

# Laser Pointer Safety Fact Sheet and Guidelines

## A Real Danger

Commercial laser pointers have become common tools in the workplace. Most often, laser pointers are used as a substitute for the retractable metal pointer used during lectures or presentations. "Even momentary exposure from a laser pointer can cause discomfort and temporary visual impairment," warns the American Optometric Association (AOA). "There can be glare, similar to that encountered with oncoming headlights at night; flash blindness, such as from a flashbulb; and afterimages, which involve the perception of spots in the field of vision."

"Flash blindness and afterimages may last for several minutes. If afterimages persist for several hours, or if a disturbance in vision is apparent, an eye examination should be performed to determine if there is any permanent eye damage."

(source: Texas Workers' Compensation Commission)



## 1. Applicability

All Class 2 or Class 3a laser pointers used for seminar or classroom presentations must be operated under the guidelines outlined in this document. Class 3b or higher laser pointers are not authorized by the COSE Laser Safety Officer and should not be used.

## 2. Rationale

Laser pointer instructional aids are becoming increasingly popular. Laser pointers fall into two laser hazard classifications: Class 2 and Class 3a. In Class 2 laser pointers, power output is less than 1 mW; the human blink reflex is sufficient to provide protection. Class 3a laser pointers are safe for momentary viewing, but they are a recognized eye hazard when viewed through optics. Their power output is between 1 and 5 mW. Most laser pointers in the marketplace are Class 3a, in the 640-650 nm range.

The human eye is more responsive to these wavelengths than to the 690 nm wavelength of the earlier laser pointers.

## 3. Green Pointers

The human eye is more sensitive to green diode lasers than to red ones. For safety, when using green lasers, handle them carefully and take extra precautions to prevent eye contact.

## 4. How to Protect Yourself and Others

When used as intended, these devices do not present a hazard to the user or to members of the audience.

To ensure safety, follow these guidelines:

- When buying a laser pointer, choose one that has that operates between 630 nm-680 nm and a maximum output of < 5 mW.
- Do not purchase a laser pointer if it does not have a CAUTION or DANGER sticker on it identifying the class. Report suspicious devices to the Food and Drug Administration (FDA).
- Do not intentionally stare into the laser beam.
- Do not intentionally aim the pointer beam at oneself or another person, particularly in the face.
- Direct the beam toward the screen and away from the audience.
- Turn the beam off when not in use.
- Choose a laser pointer that stays on only when you apply pressure with your fingers.
- Do not point the laser beam at mirror-like surfaces that reflect the light back.
- Never view a laser pointer using an optical instrument, such as binocular or a microscope.
- Do not leave laser pointers where children or students can "borrow" them without permission or without appropriate supervision.

## 5. Legal implications of Laser Pointer Misuse

The California Penal Code has several sections that state that misuse of a laser pointer can be considered a misdemeanor or felony. In particular, directing any laser beam at another person may constitute assault (suggesting the use of a laser gunshot) and directing any laser beam at an aircraft may constitute malicious mischief. These items can result in fines and or jail sentences.

## 6. Labeling of Pointers

The pointer manufacturer is required by federal law (21 CFR Part 1040) to have a laser warning label on the pointer. The label must show the laser hazard symbol, laser classification, laser wavelength, and maximum power output.

## 7. Emergencies

Although the potential for injury from a laser pointer is low, notify your supervisor and get medical attention if you suspect an eye injury from laser pointer use. Call Student Health Services, ext. 8-2754 during regular business hours or Campus Police, ext. 8-2222 or 911 24 hours per day.