



Laser Safety Self-Inspection Form

Attach a print out of the laser information from the EHS laser registration web site for this laser. If you attach the print out you do not have to fill in the “Laser Supervisor Information” or the “Laser System Information” on this page.

Laser Supervisor Information					
Last Name	Cromar		First Name	William	
Campus	Abington	Building	Rydal	Office#	002
Office Phone #	267-670-1945	E-mail Address	wrc11@psu.edu		
College	Abington		Department	MakerSpace/Academic Affairs	

Laser System Information					
Campus	Abington	Building	Rydal	Room#	002
Serial #	02235	EHS Laser ID #		Class	1
Embedded Class	3R	Type	CO2	Wavelength	10.6
Output Type	NA	Manufacturer	Full Spectrum	Model	Hobby Engraver
Beam Diameter		Pulsed Energy		Power Output	
Pulse Width		Repetition Rate		Beam Delivery	
Is laser used in a class room setting? It is used in a publicly accessible maker space					

Laser Inspection Information		
Inspection Date		
Person(s) Conducting Inspection		
EHS Present for Inspection	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Corrective Actions Required	Yes <input type="checkbox"/>	No <input type="checkbox"/>

During the inspection the following items were checked and were found to be Satisfactory, Not Satisfactory, or Not Applicable. Check Applicable Box.

Entrance properly posted	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: All signs shall be conspicuously displayed in locations where they best will serve to warn onlookers. Templates for printing your own signs are available on the laser safety page of the EHS web site.			

Room Security adequate	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Are engineering or administrative controls in place to prevent someone from entering the area while the laser is running and being exposed to the beam?			

Door interlock system	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: If a door to the laser area is opened while the laser is running will that automatically shut down the laser beam.			

Interlock functioning	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Test the door interlock by opening the door to verify that the laser is shut down and no exposure hazard exist.			

Laser status indicator outside room	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Is there an audible and/or illuminated sign outside of the laser area that indicates that the laser is being activated or in use?			

Laser class label in place	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Commercial laser products manufactured in compliance with Federal Laser Product Performance Standard (FLPPS) will be certified by the manufacturer and will incorporate this control.			

Laser hazard label in place	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Commercial laser products manufactured in compliance with Federal Laser Product Performance Standard (FLPPS) will be certified by the manufacturer and will incorporate this control.			

Laser aperture label in place	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Commercial laser products manufactured in compliance with Federal Laser Product Performance Standard (FLPPS) will be certified by the manufacturer and will incorporate this control.			

Protective housing in place	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Commercial laser products manufactured in compliance with Federal Laser Product Performance Standard (FLPPS) will be certified by the manufacturer and will incorporate this control.			

Interlock on housing	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Commercial laser products manufactured in compliance with Federal Laser Product Performance Standard (FLPPS) will be certified by the manufacturer and will incorporate this control.			

Interlock on housing functioning	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: If the laser has had no modifications and is as received from the manufacturer the interlock functionality check can be skipped. If the housing has been removed for any reason the interlock must be checked. To check the interlock remove the housing and try to actuate the laser. If the laser does not start the interlock is functioning. Please take safety precautions in the event the interlock is faulty and the laser activates during this test.			

Beam shutter present	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Does the protective housing have a beam shutter or attenuator that is capable of preventing access to laser radiation when the laser or laser system output is not required, as in warn up procedures?			

Key operation	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Commercial laser products manufactured in compliance with Federal Laser Product Performance Standard (FLPPS) will be certified by the manufacturer and will incorporate this control.			

Laser activation indicator on console	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Does the control console have an indicator that shows the operating status of the laser. That it is on, energized, or off?			

Emergency shutoff available	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Test the Emergency Shutoff to verify that it is functionally properly.			

Laser secured to table	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Is the laser in such a state that it can not be inadvertently bumped causing a stray beam?			

Laser optics secured to prevent stray beams	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Are the optics secured to prevent inadvertent bumping causing a stray beam?			

Laser not eye level	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Make sure the laser beam is not at a level that would be eye level for a person casually walking through room.			

Window in room covered	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Are there any lasers in the room emitting wavelengths that are not absorbed by glass? If so, are the windows covered to protect those on the other side?			

Physical evidence of stray beams	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Check the area for burn marks and signs of smoke residue.			

SOP available	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: The laser safety SOP must be available in the general area of the laser.			

All users have completed EHS laser safety training	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Training certificate must be in the laser safety program folder in the general area of the laser.			

Documentation that all users have been trained in the SOP	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Specific training must be documented in the specific training documentation form.			

Proper laser eye protection is available	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Verify that the proper eye protective is available for the laser users.			

Proper Skin Protection	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Skin Protection UV laser systems or UV excitation sources can present severe hazards to exposed skin surfaces. If the UV source cannot be enclosed to prevent scattered radiation exposure, it may be necessary to wear appropriate coverings to protect the skin. These coverings may include gloves, UV face shield, lab coat, etc.			

Toxic Laser media in use	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Toxic Dye Hazards The fluorescent dyes (used with dye lasers) can present substantial hazards due to their toxicity. Some of these dyes are suspected of being carcinogenic or mutagenic. The solvents used for mixing the dyes may be flammable, toxic, or present other health hazards. Material Safety Data Sheets (MSDS) on dyes or solvents are available from your department or by contacting EHS.			

