

## **Laser Safety**

**Approved By: Human Resources Director**

**Approved On: December 5, 2012**

### **Intent:**

This procedure has been approved under the mandate of Health and Safety Policy of Lakehead University. This procedure is intended to assist the University community in the effective control of laser hazards, with respect to Class 3B and Class 4 lasers only. This procedure applies to all University departments, employees, students, visiting scientists, and outside contractors using lasers on University controlled sites and is based on the requirements and standards set by the Ontario Ministry of Labour, ANSI Z136.1., ANSI Z136.5. and ANSI 136.8.

### **Definitions:**

**Laser Safety Officer (LSO)** – individual appointed by the University with the authority to effect the knowledgeable evaluation of laser hazards, and the authority to monitor and enforce the control of laser hazards.

**Class 3B laser** - lasers may produce visible or invisible emissions. The output power of CW visible Class 3B lasers ranges from 5 to 500 milli Watt (mW). They are considered medium power lasers and are capable of producing eye injury when viewed directly or with optics, even if viewed momentarily. For visible Class 3B lasers, the normal aversion response (0.25 s) does not prevent injury. Class 3B lasers may produce hazardous specular reflections, but do not usually produce a hazardous diffuse reflection or fire hazard. At the upper end of the Class 3B range, skin burns may be possible.

**Class 4 laser** - lasers are visible or invisible lasers emitting radiation capable of causing injury to the eye and skin as well as producing dangerous specular and diffuse reflections. They can also produce a fire hazard. Class 4 lasers are those emitting a CW or average power greater than 0.5 W.

### **Procedure:**

#### **Supervisor/User Responsibilities**

- All persons operating Class 3B and Class 4 lasers on Lakehead University property must have valid laser safety training prior to beginning work as per the standards set in ANSI Z136.5.
- The Laser Safety Officer (LSO) must be informed of any new laser purchases or installations prior to their operation.

- All lasers and laser systems (purchased, borrowed or fabricated) shall be operated in accordance with the requirements established by the latest American National Standards Institute (ANSI) Z136.1 document, “Standards for the Safe Use of Lasers” and ANSI Z136.5 document “Safe Use of Lasers in Educational Institutions.” These documents are available from the LSO.
- Operate Class 3B and Class 4 lasers at as low a power level as possible to achieve meaningful scientific data.
- As required by the Internal Responsibility System (IRS) as established by the Ontario Occupational Health and Safety Act, the Principle Investigator (Research) or Instructor (Teaching) is ultimately responsible for the safe use of lasers and must ensure that personnel operating the laser have been properly trained in lab specific protocols.
- Any person not directly associated with the laser facility, must obtain permission from the Principle Investigator or Instructor prior to accessing the laser lab or classroom.
- All personnel operating Class 3B or Class 4 lasers, and those that will be observing the operation of these lasers within the hazard zone must wear the appropriate personal protective equipment (PPE).
- All accidents or near misses and operating irregularities involving lasers must be reported to the Principle Investigator or Instructor AND the LSO.
- Users are strongly recommended to obtain eye examinations prior to working with a Class 3B or Class 4 laser, and to participate in regular eye examinations as directed by their physician.

#### **Laser Safety Officer Responsibilities**

- Provide or arrange basic laser safety training.
- Maintain an inventory of all Class 3B and 4 lasers at Lakehead University.
- Maintain records of training for those operating or in possession of Class 3B or 4 lasers.
- Investigate any accidents, incidents or operating irregularities with a representative of the Joint Health and Safety Committee.
- Review the safety measures proposed by a Principle Investigator or Instructor prior to the activity to ensure that hazards are minimized.
- Conduct regular inspections to ensure the requirements of ANSI 136.1 and ANSI 136.5 are complied with.

#### **Evaluation:**

This procedure will be reviewed whenever a new ANSI standard for safe operation of lasers is released or at minimum, every five years.