



Nebraska Medicine Laser and Laser System Controls Review Form (Class 3B & 4)

Please complete the following form for all Class 3B and Class 4 lasers and laser systems in your area. Once completed, please upload a copy to your Laser Safety Teams folder and send a copy to Environmental Health and Safety (EHS) (Zip 5480 or unmcehs@unmc.edu). If you have any questions, please contact EHS at 402-559-6356.

General Information

Name:

Phone:

E-mail:

Building:

Room/Lab:

Department:

Medical Provider(s):

Date:

Laser and Laser System Information

Manufacturer:

Model:

Serial Number:

Biomed Tag Number:

Laser Type:

Laser Class:

General Considerations

Control measures are procedures or methods by which hazards associates with the safe use of lasers are minimized. Control measures are divided into: engineering controls, administrative (procedural) controls, and protective equipment.

Administrative (Procedural) Control Measures

1. Written **policies and procedures (P&Ps)** for operating and maintenance are established, maintained and readily available?

Yes

No

N/A

a. Safety P&Ps for servicing the HCLS are established, maintained and readily available?

Yes No N/A

2. **Manufacturers' procedures**, including written operating, maintenance, service, and calibration have been obtained from the manufacturer or distributor of the HCLS?

Yes No N/A

a. All safety items specified for the safe use of an HCLS (e.g. LPE, warning signs, adapters, interlocks, housings, connectors, eye safety filters, beam shutters and other peripherals) have been received and delivered to the laser use site?

Yes No N/A

b. The Deputy Laser Safety Officer (DLSO) periodically updates P&Ps based upon the latest safety information supplied by the manufacturer?

Yes No N/A

3. **Laser users are authorized personnel** who have been appropriately trained in the safe use of the HCLS?

Yes No N/A

4. **Maintenance and service of Class 3B and Class 4 HCLSs** are performed only by technicians certified in laser service by the manufacturer or have other specific qualifications for medical devices?

Yes No N/A

5. **Administrative and procedural controls** are used to avoid potential hazards associated with Class 3B and Class 4 HCLSs.

Yes No N/A

Administrative and procedural controls include the following:

a. Adhering to written P&Ps.

Yes No N/A

b. Assigning a dedicated person to operate the controls, if applicable, when appropriate for the procedure and practice setting? [The laser operator should not have competing responsibilities that would require leaving the laser unattended during potential operation. Staffing assignments for a laser procedure should be evaluated using the following criteria: patient assessment and acuity, laser type and wavelength, procedure location and complexity, presence and type of anesthesia, and the competency of laser user and operator.]

Yes No N/A

- c. Maintaining a list of authorized laser users and HCP.
- | | | |
|-----|----|-----|
| Yes | No | N/A |
|-----|----|-----|
- d. Requiring storage or disabling (removal of key) of the HCLS to prevent unauthorized operation.
- | | | |
|-----|----|-----|
| Yes | No | N/A |
|-----|----|-----|
- e. Assuring that laser operators know the location and operation of the emergency stop control provided with each HCLS.
- | | | |
|-----|----|-----|
| Yes | No | N/A |
|-----|----|-----|
- f. Assuring that the laser is kept in a safe or standby mode and that the ready function is enabled only when the user is ready to treat the target tissue.
- | | | |
|-----|----|-----|
| Yes | No | N/A |
|-----|----|-----|
- g. Using only diffuse reflective materials or instruments with low reflectance in or near the beam path, where feasible.
- | | | |
|-----|----|-----|
| Yes | No | N/A |
|-----|----|-----|
- h. Taking steps to avoid confusion encountered during surgical procedures when operating with more than one floor pedal.
- | | | |
|-----|----|-----|
| Yes | No | N/A |
|-----|----|-----|

Engineering Controls

6. Is a **guarded switch** available for the health care laser system (HCLS)?
- | | | |
|-----|----|-----|
| Yes | No | N/A |
|-----|----|-----|
7. Is **accessory equipment** compatible with the HCLS, provide the requisite laser safety, and installed according to the manufacturer's instructions?
- | | | |
|-----|----|-----|
| Yes | No | N/A |
|-----|----|-----|
8. Are **HCLS equipment labels** visible during normal operation?
- | | | |
|-----|----|-----|
| Yes | No | N/A |
|-----|----|-----|
9. The DLSO will ascertain whether any changes in control measures are required following any **service and repair of laser systems?**
- | | | |
|-----|----|-----|
| Yes | No | N/A |
|-----|----|-----|
10. DLSO conducts an updated hazard evaluation following **equipment modifications?**
- | | | |
|-----|----|-----|
| Yes | No | N/A |
|-----|----|-----|

Laser Use Environment

11. The DLSO has determined the **nominal hazard zone (NHZ)** with consideration of optical viewing systems, service personnel, beam alignment procedures, direct, reflected, and scattered radiation transmission through open doors or transparent windows, as well as equipment malfunction or the intrusion of unauthorized, unprotected people?

Yes No N/A

a. Suitable safety practices and procedures are maintained within the NHZ?

Yes No N/A

12. The **laser treatment controlled area (LTCA)** is clearly delineated?

Yes No N/A

a. The LTCA is posted with the appropriate area warning signs and laser protective eyewear (LPE) provided at the entryway?

Yes No N/A

b. The LTCA is supervised by a health care provider (HCP) trained in laser safety?

Yes No N/A

c. The LTCA is occupied only by patients and appropriately trained HCP or other authorized persons who shall be provided upon entry the appropriate PPE for use within the NHZ?

