Soft Lights Foundation

9450 SW Gemini Drive
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December 31, 2021

BY EMAIL

Alexander Hoehn-Saric, Chairman
Consumer Products Safety Commission
info@cpsc.gov

Re: The LED Fraud

Dear Alexander Hoehn-Saric,

The natural night is a fundamental resource that is critical to the proper functioning of humans and nearly all biological systems. Artificial light is a pollutant that damages the natural night resource and greatly increases sickness, risk of cancer, mood disorders and premature births.[1]

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.[2] This document stunned the world as it alerted the public to the toxicity of LED radiation, and the AMA recommended setting limits on this radiation. 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 and that LED radiation is safe. These are fraudulent claims.

According to the US Department of Energy's website, energy efficiency means "using less energy to get the same job done."[3] The job is to provide uniform illumination with minimal harm. LEDs do not produce uniform illumination[4], 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

[1] https://www.softlights.org/resources
[2] https://www.ama-assn.org/sites/ama-assn.org/files/corp/media-browser/public/about-ama/councils/Council%20Reports/council-on-science-public-health/a16-csaph2.pdf
[3] https://www.energystar.gov/about/about_energy_efficiency
[4] https://ieeexplore.ieee.org/document/8879542

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

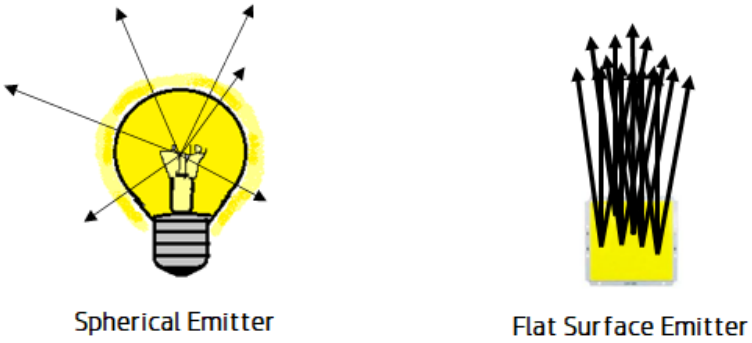

Figure 1 - Spherical vs. Flat Surface Emitter

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.

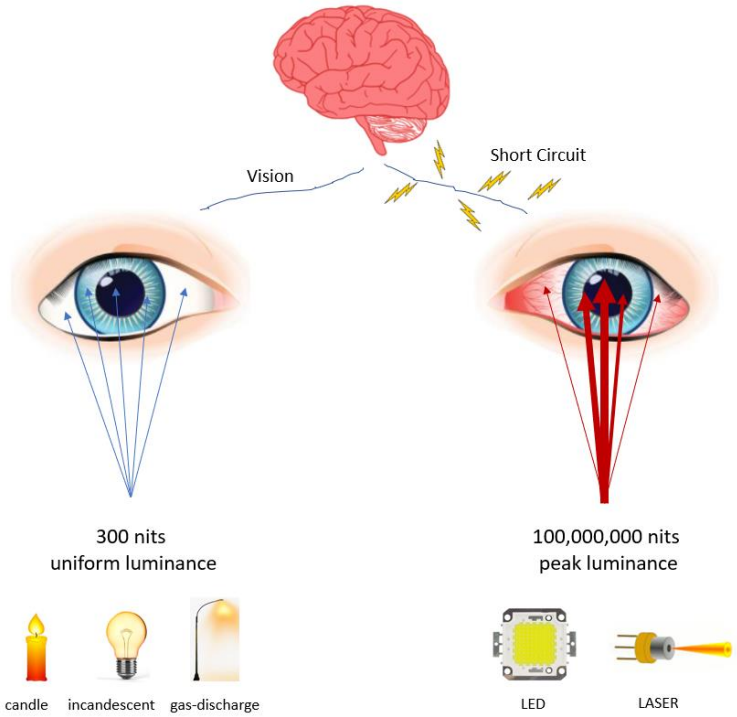

Figure 2 - Spatially Uniform v. Non-Uniform Radiation

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.

