

January 4, 2021

To Whom it May Concern:

I wish to let you know that I am what would be referred to in environmental health parlance as a “sensitive receptor”. My sensitivity is only to light, primarily artificial lights, such as fluorescent and LED, which my eyes perceive as overwhelmingly bright and very painful. I have lived and suffered with this condition since childhood and about 12 years ago was diagnosed by my neuro-ophthalmologist and my neurologist as having chronic migraine variant with severe neurological photophobia. The variant from a normal migraine is that my eyes hurt instead of my head and the trigger is only light, primarily artificial light. Here is how I react when exposed to these lights, as I explained to the doctors:

*Within a few minutes of exposure to typical office fluorescent and LED lights, for example, my lower eyelid muscle or nerve will start stiffening and twitching about to go into lock spasm. It feels like a sickly transformation of these soft tissues is occurring from normal function into pain mode. Once this happens, my eyes become super-sensitized to light and I feel a sense of panic and fear and not without reason. I know that if I don't get out of the light quickly, the eye migraine process will begin, including throbbing eye and orbital pain for days, abdominal upset, blurred vision, loss of coordination, stumbling, making mistakes and other issues rendering me virtually non-functional. This process or “migraine wave”, once it begins, is usually irreversible and takes days to run its course, during which period I am confined to a dim or dark room. For short duration light exposures, I can sometimes avoid the process with a nasally-injected triptan medication, which is quite expensive. When I am in eye migraine as described, in addition to all the other symptoms, my eyes will look all bloodshot if my head is inverted for a few minutes first and then righted. I have also noticed bright white or blue unshielded LED lights such as in parking areas actually “lase” or lash the surface of my eyeball, causing a bruising, aching pain that lasts for weeks.*

As a career environmental professional, I notice that my eyes seem to be reacting to artificial light as if it were a toxic waste consistent with the formula “Toxicity = Dosage x Exposure” as in the environmental health arena. The brighter the (white or blue) light, or longer the duration of exposure, the greater the eye pain and longer it takes to get out of the migraine. There is a threshold light exposure level below which I do not go into eye migraine or can rescue out of it with medications, if I act quickly enough and get out of the light. For decades I was in and out of eye doctor's offices futilely trying to explain my problem only to be met with skepticism and disinterest. They told me that bright light is needed for proper vision and cannot cause eye pain at normal office levels. The reason for this belief was that the eyes are connected to the vision part of the brain, not the trigeminal nervous system, which detects pain such as one might experience at the dentist. However, recent research by doctors at eye centers such as Harvard (e.g., Dr. Rami Burstein) and the University of Utah (e.g., Dr. Katheen Digre) have overturned this orthodoxy, and the research has shown that light sensitive retinal cells may be connected to the trigeminal nervous system, at least for some people, and that light can

indeed cause neurologically based eye pain. Research also indicates that neurological photophobia such as I have described maybe be a separate condition from migraine but with similar symptoms. This is an area in need of active research and it may be years before the medical basis for neurological photophobia and other light sensitivity disorders are understood. One thing appears to be clear, however, with regards to photophobia patients – exposure to bright LED lights indoors or outdoors can cause the equivalent of dental pain in and/or around the eye as orbital trigeminal nerves are activated by the brain. If it can happen to me, it can happen to others no matter how rare doctors may opine. Further, it can happen to children and be a hidden, undetected learning disability that will baffle parents and subject a child to a confusing, painful childhood. It will limit if not destroy a person's chances for a happy, normal life and severely limit career options. Your child could have this disorder and you don't even know it. What's worse, little science is being conducted on the subject and bright lights are being thrown up everywhere.

Artificial light that causes pain defeats the purpose of artificial lighting and renders those affected as second-class citizens. Living with this condition has been difficult, and even more so since the wide adoption of LED lights for lighting streets, cars, residential neighborhoods and downtown. Where I live, I have not been able to go for an evening walk since the LED streetlights were installed in 2016. Then came the intense, glary decorative LED house lights sold at every warehouse and hardware store, destroying the night time ambiance in my neighborhood. Prior to LEDs, my street was lit with tall sodium vapor lights widely spaced apart creating dark areas between them. I used to walk for an hour each night getting healthy exercise without all the light exposure I would get in the daytime. I could also look up at the sky and identify the constellations. I would also hear the screech of the barn owl flying overhead looking for prey. I very much enjoyed my evening walks and not being able to take them since 2016 because of LED lights has negatively affected both my happiness and my physical health.