

March 2, 2022

BY EMAIL

Desiree Ralls-Morrison, General Counsel
McDonald's Corporation
desiree.ralls-morrison@us.mcd.com

Re: LED Lights are a Safety Hazard

Dear Desiree Ralls-Morrison,

We notified McDonald's on October 31, 2021, about the dangerous and discriminatory conditions created by McDonald's installation and operation of LED lights. Since that time, we have not received a response, nor have we seen any indication that McDonald's has removed these LED lights to protect the health and safety of its employees and customers.

We recently became aware of a graphic on the website of the utility company Evergy, showing that LED light is non-uniform, as shown in Figure 1. This is not new information, but rather a confirmation from another source that LED light is spatially non-uniform.

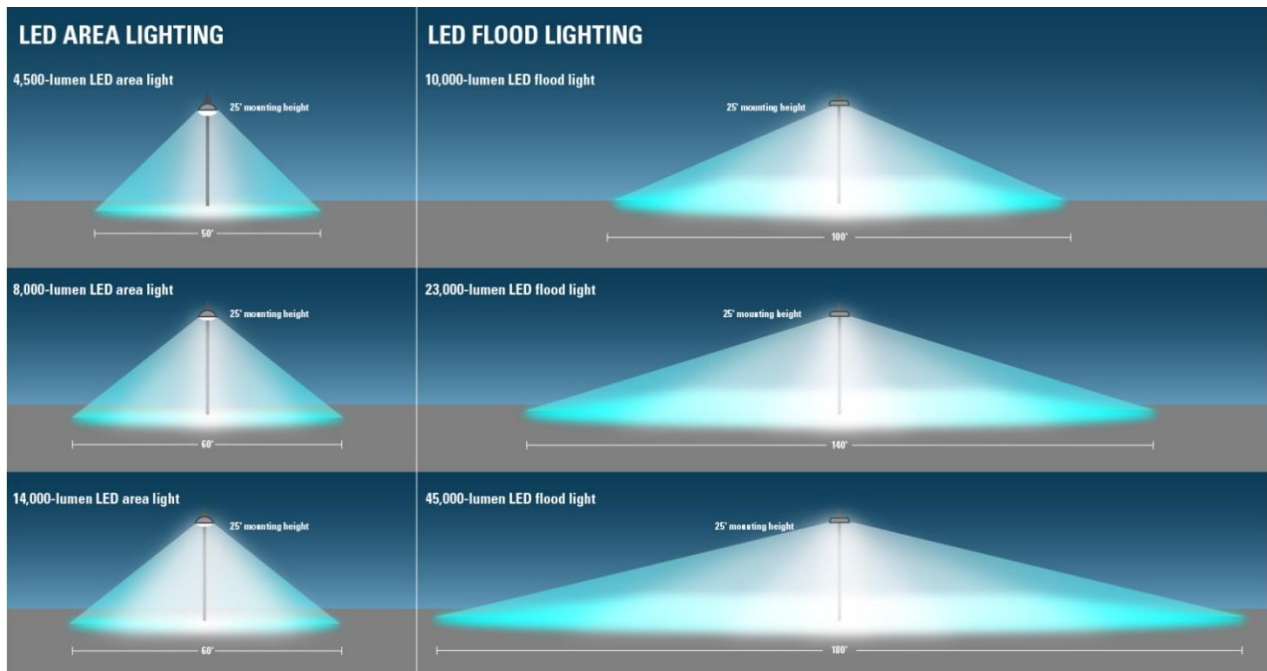


Figure 1 - LED Non-Uniform Light Distribution

We have also learned of this research presentation differentiating between point sources and flat surface sources of light as shown in Figure 2. LEDs are flat surface sources which generate a Lambertian shape with non-uniform energies.

Brightness and linearity of human vision

- **Brightness: lack of standardized scientific definition**
 - **Brightness is an attribute of visual perception and is frequently used as synonym for luminance and (incorrectly) for the radiometric term radiance**
- **For point source,**
 - **Brightness (in the photopic vision regime) can be approximated by the luminous intensity (cd)**
- **For surface source,**
 - **Brightness can be approximated by luminance (cd/m²)**
- **Standard CIE**
 - **Assumption: human vision is linear within the photopic regime**
 - **Isotropically emitting blue point source and red point source have the same luminous intensity**

445.664 (Intro. LED) / Euijoon Yoon

Figure 2 – Brightness of Two Source Types¹

LEDs are almost entirely unregulated. Existing standards and regulations are only applicable to point sources of light. We are unaware of regulations or standards for LED flat surface light sources. In our understanding, this means that McDonald's has installed LED technology without waiting for the technology to be regulated or shown to be safe.

One of the most tragic outcomes of using LED light beams is its effects on those who are LED-sensitive. This includes people with epilepsy, autism, migraines, PTSD, and other neurological conditions where the non-uniform energies of the LED light beams cause the nerves to overload and short circuit, resulting in epileptic seizures, migraines, panic attacks, anxiety, and agitation. Some of these heart-wrenching stories are posted on our website.² Here are a few quotes:

- **Epilepsy:** *I have epilepsy, and even the briefest glimpse of an LED light instantly throws me into a seizure."*
- **Migraines:** *The most distressing symptom from these [LEDs] is a burning sensation in the occipital area of my brain.*
- **Autism:** *I was crawling around on the ground, pulling the grass, pulling my hair, screaming.*
- **Lupus:** *I developed a sunburn-type rash to my face, neck, and chest with spontaneous bleeding to my lip.*
- **Irlen's Syndrome:** *Walking in the dark is horrendous because of these lights.*

¹ Seoul National University - <https://ocw.snu.ac.kr/sites/default/files/NOTE/791.pdf>

² <http://www.softlights.org/stories>

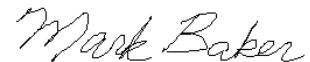
- **Sjogren's Syndrome:** *Strobing LED lights are becoming so common on utility vehicles, and they cause me to go into a completely overloaded state where I can't think straight.*

LED lights are discriminatory because they interfere with a person's major life functions such as seeing, thinking, and concentrating, and cause people to be unable to access McDonald's without undue harm. The use of LED lights creates barriers to access which is a violation of the Americans with Disabilities Act.

In 2009, the Underwriters Laboratories made a presentation stating that there were no ocular safety standards for LEDs. As far as know, this situation has not changed, and there are still no safety standards to protect eyes from LED light. In our understanding, McDonald's has installed LED lights in their parking lots and restaurants without following any guidance, regulations, or standards for LEDs to ensure eye safety, because no such standards exist. In a practical sense, it appears to us that McDonald's has embarked on a large-scale real-time experiment using LEDs, without knowing if they are safe.

We request a response from McDonald's on this issue.

Sincerely,



Mark Baker
President

Soft Lights Foundation
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