



UC IRVINE LASER SAFETY NEWSLETTER

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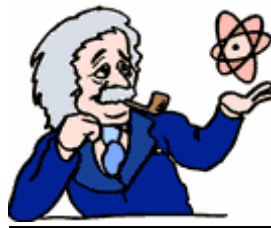
The purpose of this newsletter is to keep laser operators on the UCI campus informed regarding laser safety news, bargains on laser safety equipment (including protective eyewear), novel/inexpensive methods for controlling laser hazards, lessons learned (laser accidents), tips to improve safety, etc. These Newsletters are distributed approximately every 6 months, or whenever a laser safety issue with substantial immediacy arises. For past issues of this newsletter, please visit the Environmental Health & Safety web site under "Radiation & Laser Safety".



TRAFFIC CONTROL IN LASER LABORATORIES

Principal investigators and laser supervisors often implement policies specifying who is authorized to be present while open-beam laser systems are operated. **Ideally, the only individuals who should be permitted access are the ones actually required to perform the studies.** However, it is not uncommon to find other people in the immediate area while laser studies are underway. Laser operators are much more aware of the potential hazards presented by a laser manipulation and with the required safety procedures than the other people, who might have had no training or experience with lasers.

Principal Investigators and laser supervisors need to restrict access to laser laboratories while open-beam laser systems are operating. This requires keeping doors to laser laboratories locked and limiting keys to those doors to authorized personnel only. *Visitors must be excluded whenever any significant risks to the uninitiated and unprotected exist.* If janitors will be entering laser laboratories, accommodations for their presence must be made in advance. Master lockout keys should be removed from lasers when conditions warrant it.



MEMORABLE QUOTE

“No amount of experimentation can prove me right; a single experiment can prove me wrong.”

Albert Einstein



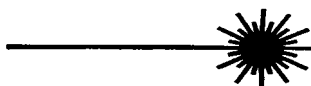
LASER WARNING SIGNS AND LIGHTS

Laser warning signs on doors and exterior “laser on” warning lights have limited usefulness. Because the signs are always posted on the laboratory doors even when the lasers are not in use, they become a permanent part of the landscape. Exterior “laser on” warning lights are helpful if they are used properly. However, if they are not tied into the electrical systems of the laser devices themselves, they are not as effective.

Sometimes personnel turn them on in the morning when the room lights are turned on, and they remain on all day until the room lights are turned off whether the laser in the room is operating or not. In other cases, operators forget to turn the lights on when lasers are started up, giving those entering the laboratory a false sense of security.

An effective means of alerting those intending to enter a Class 3b or Class 4 laser laboratory of a potentially hazardous condition is to hang warning signs from the doorknobs of the entry doors to the laser laboratory. The signs should include the laser sunburst symbol and warnings in appropriate languages. Seeing a sign on the doorknob when a person reaches for it draws attention to the sign and its message. Once lasers are turned off and hazardous conditions are eliminated, the doorknob signs can easily be removed and thus not cause the “part of the landscape” effect described above.

Laminated doorknob-type laser warning signs (see example below) are available from EH&S (contact me at 824-6098 or rcmannix@uci.edu). They include inscriptions in Spanish in order to warn janitorial staff to stay out of laser laboratories when open-beam lasers are operating.



DANGER!!!

****LASER OPERATING INSIDE**
DO NOT ENTER!**

PELIGRO!!!

****LASER ESTA OPERANDO ADENTRO**
NO ENTRAR!**



PROTECTIVE EYEWEAR

There are many vendors which sell protective eyewear for use when lasers are operated. They all sell good products. One company with which I have had very good experiences is the one below:

NoIR Laser Company.

P.O. Box 159 · South Lyon, MI 48178

Phone: 800-521-9746 · Fax: 734-769-1708

www.noirlaser.com

I have found that this company has very good products, excellent customer service, and very competitive prices for eyewear. In fact, educational institutions like UC Irvine get a 25 % discount below catalog prices for all the eyewear the company sells.

One feature I like about their catalog (available as a PDF file on the website above) is that they include optical density (OD) vs. wavelength graphs for each pair of eyewear. That way a laser user can easily see what the degree of protection (i.e., OD) is at each wavelength of interest. In addition, 8 different frame styles are available (various types of spectacles and goggles). If you need assistance in determining what OD is needed for your application, the sales representatives at NoIR can determine that for you. Be prepared to supply them with the following information:

For Continuous Wave Lasers

Type of laser/wavelength(s) emitted

Maximum laser power (milliwatts or watts)

For Pulsed Lasers

Type of laser/wavelengths emitted

Maximum pulse energy (normally microjoules or millijoules)

Pulse repetition frequency (how many pulses per second)

Pulse duration (nanoseconds, etc.)



MEMORABLE QUOTE

“The most important fundamental laws and facts of physical science have all been discovered, and these are now so firmly established that the possibility of their ever being supplemented in consequence of new discoveries is exceedingly remote.”

Albert Michelson (stated in 1903!!!)

Note: In cooperation with Professor E.W. Morley, Albert Michelson used an interferometer to show that light travels at a constant speed in all inertial systems of reference. *Michelson Drive near UC Irvine is named after him.*

If you have any questions concerned with laser safety, please contact Rick Mannix from EH&S (949-824-6098; rcmannix@uci.edu).

 **BE SAFE!!!**