

December 29, 2021

BY EMAIL

Laura Thrall, CEO
Epilepsy Foundation
lthrall@efo.org

Re: The LED Fraud

Dear Laura Thrall,

In 2016, the American Medical Association published ground-breaking recommendations regarding LED radiation with a document titled Human and Environmental Effects of Light Emitting Diode (LED) Community Lighting. This document stunned the world as it alerted the public to the toxicity of LED radiation and recommended limits. The LED cartel fought the AMA's recommendations and continues to do so. Since 2016, neither the government nor the LED cartel have taken appropriate steps to address the dangers of LED radiation.

The Soft Lights Foundation has concluded that the entire switch to LED is based on fraud. The idea that has been sold to the public is that LEDs are energy efficient or save energy compared to incandescent or High-Pressure Sodium. This is a fraudulent claim.

According to the US Department of Energy's website, energy efficiency means "using less energy to get the same job done."¹ The job is to provide uniform illumination with minimal harm. LEDs do not produce uniform illumination², but rather they emit radiation from a flat surface which creates a mix of energies that are not uniform. Since LEDs do not do the same job as an incandescent or High-Pressure Sodium, **the claim that LEDs are energy efficient cannot be made**. LEDs are simply a low quality, toxic, hazardous, and discriminatory type of visible radiation.

As shown in Figure 1, a spherical emitter sends light in all directions in space. Because of the curvature of the emitter, the light rays do not overlap, and the radiation is spatially, spectrally, and temporally uniform. A flat surface emitter, such as an LED, sends light only in the forward direction. The light rays are confined to an 'escape angle' which is determined by the physical characteristics of the chip. There are thus overlapping rays, with the most overlap being in the center of the chip, and the least overlap being on the edges. The result is that every point in space has different spatial, spectral, and temporal properties. This non-uniform radiation profile is not suitable for illumination and not

¹ https://www.energystar.gov/about/about_energy_efficiency

² <https://ieeexplore.ieee.org/document/8879542>

compatible with the human nervous system. **An energy efficiency comparison between an incandescent or High-Pressure Sodium and an LED cannot be made.**

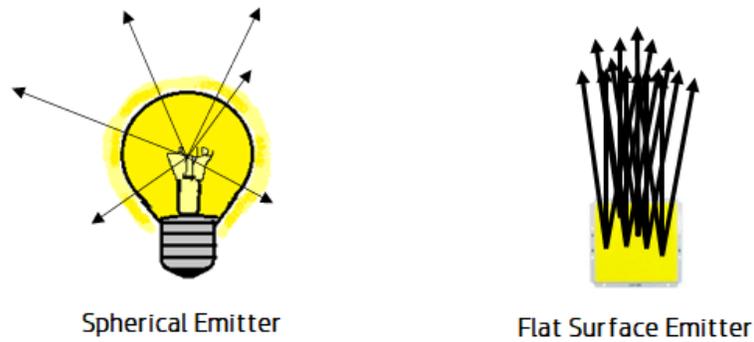


Figure 1 - Spherical vs. Flat Surface Emitter

Figure 2 shows the uniform spatial energy from candles, incandescent and High-Pressure Sodium versus the non-uniform spatial energy from an LED and LASER. The intense peak of energy will cause eye damage and will overload the nerve signals to the brain because the information is not uniform.

