



Industrial lasers can cause serious eye injuries and severe burns

With the introduction of new laser technology into industrial settings, workers are in danger of receiving serious eye injuries or burns from improperly guarded equipment.

The most common injury from exposure to laser light is to the eye. When a bright light hits the eye, a person will blink or turn away from a light source—this typically takes a quarter of a second. Unfortunately, higher power lasers can damage the eye in less time than a quarter of a second.

Symptoms of a laser burn to the eye include headache and the sudden appearance of floaters (swirling distortions) in your vision. Floaters are bits of dead cells and tissue that detach and float in the eye; some are present in normal vision. Minor burns to the cornea (transparent layer of tissue covering the eye) can cause a gritty feeling, like sand in the eye. Serious laser eye injuries can lead to permanent blindness!

Lasers can also harm the skin by causing thermal burns, ranging from a “sunburn” (reddening and blistering) to third degree burns with charring.

What is a laser?

The word “laser” is an acronym for Light Amplification by Stimulated Emission of Radiation. Laser light is generated when a power source (usually electric) is used to excite a “lasing material.” Lasing materials can be solid (e.g., ruby or garnet), gases (e.g., helium or carbon dioxide), liquids (e.g., organic dyes), or semiconductors. The resultant light bounces back and forth between a pair of mirrors, is amplified, and emitted as a beam—ready for use in hundreds of applications.

The colour of laser light depends on the type of lasing material used. For example, ruby lasers produce red light, argon lasers are blue, and krypton lasers are yellow or green. Some lasers produce light in the far-infrared (e.g., carbon dioxide lasers), or ultraviolet spectra, that are not visible to human eyes. These lasers are particularly dangerous because you can not see the beams!



Industrial Laser



Industrial Laser – Beam Emitter

Types of lasers

Lasers are classified based upon the power of the beam:

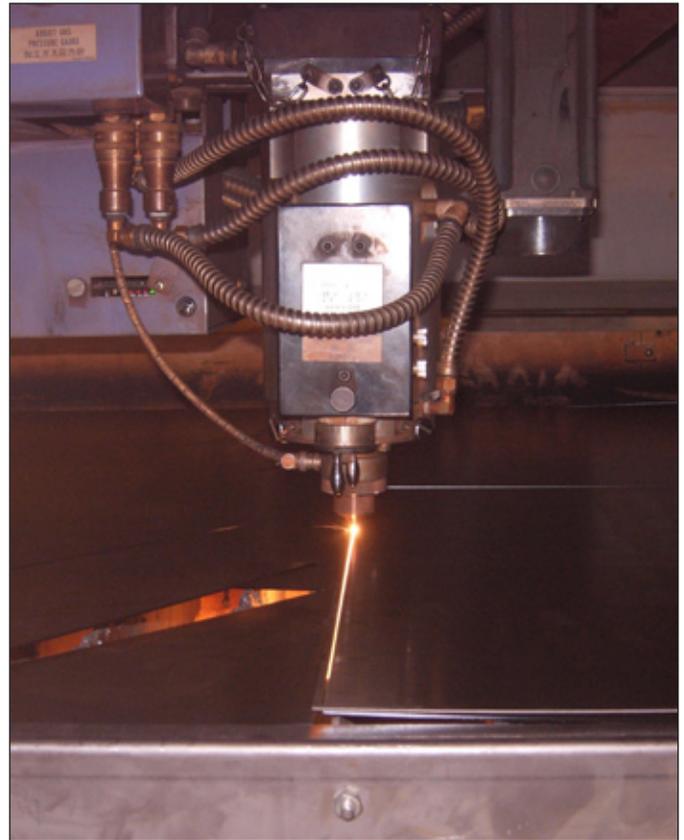
- **Class 4** are high-powered lasers that can cause eye damage (direct or reflected beam), skin damage, and fires. A Class 4 laser has enough power to cut off body parts!
- **Class 3** lasers are intermediate in power and can cause eye damage if viewed directly.
- **Class 2** lasers are also low power but emit a visible beam (e.g., laser pointers). The human “blink reflex” to bright light will protect a person from exposure to a Class 2 laser.
- **Class 1** lasers are low power and don’t produce damaging radiation under normal operating conditions. Examples of Class 1 lasers include those found in laser printers and supermarket laser scanners.

How can I prevent harmful exposure to laser light?

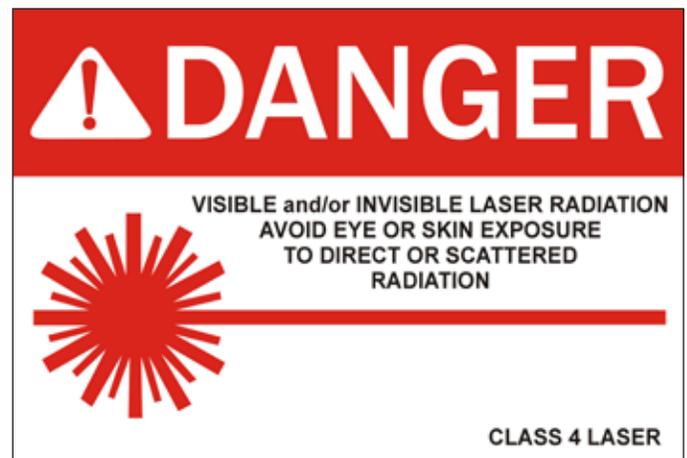
The most effective way to prevent the exposure of industrial workers to laser light is to use a laser system that has the proper engineering controls in place, including opaque barriers protected by interlocks and viewing panels of optically dense material (e.g., Perspex). Interlocks are devices that prevent the laser from firing as long as any of the protective panels remain open.

Potential purchasers should review their laser equipment requirements very carefully. Currently, the Canadian government has no import legislation covering laser equipment. Some lasers from foreign manufacturers might not have the proper interlocks or other effective devices to prevent worker injury from exposure to high-powered laser light. The Occupational Health and Safety Regulation requires that lasers be operated in accordance with the American National Standards Institute (ANSI) document Z136.1-2000, which sets out requirements for the safe use of lasers.

A Laser Safety Officer must oversee the use of all Class 4 lasers; and, any person operating an industrial laser must be properly educated and trained to handle the equipment.



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Laser Warning Sign

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