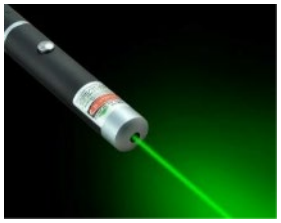
# LASER POINTER SAFETY

A laser pointer contains a small diode laser that emits an intense beam of light often used for directing attention during a presentation. Follow these safety considerations when using a laser pointer.

## LASER POINTER HAZARDS

Most laser pointers contain low to moderate powered lasers that do not pose a serious risk of eye injury unless intentionally misused. The most likely effects from exposure to viewing the beam from a laser pointer are afterimage, flash blindness and glare.



- **Afterimage** is the perception of spots in the field of vision that can last up to several days.
- **Flash blindness** is temporary vision impairment after viewing a bright light that may last several minutes.
- **Glare** is a reduction or complete loss of visibility in the central field of vision while being exposed to the direct or scattered beam.

Imported laser pointers may be more powerful and may not meet U.S. Food and Drug Administration (FDA) standards for safety.

## SELECTION CRITERIA

**Only use laser pointers meeting the following criteria** and are properly labeled:

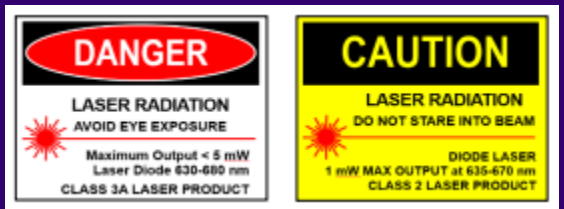
- A statement that the device complies with Chapter 21 CFR (the Code of Federal Regulations)
- Labeled with FDA certification stating, "DANGER or CAUTION: Laser Radiation" for Class 3R lasers or "CAUTION: Laser Radiation" for Class 2 pointers.
- Classified as Class 2 or 3R according to the label. (Do not use Class 3B or 4 products.)
- Consider purchasing red laser pointers that operates at a wavelength between 630 nm and 680 nm. Avoid green, blue, or violet due to the eye's increased sensitivity.
- Has a maximum output of less than 5 mW.

## SAFETY CONSIDERATIONS

Laser pointers are effective tools when used properly. The following considerations should be observed when using laser pointers:

- Never look directly into the laser beam.
- Never aim a laser pointer at anyone, aircraft, buses, and automobiles.
- Do *not* aim the laser at reflective surfaces/mirror like surfaces. A reflected beam can act like a direct beam on the eye.
- Never view a laser pointer using an optical instrument, such as binocular or a microscope.
- Do *not* allow children to use laser pointers.
- Do *not* purchase or use unlabeled laser pointer. Purchase only Class 2 or Class 3R laser pointers that have a caution or danger sign that identifies the Class and output power.
- Never purchase laser pointers over 5 mW.

**Contact EH&S Radiation Safety at 206.543.0463 or radsaf@uw.edu if you have a laser pointer *without* a Caution or Danger sticker.**



## MORE INFORMATION

The use of laser pointers has become widespread. The pointers are useful tools for educators in the classroom and at conventions and meetings. However, due to the low cost and ubiquitous supply, these pointers are now being purchased and used by the general public, including children, and used in ways not intended by the manufacturers. As a result, serious concerns about the hazards of laser pointers have surfaced.

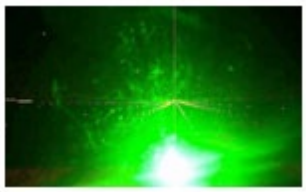
While the majority of the laser pointers contain low to moderately powered diode lasers, more powerful lasers are now being imported from China. These pointers present a significant potential for eye injury and are often not properly labeled and are found that the majority of the laser pointers tested did not meet their safety regulations (FDA).

There are currently no restrictions for purchasing laser pointers in the United States. The FDA issued a warning for laser pointers, urging that the pointers be used as intended, not as toys, and not by children unless under adult supervision.

Some of the newer laser pointers, especially the green light pointers, present a significantly increased risk of eye injury. Laser pointers used in the U.S. use Class 3R diode lasers in the 630-680 nm wavelength (red), with a maximum power output of between 1 and 5 mW. The length of exposure to visible lasers is usually limited by the eye's blink reflex, which normally occurs within a quarter of a second.

## ACCIDENTS AND INCIDENTS

Over the years, as laser pointers become more ubiquitous, more and more laser pointer related incidents have been reported worldwide. Laser beams projected into airspace and intercept aircraft have caused distractions and temporary vision impairment to pilots.



You should **never** aim a laser pointer at or near an airplane or helicopter or toward anyone.

Several individuals have reported temporary blindness when targeted by a number of laser pointers. This is becoming more prevalent at sporting events. A few individuals complained of afterimages lasting several days.

For more information, visit:
FDA Illuminating Facts About Laser Pointers

**Contact Radiation Safety at 206.543.0463 or radsaf@uw.edu for more information.**