



## Lasers

Laser, an acronym for Light Amplification by Stimulated Emission of Radiation, is a device that produces an intense beam of visible or invisible light radiation. Sports arenas, amusement parks, concert venues and planetariums are just a few of the places that use lasers to produce entertaining, dramatic light shows.

Unlike some other types of radiation, laser light has not been associated with cancer or genetic damage. However, if handled improperly, lasers can cause skin burns and eye damage.

Light radiation is only a small part of the electromagnetic spectrum. Lasers used in light shows give off visible or optical radiation which ranges from violet, with shorter waves, to red, with longer waves. Within the range of light radiation, each color we see has a different wavelength.

The light from a laser is similar in some respects to the light from a light bulb or flashlight. But, unlike light from those sources, laser light is composed of a single wavelength (one color) resulting in very pure color. Also, laser light travels in a very narrow, highly focused beam which does not spread out as light from a bulb does.

Because it is very concentrated and can travel over long distances, laser light can be harmful. Exposure to a high-power laser light can cause severe skin burns and permanent eye damage.

Even hand-held laser pointers are a concern. These are the small, flashlight-like devices used by lecturers and teachers to highlight areas on a chart or screen. When used appropriately, laser pointers are generally safe; however, they can cause serious damage if aimed directly at the eye. Hand-held laser pointers, aimed from the ground, have been found to cause momentary blindness in airline pilots.

Manufacturers are required by law to include a warning on the product label about this potential hazard. FDA warns that while they can be useful tools they are not toys and should not be used by children.

## Who is protecting you

### U.S. Food and Drug Administration (FDA)

One of the responsibilities of the FDA is to protect the public health and safety by regulating the manufacturing of products that emit radiation, which includes lasers used in stadium light shows and handheld laser pointers.

### U.S. Federal Aviation Administration (FAA)

The FAA must be notified before any open air laser light shows to assure that there will be no harm to aircraft passengers or pilots. The FAA will review the laser light show proposal and approve or disapprove usually within seven days.

### The States

State governments can have their own requirements beyond those of the FDA and FAA. If a state has requirements, laser use would normally be regulated through the state radiation protection office.

## What you can do to protect yourself

- **Be knowledgeable** — Understand the potential dangers of lasers. Know when/where laser lights will be used and if they are of particular concern, avoid being near them when possible.
- **Follow directions** — Follow any directions regarding restricted areas and don't try to reach into a laser light beam.
- **Don't look into a laser beam** — If the situation should arise, don't look into a laser light beam, including laser pointers.

## Resources

You can explore this radiation source further through the resources at the following URL:

<http://www.epa.gov/radtown/lasers.htm#resources>

We provide these resources on-line rather than here so we can keep the links up-to-date.