

This is a new pamphlet - comments are most welcome at 789-3613 © July 23, 2010

 **Environmental Health and Safety Office**
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 Z136.1-2007 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.*

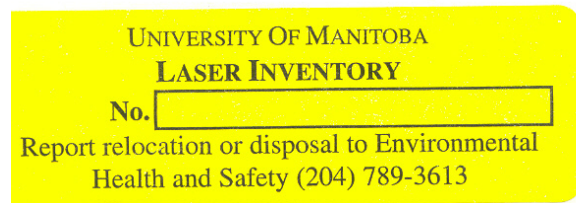
The letters in "laser" stand for Light Amplification by Stimulated Emission of Radiation

How are lasers controlled at the University? In April 2010 the University of Manitoba approved the terms of the Laser Committee to oversee and advise on 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.

The Environmental Health and Safety Office (EHSO) 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://www.umanitoba.ca/admin/human_resources/ehso/rad_safety/lasers.html

Registered lasers have this sticker:



Do I need more advanced Laser Safety training?

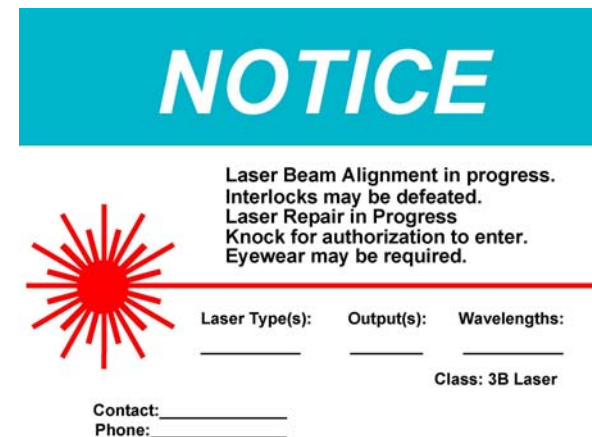
If you work in a room where open beam Class 3B or Class 4 lasers are used, you need more information/ training than what is in this pamphlet or in the EHSO orientation. Talk to your supervisor and contact Radiation Safety at 789-3613 or 789-3654.

Where may Class 3B or Class 4 Lasers be Used?

OPEN BEAM Lasers may only be used by a trained operator that has control of the room. Every entrance to a laser controlled area must have a sign warning of the danger. Do not enter a room with a DANGER sign – without following the instructions on the sign.



EMBEDDED Laser systems are enclosed in such a way that the laser radiation inside is not assessable during normal operation. An example of an embedded system is a flow cytometer. Hazardous laser radiation may be generated during servicing only. To be safe, do not enter a room with the following sign.



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 and is also available on the web and from EHSO.



What are the hazards of Laser radiation? *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.*

Class 3B and 4 lasers may cause:

- Acute (immediate) effects such as burns/blindness. or
- Delayed (accumulative) effects such as cataracts or cancer!

All lasers are labeled to identify the hazard.



Class 3B label



Class 4 label

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.



What kinds of lasers are used at the University?

Lasers are categorized by the level of hazard to humans exposed to the radiation released. Laser Classification: Lower class lasers are incapable of producing damaging radiation levels during normal operations or eyes are protected as humans naturally look away or blink before the eye is damaged.

How do I get more information or safety training?

Talk to your supervisor and contact EHSO. email: EHSO@umanitoba.ca

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ENVIRONMENTAL HEALTH and SAFETY OFFICE

Fort Garry 474-6633 Bannatyne 789-3613
 Fax- 474-7629 Fax 789-3906
http://www.umanitoba.ca/admin/human_resources/ehso

After Hour Emergencies Call **555** from all U of M phones or **#555** from cell phones on Rogers Wireless and MTS Mobility