

November 28, 2021

**BY EMAIL**

Timothy Ballo, Counsel  
Earthjustice  
tballo@earthjustice.org

**Re: Spatially Anisotropic Visible-Radiation Devices**

Dear Timothy,

English Common Law dating back to 1663 states that a property owner has an easement to allow *light* to enter their property.<sup>1</sup> The word *light* referred to sunlight and starlight that could be seen by human eyes. We now know that human-visible light is the set of frequencies between approximately 380nm and 700nm on the electromagnetic spectrum. For regulatory purposes, *light* is spatially isotropic, meaning that the shape of the radiation is the same in all spherical directions.

Biological systems have a long history of evolution with *light*. The substance emitted by the sun, stars, fire, candles, and fireflies is *light* and is a fundamental component of biological life. Humans use their visual receptors to see objects using reflected light, the different wavelengths of light provide color information, and *light* controls circadian rhythms and mood. *Light is spatially isotropic radiation in the human visible portion of the electromagnetic spectrum.*

The substance emitted by LEDs does not meet the regulatory definition of *light*. Light Emitting Diodes are misnamed because they emit visible radiation, but not *light*. LEDs should more properly be named Visible Radiation Emitting Devices or VREDs. Because the substance that LEDs emit is spatially anisotropic radiation and not *light*, this substance interferes with the nervous system and can cause eye damage, pain, epileptic seizures, migraines, psychiatric trauma, and thoughts of suicide.

We wish to alert Earthjustice to legal issues related to the promotion of LED radiation devices. Figure 1 is a diagram that shows that *light* is spatially isotropic radiation in the human visible portion of the electromagnetic spectrum and that the radiation emitted by LEDs, while visible, is not *light*.

---

<sup>1</sup> <https://www.britannica.com/topic/ancient-lights>

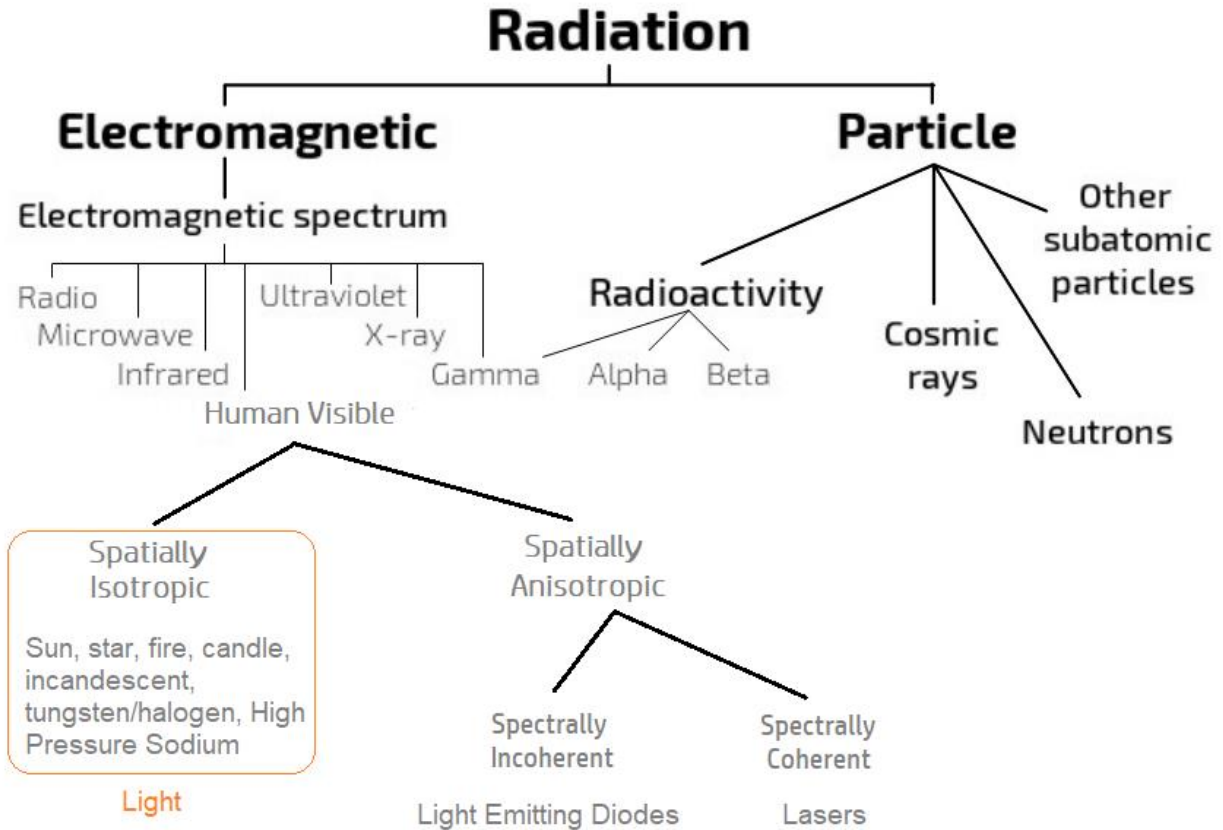


Figure 1 - Radiation

LEDs are not “energy efficient”. To be energy efficient, a technology must provide the same quality of service and perform the same task as the previous technology<sup>2</sup>. The task in this situation is to provide *light* and uniform illumination while using less energy and not causing harm. Since LEDs do not emit spatially isotropic radiation, LEDs do not emit light, and the radiation that LEDs do emit is not uniform. Instead, LEDs emit spatially anisotropic visible radiation that is sending people to the hospital, causing eye damage, and violating civil rights. The claim of “energy efficiency” by the LED lighting industry is fraudulent.

The federal Americans with Disabilities Act prohibits discrimination. Since LED radiation interferes with 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 is discriminatory. The US Access Board has not yet developed guidelines for spatially anisotropic radiation from LEDs. Since LED radiation prevents safe access to public services such as roads, sidewalks and government facilities, LED radiation is discriminatory.

<sup>2</sup> [https://www.energystar.gov/about/about\\_energy\\_efficiency](https://www.energystar.gov/about/about_energy_efficiency)

Figure 2 shows LED radiation devices in a parking lot. The visible radiation shown in the photo is not *light*. The substance is certainly visible, but it is not light as defined in regulations and law and is instead a toxic substance that causes injury.



Figure 2 –LED streetlight radiation

As an example of how dangerous LED radiation is, consider this warning shown in Figure 3 from the company Gear Light.

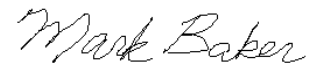
**WARNING:** To avoid eye injury, do not stare directly into the light beam or shine the beam directly into anyone's eyes. This product is not designed, intended, or recommended for children or hazardous environments.



Figure 3 - LED Flashlight

Since the substance that LEDs emit does not meet the regulatory definition of *light*, Earthjustice can use this fact in their lawsuits against agencies that use LED radiation devices.

Sincerely,

A handwritten signature in black ink that reads "Mark Baker". The signature is written in a cursive style with a large initial "M".

Mark Baker  
President  
Soft Lights Foundation  
[www.softlights.org](http://www.softlights.org)  
[mbaker@softlights.org](mailto:mbaker@softlights.org)