

December 3, 2021

BY EMAIL

William Jenaway, Chairperson
Upper Merion Township, Pennsylvania
bjenaway@umtownship.org

Re: Discriminatory LED Radiation

Dear William Jenaway,

The radiation from Light Emitting Diodes is emitted in a shape known as a Lambertian ball.¹ This shape is different than the uniform radiation shape emitted by the sun, a candle, or incandescent source. Standard regulations for light and illumination apply to spatially isotropic electromagnetic radiation such as from the sun or gas-discharge, but do not apply to spatially anisotropic electromagnetic radiation from a flat surface emitter such as LED or laser, unless explicitly specified. The Lambertian shape of LED radiation interferes with the proper functioning of the human nervous system. In addition, the spectral and temporal properties of LEDs also interfere with nerve function. At very low power, this interference may not be noticeable. However, at the intensity levels delivered by today's LEDs, the spatially anisotropic radiation causes epileptic seizures, migraines, psychological trauma, pain, sickness, and thoughts of suicide.

Figure 1 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 for light, and LEDs are not suitable or regulated for the purpose of illumination.

¹ <https://ieeexplore.ieee.org/document/8879542>

Regulatory Meaning of Light and Illumination

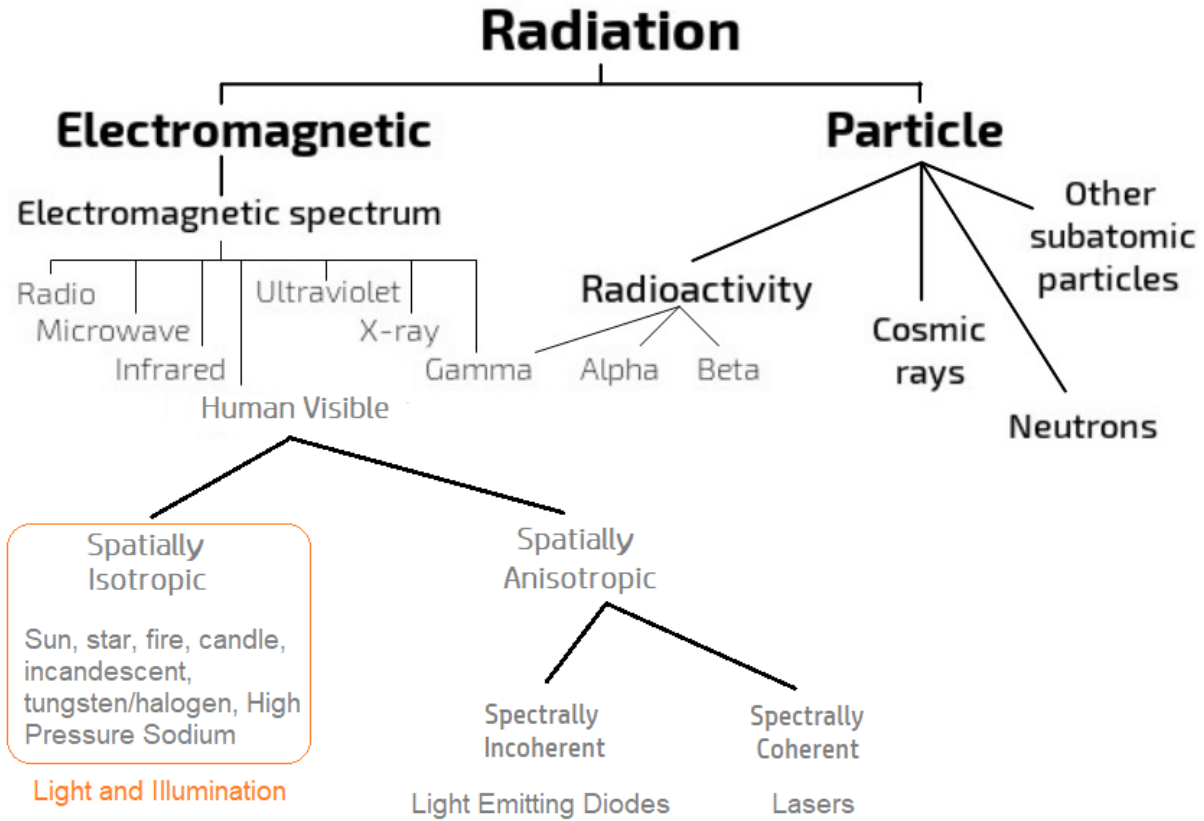


Figure 1 - Radiation Types

After a review of the town’s website, we no indication that the town has addressed the discriminatory effects of LED radiation on those with disabilities, neither on the town’s website nor in the town’s ADA self-evaluation plan. This situation must be corrected so that the town can comply with the Americans with Disabilities Act.

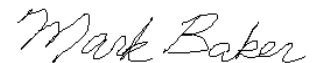
The US Access Board does not currently have guidance on LED radiation, so it is incumbent on the town to develop their own guidelines. As an advocacy group, the Soft Lights Foundation is available to assist the town with drafting guidance for LED radiation devices.

Situations where the town uses or may use LED radiation devices includes streetlights, electronic billboards, flashing lights on emergency and utility vehicles, flashing lights on stop sign and crossing walk devices, flashing lights on radio towers, floodlights, and strip lights.

For people who are protected under the ADA and are LED-reactive, LED radiation devices are discriminatory because they prevent access to public services. For example, an LED flashing light on an ambulance may prevent an LED-reactive person from receiving care. LED billboards may prevent a person with a disability from using the roads.

To prevent discrimination and reduce the risk of liability, the town should have a written plan to ensure that any project does not harm or discriminate against persons with disabilities. Failure to consult with the disability community prior to the installation of an LED radiation device will also make the city liable and the city would not later be able to claim undue burden when accommodations are requested. For example, in the case of the installation of an electronic billboard, a person with epilepsy would be entitled to have the electronic billboard removed, even if doing so was expensive or invalidated a contract.

Sincerely,

A handwritten signature in cursive script that reads "Mark Baker".

Mark Baker
President
Soft Lights Foundation
www.softlights.org
mbaker@softlights.org