

University of Illinois Materials Research Lab (MRL)

May 2019



Important Dates and Reminders

IMPORTANT DATES:

AMC Workshop

- Tuesday & Wednesday, June 4 & 5, 2019
- MUST register
- <http://amc.mrl.illinois.edu/>

DAILY REMINDERS

- Use buddy system when working in labs
- Do not leave labs unlocked
- Be aware of your surroundings
- Remove lab PPE before leaving lab spaces. PPE is not allowed in public areas

Safety Newsletter

This month's topic is Laser Safety.

Laser Registration

The Illinois Emergency Management Administration (IEMA) requires that all Class 3b and Class 4 laser systems be registered with the state. At the University of Illinois this registration is done by the Division of Research Safety (DRS). All Class 3b and Class 4 laser systems must be registered with DRS as soon as they arrive on campus.

- Exemptions: Laser systems containing embedded Class 3b or Class 4 lasers, where the laser system's lower classification is appropriate due to engineering features limiting accessible emission, are exempt from the registration requirement. This exemption applies to laser systems where the laser beam does not exit the system and therefore poses no hazard to the user. Contact DRS if unsure if your system requires registration.

Registration Process

To see a list of lasers currently registered under you or your Principal Investigator (PI) click [here](#) (log-in required). Click on "add a laser" at the top of the page to register a new laser or to add an existing laser registered under another PI to your inventory. A laser is only registered once on campus but can be listed for multiple PIs. Please avoid duplicate registration.

Laser Safety Program Overview

Responsibilities

The PI/supervisor is responsible for the safe use of laser systems in his/her laboratory space. Responsibilities include:

- Ensuring that only authorized users operate the lasers;
- Ensuring that authorized users have completed the DRS online training [Laser Safety](#) and receive specific training for laser systems they are authorized to use; Training has to be refreshed annually (not to exceed 12 months) and documented;
- Ensuring that lasers are used in accordance with campus policies and that adequate control measures are in place to prevent exposure to laser radiation above the Maximum Permissible Exposure limit (MPE). See [DRS guidance document Laser Hazards and Control Measures](#) for more information.
- Providing adequate eye protection and other PPE as necessary;
- Ensuring that all lasers including those that were manufactured or modified in the lab are properly classified, labeled and registered;
- Ensuring that all accidents involving lasers are reported to DRS.

Laser Safety Audits

Audits will be conducted by DRS for first time registrants, as part of the Annual Laboratory Safety Audit, at the discretion of DRS and upon request. It is expected that findings will be addressed within two weeks.

Useful Contacts

MRL Safety Committee
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Laser Control Measures

Administrative Controls

- All Class 3b and 4 lasers must be registered with DRS.
- The lab safety plan must include SOPs for laser operation and alignment. If possible, alignment procedures should use minimum power.
- Laser users must receive initial and annual refresher training.
- The entrance to the laser area must bear a warning sign. DRS issues signs upon new laser registrations and upon request.
- All lasers including self-built systems must be labeled with a laser warning sign and aperture sign. If labeling is technically infeasible due to the dimension of the laser, other means of warning the user about its hazardous radiation have to be implemented if the laser is used by others than those involved in laser manufacturing. Possible other means could be accompanying documentation or training.

Personal Protective Equipment (PPE)

- Adequate PPE must be available and in good condition. Eye protection must be suitable for the laser wavelength and have sufficient optical density (OD) for the power of the laser. Wavelength and OD must be labeled on the eyewear. DRS will calculate OD requirements for registered laser systems.
- Eyewear must be inspected every six months and the inspection must be documented (required by IEMA regulation).
- For high-power lasers and UV lasers, gloves, clothing or shields may be required.

Engineering Controls

- Lasers must have their protective housing in place and interlocks working as intended during operation.
- Lasers in use must be mounted on a stable platform, preferably not at eye level unless the application requires otherwise.
- The beam must be controlled and confined to the laser area; unwanted reflections should be blocked. The beam should be enclosed as much as the application allows.
- A warning system for the entry door must be in place unless the beam is fully enclosed. Warning systems can be a light that is switched on or a flip sign that is turned when the laser is on.
- Unless the entry door to the laser area is interlocked, laser radiation must be attenuated by the door to below the MPE. Curtains or other barriers can be used to block the beam. During alignments, temporary barriers can be used.
- Access to laser controlled areas must be restricted (e.g. locking the door).
- Egress routes from the laser controlled area must be clear of obstructions.
- High-power lasers and infrared lasers require controls to minimize fire hazards, e.g. by terminating the beam in a fire-resistant material.