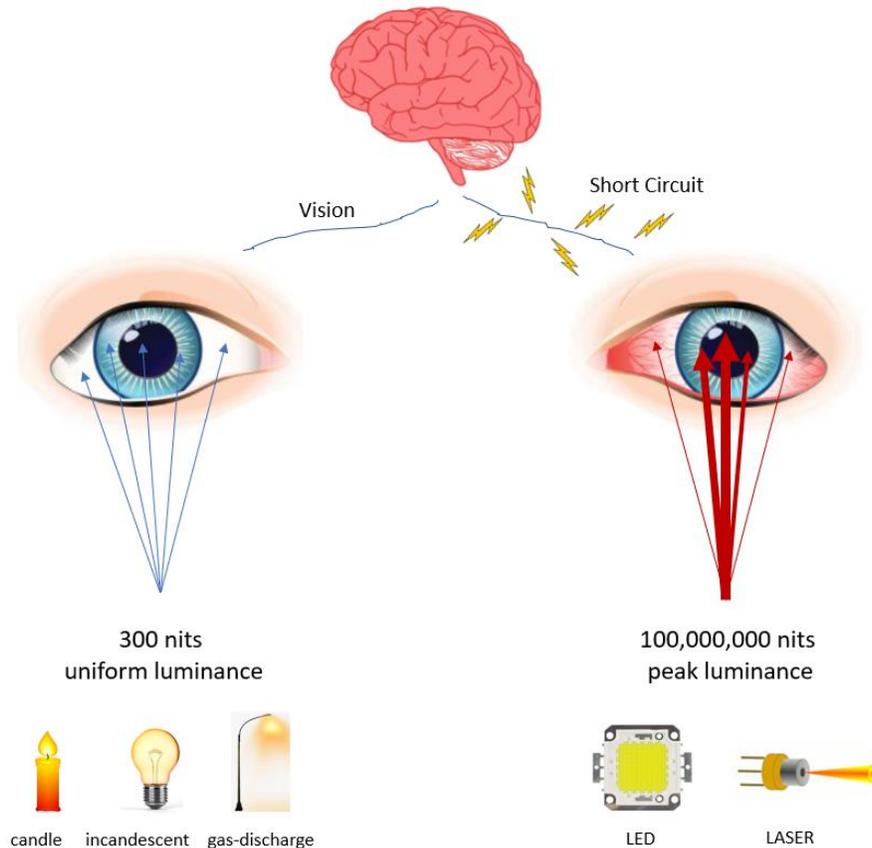


Figure 2 - Spatially Uniform v. Non-Uniform Radiation

Figure 3 is a diagram showing the categorization of radiation and shows that *light* and *illumination* are spatially isotropic radiation in the human visible portion of the electromagnetic spectrum. Radiation emitted by LEDs do meet the regulatory meaning of or comply with standards for the use of light as illumination.

Regulatory Meaning of Light and Illumination

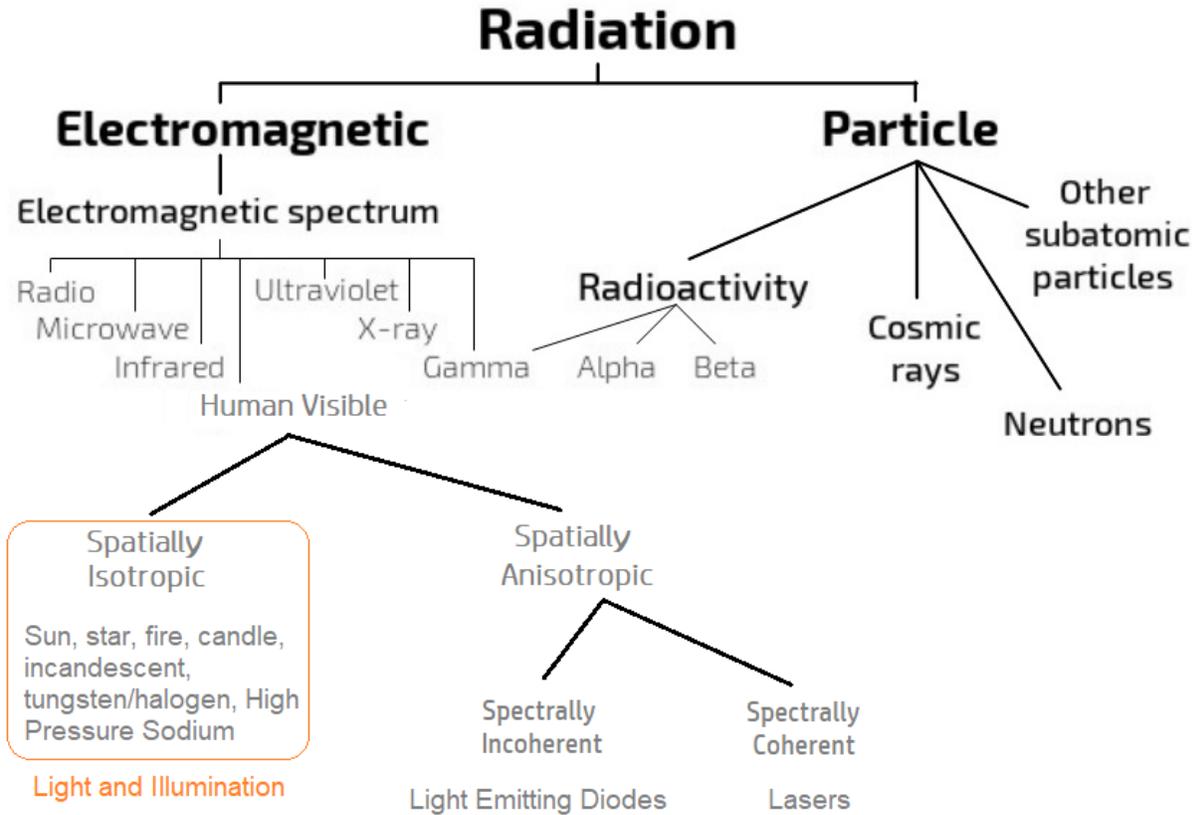
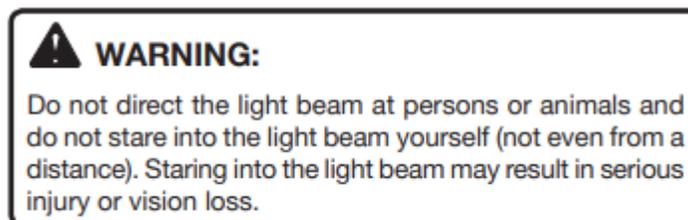


