Laser Pointers and Eye Safety

The Canadian Association of Optometrists (CAO) is the national voice of doctors of optometry in Canada. Doctors of optometry are primary eye care providers and represent the front line of vision health. Canadians' eye health and good vision are the prime responsibilities of doctors of optometry.

Background

Laser pointers are small, hand-held devices whose pointer emits a light at a wavelength of 670nm to produce a narrow beam of red laser light which can be directed over long distances. While originally designed as educational and business tools, laser pointers are now marketed as toys which increases the risk of safety incidents.

The concentration of power in the beam makes lasers potentially dangerous to the eye and vision. When directed into the eye, the beam forms an intense image on the retina. If this image is held on the retina for an extended time period, it may cause a retinal burn to occur. As with photo-flashes, a brief exposure to laser light results in bright afterimages that may interfere with vision, particularly in dim lighting or at night. The danger lies where the flash distracts an individual engaged in vision-critical activity such as driving, flying, operating machinery, or playing sports.

Like all lasers, the pointers are given a hazard classification that is defined by the ANSI Z136.1 Standard for Safe Use of Lasers. A laser pointer is a class 3R/IIIa device which suggests that there is a potential for eye damage from direct exposure to the beam. For comparison, class 3B and class 4 lasers are dangerous, and can damage eyes instantaneously upon exposure. Class 3B lasers require only one second or more to burn skin.

Policy Issue

Canadians need information and education about lasers and their potential to harm eyes and vision. Staring into the beam or directing the beam into the eyes can result in injury after extended exposure. The CAO will continue to emphasize the seriousness of this matter among doctors of optometry, patients, and other stakeholders.

Policy Position

Doctors of optometry should be familiar with laser-related eye problems, and should educate their patients about lasers, as appropriate. Individuals affected by lasers should be encouraged to seek care from an eye care professional if they experience visual discomfort, afterimages, or a disturbance in reading for a duration of more than a few minutes.

The following tips may help to reduce risk:

- Laser pointers categorized as Class 3R/IIIa or lower can be operated safely if used as directed and should always be used with caution.
- Be wary of Internet sales or the purchase of lasers advertised for purposes other than pointing or beam-display (e.g. for burning, balloon popping).
- Look for warning labels, safety features, and instructions which explain how to properly handle the laser.
- Choose a laser pointer that stays on only when the button is pressed, so that the beam cannot be left on by accident.
- Never point a laser beam at anyone, nor look directly into the beam.
- Never aim a laser pointer at surfaces that would reflect the light back, like mirrors or mirrored surfaces.
- Never aim a direct bright light source like a laser into the cockpit of an aircraft. This may jeopardize aviation safety and can be hazardous to pilots and threaten passenger safety. This is a federal offence under the *Aeronautics Act*. Similarly, do not aim lasers at cars or trucks.
- Keep laser pointers out of the reach of children and do not allow children to use them.
- When uncertain about the classification of a laser, contact the manufacturer or retailer.
- Never 'play around' with lasers, as they can be a fire hazard, cause flash blindness or even permanent eye damage.

References

Government of Canada. Hand held lasers and laser pointers. Accessed online August 5, 2016 at: http://healthycanadians.gc.ca/security-securite/radiation/devices-dispositifs/consumer-consommateur/laser-eng.php

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