Laser Pointers

There has been a great deal of media interest in laser pointers recently. There were a number of incidents involving these towards the end of 1997 with bus drivers, police and fire officers and footballers amongst others being allegedly targeted. This resulted in concerns as to how dangerous these were and whether they should be available to the general public. One of the problems has been that technology has developed to an extent that small powerful and cheap lasers became available and which could be fashioned in to novelty products such as key rings.

Laser pointers first started to become available to lecturers about 15 years ago. They were large, heavy and mains powered. However improvements have resulted in these now being available in a similar size to pens and with good battery life. The danger from laser light is that the light emitted is of a very narrow wavelength and is seen as a single colour. Lasers also produce very narrow beams of light so that a small spot is produced even when shone onto surfaces at large distances, e.g. 100 metres or more. As result the light energy is very concentrated. By comparison an electric light bulb produces light energy which is distributed over the whole visible spectrum and is emitted in all directions so that this rapidly decreases with distance.

It is the energy of the light that can cause injury. The eye is obviously at most risk but powerful lasers may also burn the skin. One of the controls for this is the classification of lasers according to their energy in accordance with a British Standard for laser safety. There are five classes of lasers, namely 1, 2, 3A, 3B and 4. The higher the class number the greater the laser radiation hazard. Classes 1, 2 and 3A lasers are those which will not cause injury unless stared at or used with optical instruments to focus the light. Class 3B and 4 lasers however may have very high power outputs and present a serious risk to the eye and even the skin.

Laser pointers should be marked with a laser warning symbol and the class of the laser.
Typically the laser pointers available have fallen into classes 2, 3A and 3B.

One point of confusion is that some laser pointers may be classified with accordance with the American Standard (identifiable by the use of roman numerals). American Standard class IIIa laser pointers have a more concentrated output energy than the equivalent British Standard class 3a and may therefore present a risk to the eye. There have however been instances where a IIIa American Standard device has been inappropriately relabelled as 3a for the British market although it would in fact be a 3b device.

Anyone using a laser pointer for their work should look to see what class of product they have. If it is of a class higher than 2 then it should be notified to their Departmental Safety Officer who will inform the Safety Office. All new laser pointers purchased should not be higher than class 2. Indeed the Trading Standards Officers are prohibiting the sale of laser pointers higher than class 2.

So far there have not been any cases reported to the Safety Office of novelty laser pointer products being abused within the University. However should there be any cases where this occurs then these should be reported promptly.

Although there is only a small risk of a permanent eye injury from a laser pointer, someone receiving even a brief eye exposure will experience a bright flash, a dazzling effect which is likely to cause distraction and a temporary loss of vision in the affected eye, and possibly after images. The time taken to recover from this will vary between people, with the laser energy of the source and with the ambient light level at the time of exposure (the darker the more noticeable the effect). Medical attention should be sought if after images persist for hours or if reading vision has been affected. Occupational Health can carry out eye examinations.

Further information on these devices can be obtained from the Safety Office.

Further Advice

Sarah Watson
Assistant Safety Officer (Mon-Wed)
sarah.c.watson@nottingham.ac.uk

Tel +44 (0) 115 951 3301
Mob 07920 563930