Figure 3 - Radiation Types

As an example of how dangerous LED radiation is, the operator’s manual for the Ryobi P705 Flashlight includes the following: “WARNING: Do not direct the light beam at persons or animals and do not stare into the beam yourself (not even from a distance) Staring into the light beam may result in serious injury or vision loss.”



As another example, consider this warning shown in Figure 4 from the company Gear Light.

WARNING: To avoid eye injury, do not stare directly into the light beam or shine the beam directly into anyone's eyes. This product is not designed, intended, or recommended for children or hazardous environments.



Figure 4 - LED Flashlight

Clearly neither flashlight can be safely used in a dark environment, as there is no feasible way to protect every approaching person or animal from being hit in the eye with the light beam. The warnings also refer to children, who along with infants are an identified high-risk population vulnerable to LED-exposure harm. Babies often lack an adult's automatic, self-protective aversion response to bright or intense light, and will stare directly at the source.

Another area of danger, especially for people with epilepsy, is LED flashing lights which turn on and off instantly. There are many LED flashing radiation devices already released into the public realm such as on ambulances, Rectangular Rapid Flashing Beacons, and radio towers that will trigger seizures. A video example is available here: <https://youtu.be/ma0hGwHivO4>

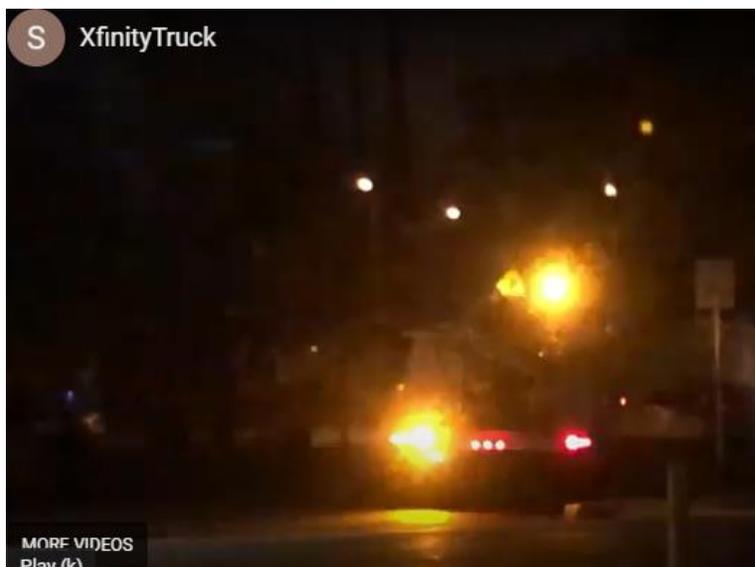


Figure 5 - LED Flashing Lights

The result of exposure to LED radiation is immediate sickness in the form of headaches, nausea, eye pain, loss of balance, migraines, panic response, altered vision, epileptic seizures, disorientation, and other neurological disturbances. Each of these symptoms is being verifiably reported by an increasing number of individuals and constitute medical evidence of LED-induced harm. LED visible radiation exposure is causing catastrophic physical harm, subjecting at-risk individuals to illness and injury, and plunging formerly healthy, independent people into crisis levels of stress, hopelessness, psychological trauma, and persistent thoughts of suicide.

The Epilepsy Foundation's website does not adequately detail the dangers of LED radiation.³ To protect people with epilepsy and provide them with the information they need, the Soft Lights Foundation requests that the Epilepsy Foundation produce a report in 2022 that details the harms caused by LED radiation for those who have epilepsy and post this report on the Epilepsy Foundation website.

Sincerely,



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³ <https://www.epilepsy.com/learn/triggers-seizures/photosensitivity-and-seizures>