

Is BlueMax Technology safe for your eyes?

There are at least five separate types of hazards to the eye and skin from optical sources:¹

1. Ultraviolet photochemical injury to the skin (erythema and carcinogenic effects), and to the cornea (photokeratitis) and lens (cataract) of the eye (180 nm to 400 nm).
2. Thermal injury to the retina of the eye (400 nm to 1400 nm)
3. Blue-light photochemical injury to the retina of the eye (principally 400 nm to 550 nm; unless aphakic, 310 to 550 nm)²
4. Near-infrared thermal hazards to the lens (approximately 800 nm to 3000 nm).
5. Thermal injury (burns) of the skin (approximately 400 nm to 1 mm) and of the cornea of the eye (approximately 1400 nm to 1 mm).

Our eyes are protected against very bright light sources by the natural aversion response to viewing bright light sources. This aversion limits the duration of exposure to a fraction of about 0.25 second³. The potential for retinal damage from commercially available light source used as a task light and or SAD light for application in light therapy was evaluated. The spectral radiance profile of a light source (Blue Max 70 watts) was measured and calculated at various distances and viewing directions by means of a spectroradiometer and the results weighted according to the American Conference of Governmental Industrial Hygienists (ACGIH) Blue Light Hazard Function and Thermal Hazard Function. The values were then integrated by means of the ACGIH hazard formulae. The maximum permissible exposure (MPE) duration for this light was determined. This calculation assumed a worst-case condition of direct viewing of the light source from a distance of 10 cm to 40 cm. The results indicate that there is no thermal or blue light hazard to the retina. The MPE duration values for the blue light hazard to the retina ranged from 3 minutes per day (for closest distance of the light source unit) to 60.0 minutes per day (for the far distance and its off axis viewing direction of the light source unite). None of these hazard times is short enough to be of concern unless the individual operator elects to focus on the light source or the reflected output from unit for a long extended period of time.

REFERENCE

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