

## Lasers



Lasers are used throughout the University community in research and teaching. Since the use of this technology constitutes a potential hazard to health, the possession and use of lasers is governed in the workplace by Manitoba Workplace Safety and Health. Effective February 1, 2007, the University of Manitoba has the duty to inform anyone that may be exposed to radiation from lasers at the University of the potential hazards (MB 217/2006 Workplace safety and Health Regulation Section 18.4). Additionally, lasers must be installed, used and maintained in accordance with ANSI Z136.1 (latest version) American National Standard for the safe use of Lasers (Section 16.28)

*High- powered lasers (Class 3B or Class 4) may be hazardous under direct or reflected viewing and may cause eye injury, skin damage or fire conditions. Careful attention to heed warning signs on doors and asking questions of the laser operators will reduce the risk.*

The letters in "laser" stand for Light Amplification by Stimulated Emission of Radiation

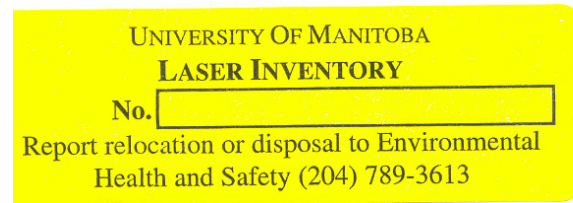
## How are lasers controlled at the University?

In April 2010 the University of Manitoba approved the terms of the Laser Safety Program. Currently the University is focused on registering the high powered lasers (Class 3B or Class 4) used or stored at locations controlled by the University of Manitoba and creating an appropriate Laser Safety Program.

Environmental Health and Safety (EHS) provides staff and resources for the day to day operations of the Laser Safety Program. The University of Manitoba has developed a web page to apprise owners of high powered lasers of the legal requirements and some resources to assist with this duty.

Details on the Laser Safety Program are found at [http://umanitoba.ca/admin/vp\\_admin/risk\\_management/ehso/rad\\_safety/lasers.html](http://umanitoba.ca/admin/vp_admin/risk_management/ehso/rad_safety/lasers.html)

Registered UM lasers have this sticker:



## Do I need more advanced Laser Safety training?

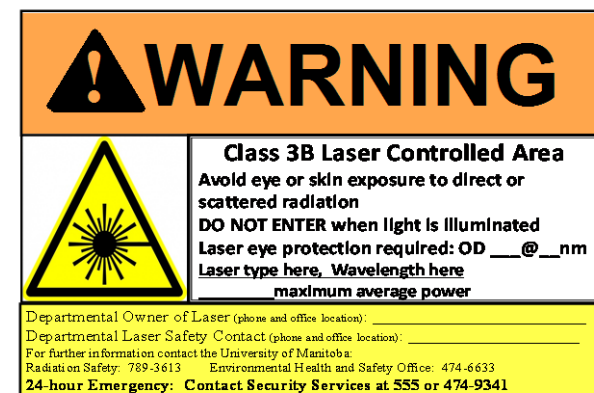
If you work in a room where:

**Enclosed/Embedded** lasers are used, no further laser training is required.

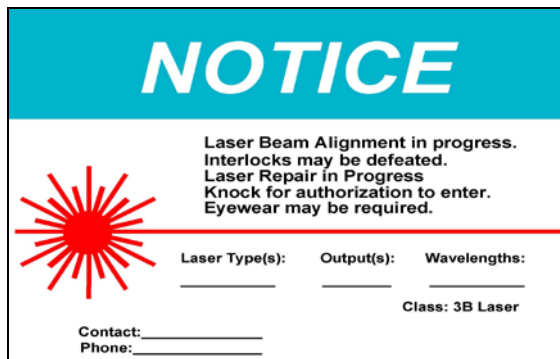
**Open beam** Class 3B or Class 4 lasers are used, you may need more information/ training than what is in this pamphlet or in the EHS orientation. Talk to your supervisor and contact Radiation Safety at 789-3613 or 789-3654.

## Where are Class 3B or Class 4 Lasers Used?

OPEN BEAM Lasers may only be used by a trained operator that has control of the room. These laser controlled areas must have a sign at every entrance warning of the danger. If a room or area has either the DANGER or WARNING sign posted at the entrance, do not enter without following the instructions on the sign. If the light is illuminated, DO NOT ENTER.



**EMBEDDED** Laser systems are enclosed in such a way that the laser radiation is not assessable during normal operation. Hazardous laser radiation may be generated during servicing only. To be safe, do not enter a room when the following sign is posted.



**What are the hazards of Laser radiation?** Lasers are categorized by the level of hazard they create to people exposed to the beam. Lower class lasers are incapable of producing damaging radiation levels during normal operations plus eyes are protected as humans naturally look away or blink before the eye is damaged. **High-powered lasers (Class 3B or Class 4)** produce damaging beams that may be hazardous. Direct or reflected exposure may cause eye injury, skin damage or fire conditions.

**EYE HAZARDS of LASERS**

A split-second look at Class 3B or 4 laser can cause corneal and/or retinal burns, retinal injury, and corneal opacities. Permanent vision loss is possible. The injury can be extremely painful.

**SKIN HAZARDS of LASERS**

- Thermal injury (BURN)
- Erythema (sun burn)
- Accelerated aging and pigmentation

Some people may be more at risk of photosensitive reactions from genetics or induced by medicines.

**How can I stay safe?** When assessing the risk of a laser or laser system, it is important to differentiate between open beam and embedded systems.

**OPEN BEAM lasers release radiation that may reach the eye or skin.**

Remember these rules to reduce your risk:

1. **DIRECT VIEWING OF LASER BEAMS IS PROHIBITED.**
2. Beware and heed warning signs at entrances.
3. Only trained operators should use Class 3B or 4 Lasers.
4. Only required personal should be in the laser controlled area. Limit or prohibit spectators.
5. Class 3B and 4 lasers should be used in sole use laboratories or enclosures and access controlled.
6. Be certain scattered laser radiation is not escaping through windows or openings to outside the laser controlled area.
7. Depending on the wavelength of the laser emissions, cover up exposed skin. Consider wearing sunscreen.
8. If an eye exposure to a laser beam is suspected follow the **Laser Exposure/Injury Protocol.**

This protocol should be posted in the laser facility. It is also available on the web and from EHS.



**What kinds of lasers are used at the University?** Open beam lasers are used in research, for medical treatment and teaching purposes. Some other common open beam lasers are laser pointers and laser levels.

Embedded lasers are found in laser printers and lab equipment. All lasers are labeled to identify the hazard.



**How do I get more information or safety training?**

Talk to your supervisor and contact EHS. email: [EHSO@umanitoba.ca](mailto:EHSO@umanitoba.ca)



**ENVIRONMENTAL HEALTH and SAFETY**  
 Fort Garry 474-6633 Bannatyne 789-3613  
 Fax 474-7629 Fax 789-3906  
[http://umanitoba.ca/admin/vp\\_admin/risk\\_management/ehso/](http://umanitoba.ca/admin/vp_admin/risk_management/ehso/)  
 After Hour Emergencies Call 911 or **555** from all U of M phones or **#555** from cell phones on Rogers Wireless and MTS Mobility