to provide them with:

- A safe working environment
- An awareness of the hazards to which they may be exposed
- Training in methods to protect themselves against those hazards

This training is required by the laser safety policy. It must be a joint effort between the Laboratory Safety Office and the Principal Authorized Laser Operator.

All individuals who work with or in the vicinity of class 3 and 4 lasers must be knowledgeable about the potential health hazards of non-ionizing radiation (lasers), methods and procedures to minimize exposure to laser radiation, and their rights and responsibilities under the USC Laser Safety Program.

B. Scope

An Authorized Laser Operator must have appropriate theoretical training in the use of laser equipment. Laboratory Safety with faculty members with expertise in laser safety conducts an annual “Laser Safety Seminar” that includes the characteristics of laser radiation, principles of non-ionizing radiation protection, biological effects (i.e. laser damage to the eyes and skin), laser classification, requirements and controls, laser eye protection, laser medical surveillance, non-beam hazards, laser acquisition, requisition, and inventory; chemical waste management and emergency response procedures. All new prospective Authorized Laser Operators and new faculty members are advised to attend this seminar. Faculty members with extensive training in laser safety, with equivalent training at another institution, will be exempted from this procedure provided they receive instruction about 21 CFR and ANSI Z136.1 on safe laser and USC policies and procedures.

C. Technical Staff and Students

All individuals designated as technical staff and students must successfully complete the “Laser Safety Seminar” at one of the two sessions immediately following commencement of their work with lasers.

Successful completion of this course is a prerequisite for working with laser systems and devices at USC.

Note:

- Prior to successful completion of the seminar, or receiving an exemption, individuals may work with laser systems only under the direct supervision and in the physical presence of another individual who has been appropriately trained.
- This policy does not relieve the Principal Authorized Laser Operator of their responsibility to provide in-service training for personnel working in his/her laboratory.

D. In-Service Training

Before an individual (faculty, staff or student) begins working in the lab, the supervisor (PALO) must provide instruction in:

- The procedures to be followed
- Protective clothing and safety devices to be used
- Emergency procedures
- Proper maintenance of records