

U.S. Food and Drug Administration  
Protecting and Promoting *Your* Health

# Risk of Eye and Skin Injuries from Hand-held Laser Pointers: FDA Safety Communication

Updated: December 22, 2015

Previously Issued as FDA Safety Notification on Dec. 16, 2010

## Audiences:

- Consumers/Parents who may consider purchasing laser pointers
- Health care providers who identify and treat injuries to the eyes or skin

**Medical Specialties:** Primary Care, Pediatrics, Ophthalmology, Emergency Room and Urgent Care Providers

**Product:** Hand-held laser pointers

**Purpose:** The FDA wants to remind consumers about the risk of eye and skin injuries from hand-held laser pointers.

Embedded Video

## Summary of Problem and Scope:

The Food and Drug Administration (FDA) is reminding consumers about the risk of eye and skin injuries from exposure to products containing lasers. Although most toys with lasers are safe and comply with performance standards, some laser products such as hand-held laser pointers are being misused as toys.

Laser products operated in an unsafe and uncontrolled manner may cause injury to the user and/or others within range of the laser beam. This is a particular concern for lasers intended for entertainment purposes, especially when used by children as toys.

FDA regulations limit the visible light power of hand-held laser pointers to 5 milliwatts (mW). Even at the 5mW legal limit, a laser aimed directly into the eye can cause temporary flash blindness. This will not likely cause permanent injury, because most people have a protective reflexes such as looking away, blinking, or making other movements to protect the eyes. However, reflections of the laser beam from mirrors or metallic surfaces may not induce the protective reflex quickly enough to avoid injury. In addition, intentionally keeping your eyes open and staring into a 5 mW beam will cause eye injury.

Lasers that emit more than 5mW visible light power can cause irreversible eye injury of increasing severity as the power increases. High-powered laser pointers can irritate or even burn the skin. Although illegal and potentially dangerous, high-powered laser pointers are available on the Internet and in stores. The FDA wants to make consumers aware that they should not buy these lasers for themselves or as gifts for others.

The FDA believes that many eye injuries from laser pointers go unreported. Nonetheless, the FDA is aware of laser pointer injuries involving military personnel, researchers, hobbyists and children. The FDA is aware of many child eye injuries caused when children play with laser pointers. Just two of many incidents FDA is aware of include:

- A child's eyes were damaged from reflected beams after directing a 150 mW laser pointer into a mirror.
- A child is legally blind in both eyes after playing with his mother's laser pointer which was purchased online.

The FDA is also aware of incidents reported by the Federal Aviation Administration of pilots experiencing temporary "flash-blinding" when lasers are aimed at their aircraft. The temporary loss of vision reported by pilots during these incidents could cause a serious accident. From 2004 to 2006, 329 cases were reported, and since then 26,320 cases have been reported incidents of aircraft illuminations from laser pointers, according to FDA analysis of FAA public data. Close to 5,000 incidents have been reported in the first nine months of 2015. **Using a laser to illuminate an aircraft is a federal crime and a felony** and those convicted face a maximum penalty of five years in prison and a \$250,000 fine. Many individuals have been convicted of shining either legal or overpowered lasers on an aircraft, recent examples include:

- In 2014 a 26-year-old California man was sentenced to 14 years in prison for aiming a laser pointer at a police helicopter and a hospital emergency transport helicopter.
- In 2015 a 52-year-old California man was sentenced to 21 months in prison for shining a powerful green laser at a sheriff's helicopter.

#### **Recommendations:**

The FDA recognizes that there are legitimate uses of laser pointers, including giving presentations and pointing to stars. Even lasers under the 5mW limit can cause harm if not used properly. The FDA recommends the following:

- Do NOT buy laser pointers for children or allow them to use them. These products are not toys.
- Do NOT buy any laser pointer that emits more than 5 mW power and does not have the power printed somewhere on the pointer or its packaging. **Hand-held laser pointers over 5 mW and those that are not properly labeled are illegal and potentially dangerous.**
- Never aim or shine a laser beam directly at any person, pet, vehicle, or aircraft. The startling effect and temporary flash-blinding from a bright beam of light can cause serious accidents.
- Do not aim a laser at any reflective surface such as a mirror or any other shiny surfaces where the beam cannot be controlled.
- Check the label of any laser pointer that you own. If it has a power greater than 5 mW, dispose of it safely according to local environmental protection guidelines.
- In the event of injury, immediately consult your eye doctor. Keep in mind that laser eye injuries are likely to be painless.

