

## Laser Pointer Warnings

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Two papers have recently been published which highlight the dangers from ‘laser pointers’. These are not the laser pointers that have been used in the past for use in lectures, which should now be restricted to 1mW Class 2 devices, but similar looking devices that can be obtained over the internet with outputs of up to 1000mW. (Yes that’s right 1W - just google for ‘laser pointer’)

Wyrsh, Baenninger and Schmid (Lucerne Cantonal Hospital, Lucerne, Switzerland) reported an incident in the New England Journal of Medicine in September last year.

<http://www.nejm.org/doi/full/10.1056/NEJMc1005818>

A 15 year old boy had been playing with a green laser pointer in front of a mirror and severely damaged the retina in both eyes. The measured output of the device, which looked just like a low powered laser pen/pointer, was 150mW

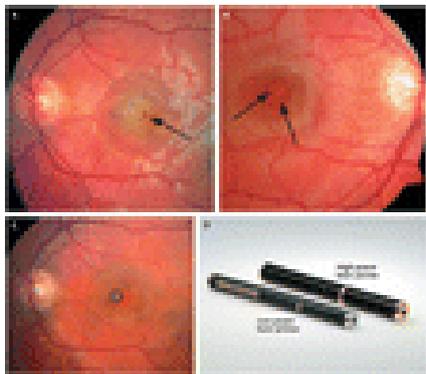


FIGURE : Retinal Injury in a Teenage Boy and Laser Pointers.

A funduscopy examination revealed a dense subretinal hemorrhage in his left macula and several tiny round scars in the pigment epithelium of the foveolar region of his right eye. The clinical findings were consistent with severe bilateral retinal laser injury.<sup>1</sup> After 4 months, the boy's visual function remained impaired but improved to 20/32 in the right eye spontaneously and to 20/25 with a remaining scar just beside the centre of the fovea in the left eye.

For clearer image see - [Figure 1A](#).

Another paper appeared in the US National Institute of Standards and Technology last July - NIST Technical Note 1668, see - [http://www.nist.gov/pml/div699/laser\\_080310.cfm](http://www.nist.gov/pml/div699/laser_080310.cfm)

This drew peoples’ attention to another green laser pointer hazard – beware the dim laser pointer! The researchers had found that some cheap green laser pointers emit hazardous levels of invisible infra-red radiation. The researchers purchased 3 inexpensive (\$15) laser pointers with stated output powers of approx 10mW. One of the pointers appeared much dimmer than the others but was found to be emitting 10 x more invisible IR (10mW) than green laser light. The paper describes the technology behind the diode-pumped frequency doubling design and how the omission of an IR filter led to the problem discovered. They then go on to describe a simple way of testing a green laser pointer (using a CD as a diffraction grating and a webcam as a detector) to see if yours is emitting IR. Of course if you have a laser power meter and some filters you can test more straightforwardly.

It is unlikely that many owners nor the potential victims of such dangerous “toys” can distinguish harmless laser pointers from hazardous ones, and we may see many more eye injuries from these ‘pointers’ in the near future unless there is a clamp down on their sale. This is much more serious than the original laser pointer scares some years ago.