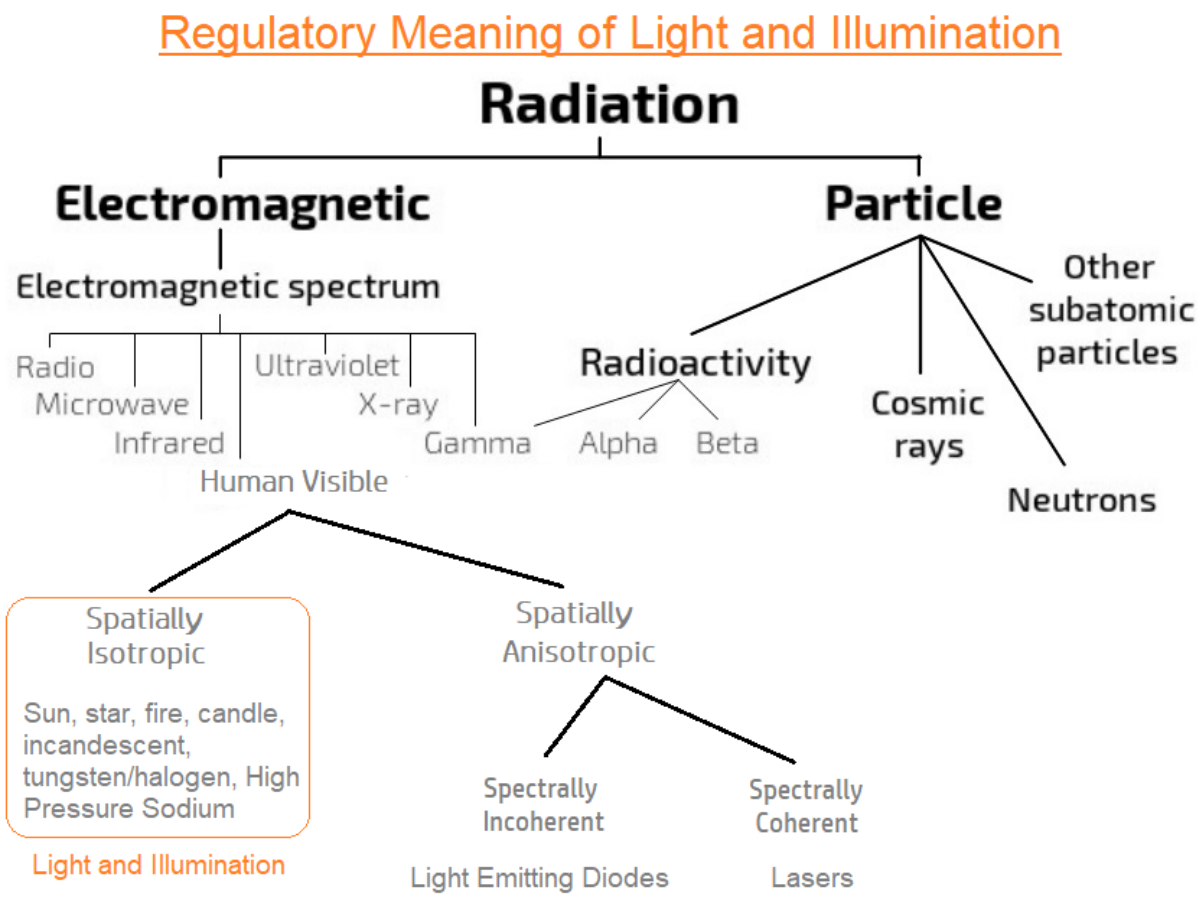

Figure 3 - Radiation Types

A standard such as the Illuminating Engineering Society Recommended Practice for Design and Maintenance for Roadway Parking Facility Lighting (IES RP-8-18) is applicable only to the standard regulatory meaning of light and illumination and cannot be used for LED radiation devices. A utility company or city that relies on IES RP-8-18 or similar standard for the installation of LED streetlights will not have complied with the standard.

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."

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

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 is LED flashing lights which turn on and off instantly and have a dangerous peak radiance. 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, cause migraines, and interfere with human nerve functioning. Here are some video examples:

Utility Truck: https://youtu.be/ma0hGwHivO4

Rectangular Rapid Flashing Beacon: https://youtu.be/KBltx0Argag

Shoes: https://youtu.be/owZFQuats1k

Figure 5 - LEDs on Shoes

Appliances such as dishwashers, microwave ovens, washing machines, and refrigerators now use LEDs which are painful and dangerous. Figure 6 shows how consumers are dealing with the dangerous LED indicator lights by taping over them.