We have found that some lasers are more powerful than the labeled or advertised power. If you

are not sure if your laser pointer is a high-powered laser, consider the following:

- If the laser pointer is small and uses button batteries, its power is probably less than 5 mW.
- If the laser pointer is pen-sized and runs on AA or AAA batteries, it's likely to be more powerful and may exceed 5 mW.
- If the laser pointer is flashlight-sized and runs on a cluster of AA or AAA batteries or runs on lithium batteries, it likely exceeds 5 mW.
- Laser pointers sold with battery chargers probably drain their batteries quickly and are very likely to be overpowered.
- Some laser pointers are sold with a removable cap that spreads the beam into a pattern. If used without the cap, the beam becomes a single beam that could exceed 5 mW.
- Sellers promoting high-powered laser pointers may use words such as: powerful, bright, ultra, super, military, military grade, super bright, high power, ultra bright, strong, balloon pop, burn, burning, adjustable focus, lithium battery, or lithium powered.
- Videos or photos that show a laser with a bright, well-defined beam of light burning, melting, or popping balloons are probably lasers that greatly exceed 5 mW.
- If comments posted on the website describe the brightness or power of the product, then it likely exceeds 5 mW.

#### **Report Problems to FDA:**

Prompt reporting of injuries can help FDA identify and lessen the risks associated with these products. If you have been injured by a laser pointer, or if you witness an injury involving a laser pointer, we encourage you to file a voluntary report through [MedWatch \(https://www.accessdata.fda.gov/scripts/medwatch/index.cfm?action=reporting.home\)](https://www.accessdata.fda.gov/scripts/medwatch/index.cfm?action=reporting.home) as a medical device report, even if the laser injury is suspected to be from a non-medical laser product.

This information will assist the FDA in collecting laser product injury cases and in investigating the circumstances surrounding the injuries. It will also help the FDA develop trends that indicate if laser injuries from certain products are increasing or decreasing over time.

When reporting a laser injury, please be sure to include the following information:

- How, when and where was the injured person exposed to laser light? For example, did the injury happen at a concert or other event where there was a laser light show? Was the injury caused by a laser pointer or a toy that emits laser light?
- Describe the color and brightness of the light.
- Where was the product purchased?
- What is the product brand name?
- Was the product advertised as a toy for children 14 years of age or younger?
- How long was the injured person exposed to the laser light and how far they from the laser when the injury occurred?
- Did the injury occur when the laser beam went directly into the eye or was it reflected off of a surface like a mirror before it entered the eye?
- If the injured person was wearing any eyewear or eye protection, what was worn?
- Did the injured person view the laser through a lens, such as a camera or binocular?

- Did the injury occur from something that might emit an invisible beam in low light or at night, such as a gun scope or a surveillance camera?

**Contact Information:**

If you have questions about this communication, please contact the Division of Industry and Consumer Education (DICE) at [DICE@FDA.HHS.GOV](mailto:DICE@FDA.HHS.GOV) (<mailto:DICE@FDA.HHS.GOV>), 800-638-2041 or 301-796-7100.

**Additional Resources**

- [Laser Pointer Safety Video \(https://youtu.be/FPPnFg\\_ujJI\)](https://youtu.be/FPPnFg_ujJI)  
(</AboutFDA/AboutThisWebsite/WebsitePolicies/Disclaimers/default.htm>)
- [Laser Toys: Not Always Child's Play \(/ForConsumers/ConsumerUpdates/ucm363908.htm\)](/ForConsumers/ConsumerUpdates/ucm363908.htm)
- [Consumer Safety Alert: Internet Sales of Laser Products \(/Radiation-EmittingProducts/RadiationSafety/AlertsandNotices/ucm116534.htm\)](/Radiation-EmittingProducts/RadiationSafety/AlertsandNotices/ucm116534.htm)
- [Illuminating the Hazards of Powerful Laser Products \(/ForConsumers/ConsumerUpdates/ucm166649.htm#TipsforConsumers\)](/ForConsumers/ConsumerUpdates/ucm166649.htm#TipsforConsumers)
- [Is Your Laser Pointer Dangerous Enough to Cause Eye Injury? \(http://www.geteyesmart.org/eyesmart/eye-health-news/laser-pointer-eye-injury.cfm\)](http://www.geteyesmart.org/eyesmart/eye-health-news/laser-pointer-eye-injury.cfm)  
(</AboutFDA/AboutThisWebsite/WebsitePolicies/Disclaimers/default.htm>)

**More in Safety Communications**

(</MedicalDevices/Safety/AlertsandNotices/default.htm>)

[Information About Heparin \(/MedicalDevices/Safety/AlertsandNotices/ucm135345.htm\)](/MedicalDevices/Safety/AlertsandNotices/ucm135345.htm)

[Preventing Tubing and Luer Misconnections](/MedicalDevices/Safety/AlertsandNotices/TubingandLuerMisconnections/default.htm)

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