Yes No N/A

d. Have all windows, doorways, open portals within, or allowing access into, the NHZ covered or restricted in such a manner as to reduce the transmitted laser radiation to levels at or below the appropriate ocular maximum permissible exposure (MPE)?

Yes No N/A

e. Is a door, blocking barrier, screen or curtains used to attenuate laser radiation in the entryway?

Yes No N/A

f. Are area/entry safety controls designed to allow both rapid egress and admittance to the LTCA under emergency conditions?

Yes No N/A

13. **Surgical probes and optical fibers** have been evaluated by the DLSO?

Yes No N/A

14. **Patient eye protection** is utilized when the patient's eyes are potentially within the NHZ?

Yes No N/A

Maintenance and Service Procedural Controls

15. Written **operation, alignment and calibration procedures** are available?

Yes No N/A

a. Alignment and calibration procedures used during routine perioperative check of HCLSs include (but are not limited to):

i. Output coupler alignment of high power laser and aiming beams?

Yes No N/A

ii. Power meter verification and calibration?

Yes No N/A

b. Procedures are performed in such a manner that there is no exposure of the eye or skin above the applicable MPE?

Yes No N/A

16. **Safety** during alignment procedures is taken into consideration?

Yes No N/A

a. Alignment of laser optical systems (e.g. mirrors, lenses, beam deflectors) are performed in a manner that the primary beam, or a specular or diffuse reflection of a beam, does not expose the eye to a level above the MPE?

Yes No N/A

b. Written procedures detailing alignment methods are provided by the manufacturer?

Yes No N/A

c. Low power (Class 1 or Class 2) visible lasers for path simulation of higher power lasers are used for alignment of higher power visible or invisible lasers and laser systems?

Yes No N/A

17. **TLCA** safety requirements satisfied during conditions (e.g. service, demonstrations, educational laboratories, training) where removal of panels or protective housings, over-riding of protective housing interlocks, or entry into the NHZ becomes necessary?

Yes No N/A

18. **Service personnel** who require access to the laser or laser system contained within a protective housing or beam enclosure for the purpose of service comply with the appropriate control measures?

Yes No N/A

- a. Service personnel have received education and training commensurate with the class of the embedded laser or laser system being serviced?

Yes No N/A

Personal Protective Equipment (PPE)

19. **PPE** is used by all people within the NHZ when a Class 3B or Class 4 laser is operating?

Yes No N/A

20. **Laser protective eyewear** specifically selected to reduce the potential ocular exposure below the applicable MPE?

Yes No N/A

- a. LPE is accompanied with the optical density at appropriate wavelengths and the manufacturer's recommendations on shelf life, storage conditions, and appropriate cleaning methods?

Yes No N/A

- b. LPE specifically selected to withstand either direct or diffusely scattered beams?

Yes No N/A

- c. Flammability factor is considered when selecting LPE?

Yes No N/A

- d. Damaged or faded LPE are removed from service?

Yes No N/A

21. **LPE for fiberoptic procedures** is worn whenever the distal end of the fiber is open and exposed to and a potential hazard exists that exceeds the MPE within the NHZ?

Yes No N/A

- a. A distinction is made between unprotected fibers and permanently attached armored fibers used as part of an optical delivery system?

Yes No N/A

22. **LPE for endoscopic procedures** is worn?

Yes No N/A

- a. If no, procedural controls are sufficient, as determined by the DLSO to limit accidental exposure during endoscopic procedures?

Yes No N/A

23. **Microscopes and other optical viewing instruments** equipped with appropriate protective filters to ensure that all potential viewing paths are protected?

Yes No N/A

a. If no, LPE worn by persons viewing the laser target site through microscopes and other optical viewing instruments?

Yes No N/A

24. LPE has an adequate **Optical Density** for the wavelength(s) emitted by the laser?

Yes No N/A

25. LPE is clearly marked and permanently labeled with the OD and wavelength for which protection is afforded?

Yes No N/A

26. **Cleaning and disinfection procedures** of LPE lenses are conducted in accordance with the manufacturer's recommendations?

Yes No N/A

27. **Periodic inspection** of LPE is conducted?

Yes No N/A

Periodic inspection includes the following:

a. Inspection of the attenuation material for pitting, crazing, cracking, discoloration?

Yes No N/A

b. Inspection of the frame for mechanical integrity?

Yes No N/A

c. Inspection of straps or other retaining devices to ensure that they are not excessively worn or damaged?

Yes No N/A

d. Inspection for light leaks and coating damage that would permit hazardous intrabeam viewing?

Yes No N/A

28. **Laser protective barriers and curtains** are used when the MPE for human skin is exceeded at the windows, exterior or interior, or entryways that are located within the NHZ?

Yes No N/A

29. Only wet or flame retardant **drapes** used in the operative field?

Yes No N/A

Area Warning Signs and Equipment Labels

30. Area warning signs are conspicuously **displayed** on all doors entering the LTCA to warn those entering the area of laser use?

Yes No N/A

a. Area warning signs are covered or removed when the laser is not in use?

Yes No N/A

31. Are the appropriate **signal words**, applicable to the class of laser or laser system, posted?

Yes No N/A

32. **Pertinent information** included on area warning signs and equipment labels in accordance ANSI Z535.2?

Yes No N/A

33. **TLCA notice sign** posted outside the TLCA?

Yes No N/A

34. **Exhibits, demonstrations, and clinical training** requirements of HCLS are met?

Yes No N/A

****For EHS Use Only****

Form reviewed on:

By:

Comments: