



Hazard Alert for Ultraviolet-A Flashlights and “Black Lights” Used for Inspections

FACT SHEET 24-014-0815

Introduction: Some materials fluoresce when exposed to ultraviolet (UV) radiation. Lamps that emit in the UV-A range (UV-A: 315 nm - 400 nm) use these fluorescent properties to detect forgeries, detect oil leaks, investigate crime scenes, and detect rodent urine. These lamps pose a hazard to the eye, but proper awareness and training are sufficient to prevent injuries during the normal use of these devices. Figures 1-2 show examples of UV-A flashlights with light emitting diodes (LEDs).

What is UV radiation? The UV radiation, like visible light, is a type of electromagnetic radiation. The UV radiation is present in sunlight, and is emitted by UV-A “black light” lamps, UV LEDs, mercury vapor lamps, tanning lamps, and other types of lamps.

How is the UV radiation in “black light” lamps and UV-A LED flashlights different from the UV radiation in sunlight? The solar UV radiation that reaches the Earth is a wide range of UV-A and UV-B radiation (UV-A: 315 nm – 400 nm, UV-B: 280 nm – 315 nm). “Black light” lamps emit mainly in the UV-A range, with lesser emissions of visible violet and blue light. Some UV-A LEDs emit in narrow bands that include the UV-A and visible, while others emit entirely in the UV-A range. Human vision is mainly sensitive to visible light, with only some sensitivity to UV-A radiation.

What is the hazard from these UV-A sources?

Sufficiently intense UV-A and blue radiation can cause chemically-induced lesions in the retina. Other effects are possible (e.g., UV-A induced sunburn), but the risk is much less significant. Glare discomfort may also occur at exposures within the safety limits.

The UV-A LED flashlights and “black lights” evaluated to date by APHC (Prov)’s Nonionizing Radiation Program (NRP) pose some risk, but would not cause injury during normal use. The safety limits would only be exceeded if prolonged or many repeated exposures occurred.

What control measures are recommended?

Operators of these devices should:

- (1) Label each device to identify the UV hazard and inform operators.



Figure 1. UV-A LED flashlights.¹

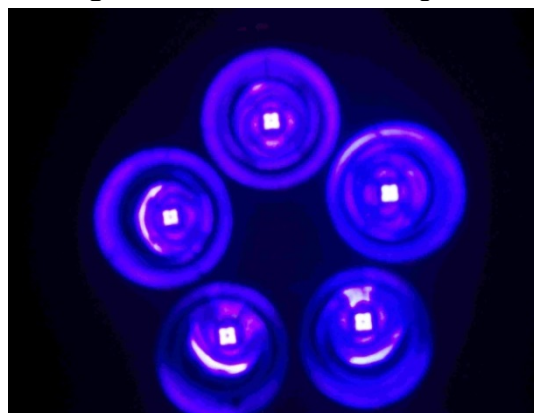


Figure 2. UV-A LEDs, close detail.²

^{1,2} Photos in Figures 1 and 2 by APHC (Prov) Nonionizing Radiation Program.

- (2) Instruct operators to avoid prolonged or repeated exposure to the beam.
- (3) Instruct operators not to point the beam at the faces of bystanders.
- (4) Personal protective equipment may be worn, but is not necessary to prevent injury.
- (5) “Black light” lamps should be disposed of in the same manner as office fluorescent lamps.

Where can I get additional information, or report a suspected overexposure?

In the event of a known or suspected overexposure, contact the following as soon as possible after getting the accident victim immediate medical attention:

- (1) Your installation radiation safety officer.
- (2) The APHC (Prov) NRP at DSN 584-3932; commercial (410) 436-3932.
- (3) The APHC (Prov) Tri-Service Vision Conservation and Readiness Program at DSN 584-2714; commercial (410) 436-2714.