Because the dyes normally come in a dry powder form, they are readily dispersible and should be handled and mixed with great care. A lab coat, disposable gloves, safety glasses or goggles, and a properly functioning chemical fume hood must be used when handling or mixing the dyes. Good housekeeping should be maintained before, during, and after the mixing. Use double containment adequate to contain the entire volume of the dye solution when they are being mixed, stored, and used. Clean up any spills immediately using the appropriate protective equipment. Contact EHS if you need additional information.

Cryogen in use	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Cryogen Hazards Some lasers and laser systems may require the use of cryogenic liquids (liquid nitrogen, oxygen, hydrogen, etc.). These liquids present skin and eye hazards from their extremely low temperatures and should not be handled without insulated gloves, goggles and a face shield. The dewars used for transport and storage of cryogens may present implosion hazards if they are made of glass. Glass dewars should be carefully wrapped with strong tape to contain glass fragments should they implode. If the cryogenic liquid is allowed to warm to room temperature, the resulting gas will expand to more than 600 times the volume in the liquid state. Once it expands to become a gas, the gas may present an additional hazard (toxic, asphyxiant, etc.). The specific hazards of the cryogen can be found in the MSDS.			

Compressed gas in use	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Compressed Gas Hazards The use of compressed gases is common in the laser laboratory. Some lasers use both pure gases and gas mixtures as the lasing media. The high pressure of the gas translates into substantial potential energy stored in the cylinder. If this pressure is released in an uncontrolled manner (such as broken nozzle) the cylinder can become an unguided missile. Compressed gas cylinders must be properly restrained to prevent damage to the nozzle or regulator. The gases themselves may present a variety of hazards if they leak from the cylinder. Depending on the gas, it may be toxic, corrosive, flammable, etc. Again, refer to the MSDS for detailed information on the gas in question. If the hazards are sufficient, it may be necessary to provide a gas cabinet under negative pressure to control the hazard in the case of a leak. Inform your department safety contact if compressed gases are to be used in the laser facility.			

Gas cylinder secured	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Verify that all gas cylinders are secured so that they can not fall over.			

High voltage power hazard	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: High Voltage Power Hazards The high voltage power supplies associated with laser systems have been responsible for serious injuries and electrocutions. For this reason, it is important to know the hazards associated with your laser and the laser's power supply. Capacitor systems are of particular concern because they can remain hazardous long after the main power is disconnected. Capacitor systems should be safely discharged several times with the main power off to reduce the hazard before beginning work. Only qualified persons should perform high voltage laser or power supply maintenance or repair. As a precaution, a second person (knowledgeable in high voltage safety and CPR) should always be in attendance when high voltage work is being performed.			

Electrical panels are unobstructed	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Verify unobstructed access to the electrical panel.			

X-ray radiation hazard	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency:			
Corrective Action (s) Implemented:			
Corrective Action (s) Completed on Date:			
Guidance: Collateral Radiation Hazards Laser excitation systems and power supplies may produce hazardous collateral radiation of various types. These hazards are normally controlled by the equipment housings, and are usually a problem only if the protective housings are removed. The laser excitation device may produce very intense UV/Visible/IR radiation that can be hazardous. Collateral ultraviolet radiation may injure both the eye and the skin if the exposure duration is long enough. Blue light presents a special hazard because of its ease of absorption in the retina. This "Blue Light Hazard" is thought to create photochemical injury in the retina. Exposure to any very intense visible light source can seriously degrade color vision and night vision capabilities. Exposure to these intense light sources should be carefully controlled or eliminated by leaving the housings in place.			

Laser power supplies capable of creating energies greater than 15 kVp may be a source of x-rays if they contain high voltage vacuum tubes. Electric discharge excitation sources in lasers may also be a source of x-rays. Generally, these x-rays are low energy and are shielded by the equipment housings.

Explosion hazard	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Explosion Hazards Explosion hazards in the laser lab include: the storage and use of flammable solvents and gases (both compressed and cryogenic) and the implosion potential from dewars and excitation flash lamps. Proper storage and control of these sources should reduce the potential hazard.			

Fire hazard	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Fire Hazards Class 4 lasers can present fire hazards. Lasers being operated in a CW mode with a beam power that exceeds 0.5 Watt can ignite or cause off-gassing in combustible materials left in the beam path. Beam stops, barriers, and curtains used with Class 4 lasers must be made of non-combustible materials. All Class 4 laser labs should have an ABC Type extinguisher readily available as a fire precaution.			

LGAC production	Satisfactory <input type="checkbox"/>	Not Satisfactory <input type="checkbox"/>	N/A <input type="checkbox"/>
Description of Deficiency: Corrective Action (s) Implemented: Corrective Action (s) Completed on Date:			
Guidance: Hazards from Laser Generated Air Contaminants (LGAC) The interaction of the laser beam with target materials may produce toxic dusts, vapors or gases called LGAC. This is particularly true during material processing (welding, cutting, vapor deposition, etc.). Toxic products resulting from laser processing must be properly controlled through the use of adequate ventilation and filtration. The RSO should be consulted whenever LGAC may result from the laser use.			

Comments:
