OSU Laser Safety Self-Audit Checklist

Building & Room _____ Principal Investigator _____ Date _____

Audit Performed by_____	Y	N	NA	COMMENTS
A. Administrative				
1. Lasers are classified appropriately (2, 3a, 3b, 4a, 4b)				
2. Standard operating procedures are available				
3. Alignment procedures are available				
4. Viewing cards are used for alignment				
5. Laser users attended appropriate training				
6. Lasers are included in inventory				
B. Labeling and Posting				
1. Certification label present				
2. Class designation and appropriate warning label present				
3. Radiation output information on label				
4. Aperture label present				
5. Appropriate warning/danger sign at entrance to laser area				
6. Warning posted for invisible radiation				
C. Control Measures				
1. Protective housing present and in good condition				
2. Beam attenuator present				
3. Laser table below eye level				
4. Beam is enclosed as much as possible				
5. Beam not directed toward doors or windows				
6. Beams are terminated with fire-resistant beam stops				
7. Surfaces minimize specular reflections				
8. Controls located so operator is not exposed to beam hazards				

Key to Laser Safety Checklist

A. Administrative

1. Lasers are classified by the manufacturer, but must be reclassified by the principal investigator if the system is altered or constructed in the laboratory.
    - Class 2 designates lasers in the visible range (400-700 nm) where radiant power does not exceed 1 mW.
    - Class 3a designates visible lasers with 1 – 5 mW radiant power.
    - Class 3b designates lasers with radiant power ranging 5 mW – 500 mW.
    - Class 4 lasers have radiant power exceeding 500 mW.
2. Self-explanatory
3. Self-explanatory
4. Self-explanatory
5. All faculty, staff and students operating Class 2, 3 or 4 lasers must attend training given by EH&S.
6. All lasers must be included in the OSU laser inventory maintained by EH&S. Any new laser system must be reported to EH&S at 737-2273.

B. Labeling and Posting

1. The manufacturer's certification label must be affixed to the laser housing.
2. The laser housing must bear a sticker which includes the class designation and appropriate warnings.
3. The laser labeling must include the output radiant energy or power.
4. Self-explanatory.
5. At the entrance to the room, the following signage is necessary:
    - Class 2: CAUTION, Laser Radiation (or laser symbol), Do Not Stare Into Beam
    - Class 3a: DANGER, Laser Radiation (or laser symbol), Avoid Direct Eye Exposure
    - Class 3b: DANGER, Laser Radiation (or laser symbol), Avoid Direct Exposure To Beam
    - Class 4: DANGER, Laser Radiation (or laser symbol), Avoid Eye or Skin Exposure to Direct or Scattered Radiation
6. If laser is not visible range (e.g., not 400-700 nm), warning sign should be posted stating that the beam is not visible.

C. Control Measures

1. Self-explanatory
2. Self-explanatory
3. Laser table should be set up such that the beam is below eye level when sitting or standing.
4. Self-explanatory
5. Self-explanatory
6. Self-explanatory
7. Self-explanatory
8. Self-explanatory

	Y	N	NA	COMMENTS
D. Personal Protective Equipment				
1. Eye protection is appropriate for wavelength				
2. Eye protection has adequate OD				
3. Warning/indicator lights can be seen through protective filters				
E. Class 3b and 4 Lasers				
1. Interlocks on protective housing				
2. Service access panel present				
3. Limited access to spectators				
4. Nominal hazard zone determined				
5. No watches or reflective jewelry worn while laser is operating				
6. Viewing portals present where MPE is exceeded				
F. Class 4 Lasers				
1. Failsafe interlocks at entry to controlled area				
2. Area restricted to authorized personnel				
3. Laser may be fired remotely				
4. If present, curtains are fire-resistant				
5. Area designed to allow rapid emergency egress				
6. **Pulsed –** interlocks designed to prevent firing of the laser by dumping the stored energy into a dummy load				
7. CW – interlocks designed to turn off power supply or interrupt the beam by means of shutters				
8. Operators know not to wear ties around the laser				
G. Non-Beam Hazards				
1. High voltage equipment appropriately grounded				
2. High voltage equipment located away from wet surfaces or water sources				
3. High voltage warning label in place				

Key to Laser Safety Checklist

D. Personal Protective Equipment

1. Eye protection should bear markings indicating the optical density and wavelength that the eyewear protects
2. Optical density must be appropriate for the laser system.

   OD = $\log_{10}$ (anticipated worst case exposure in W/cm^2 or J/cm^2)/MPE
3. Self-explanatory

E. Class 3b and 4 Lasers

1. Interlocks must be provided on removable parts of the housing.
2. Service access panels should be interlocked or require a tool for removal.
3. Spectators must be provided appropriate personal protection and be warned of the associated hazards of the laser.
4. The Nominal Hazard Zone (NHZ) must be calculated and marked to warn individuals within the NHZ that protective equipment is needed.
5. Watches and reflective jewelry may create hazardous specular reflections.
6. Recommended.

F. Class 4 Lasers

1. It is strongly recommended that interlocks be placed at entryways to the controlled area such that the laser system shuts down upon entry of unauthorized personnel.
2. Self-explanatory. Visitors or spectators must be warned of hazards and given protective equipment.
3. It is strongly recommended that the laser be monitored and fired remotely.
4. Self-explanatory.
5. Self-explanatory.
6. Self-explanatory
7. Self-explanatory
8. Ties may accidentally get into the path of the beam

G. Non-Beam Hazards

1. Self-explanatory.
2. Self-explanatory. Operators should take care not to handle electrically charged equipment when hands are wet or sweaty.
3. Self-explanatory.