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## RISK ASSESSMENT FOR LED LIGHTING FLICKER

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**Background** LED (Light Emitting Diode) based lighting has been predicted to reach as much as 60% share of the global lighting market in the next 10 years. It is characterized by exceptional lifetime and excellent energy efficiency. However potential health

concerns have been associated with flicker in some LED lighting technologies.

**Aims/Objectives/Purpose** The IEEE PAR1789 Working Group has undertaken a risk assessment of potential hazards associated with flicker in LED lighting as part of an effort to develop Recommended Practices of Modulating Current in High Brightness LEDs for Mitigating Health Risks to Viewers.

**Methods** Information on potential health effects of flicker was collected through an extensive literature review and consultation with experts. A risk assessment was conducted following the Eurosafe framework model of risk assessment.

**Results/Outcome** Potential adverse effects of flicker include seizure, stroboscopic effects, migraine, exacerbation of repetitive behaviour in persons with autism, and asthenopic effects including eyestrain, fatigue, and reduced performance on visual tasks. Some health effects are well understood in terms of susceptible subgroups, prevalence and influential parameters while other potential hazards are less extensively studied. Therefore the risk assessment incorporates informational certainty as well as probability and severity of potential effects.

**Significance/Contribution to the Field** Enable confidence in safe use and guidance for safe design of an environmentally important lighting technology.