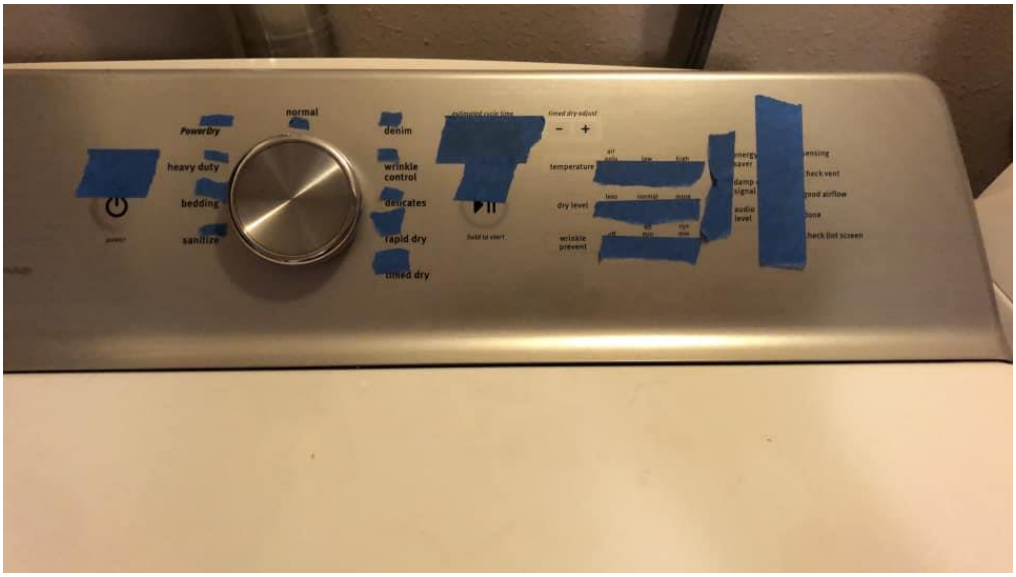

Figure 6 - Washing Machine

The Soft Lights Petition to ban blinding LED vehicle headlights has tens of thousands of signatures. Here are a few of the most recent comments.[5]

"These new bright headlights are dangerous and blinding to other drivers."

"I'm tired of being blinded with these bright lights! It's painful!"

[5] https://www.change.org/p/u-s-dot-ban-blinding-headlights-and-save-lives

"I can barely drive at night anymore. I'm afraid of an accident because I am constantly blinded by LED lights aimed into my vehicle"

The National Highway Transportation Safety Administration has never approved a flat surface emitter, such as an LED, for use as a vehicle headlight. The substance emitted by LEDs is spatially anisotropic visible radiation with orders of magnitude difference between the peak radiance at zero degrees along the center axis of the LED chip and angles greater than zero degrees. Mathematically, the shape of the radiation is a Lambertian which is created because the source of the radiation is a flat surface.[6] The radiation energy from an LED is different at every point in space, which is very different than the spatially uniform energy of *light* as used in regulatory filings. Because the radiation emitted by LEDs is spatially anisotropic, and because the peak radiance is so dense, this LED radiation causes eye damage and reduced vision.

Figure 7 - LED Headlights on a Toyota

NHTSA has released a letter stating that NHTSA has never approved a single aftermarket LED headlight. This means that all aftermarket LED headlights are illegal.[7] In addition, NHTSA has never approved a flat surface emitter, which creates spatially anisotropic visible radiation, for use in OEM headlights. The auto makers such as General Motors and Toyota and the headlight suppliers such as Hella have fraudulently certified LED headlights as compliant with NHTSA FMVSS-108 when they are not.

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

[6] https://ieeexplore.ieee.org/document/8879542
[7] http://www.softlights.org/wp-content/uploads/2021/12/Leroy-Angeles.pdf

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.

LED radiation is discriminatory because it interferes with human nerves and disrupts major life functions such as seeing, thinking, and concentrating for people with disabilities, such as those with epilepsy, autism, PTSD, migraines, bipolar disorder, and others. LED radiation prevents safe access to public services such as roads, sidewalks, and government facilities. Use of LED radiation devices violates the federal Americans with Disabilities Act.

The CPSC must taken action to eliminate unsafe and discriminatory products that emit LED radiation.

Sincerely,

Mark Baker
President
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