

ELC
Questions & Answers document
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The issue

On October, 25th 2010, ANSES, the French agency for food, environmental and occupational health & safety published a report on the "risk of blue-light photochemical damage" caused by light-emitting diodes (LEDs). Consequently, articles appeared in the media stating that LED light is dangerous to eyes.

Questions & Answers

Question 1: It was reported that LED lights are dangerous to eyes. Is this true?

Answer: No, there is no difference between LED light compared to any other artificial light sources, therefore LED lamps are safe to use for consumers. In fact, natural light contains much more blue light than any artificial general lighting bulb. In Europe, all lamps are subject to EU regulations and all ELC companies' LED bulbs comply with these measures, ensuring their products are safe to use. This means that being exposed to a LED lamp's light is as safe as being exposed to any other artificial light source, and safer than being exposed to natural lighting conditions – such as walking in the open air.

More detailed info – putting the issue into perspective:

There is a small amount of blue light generated by LED lamps like all other light sources. But it is a tiny fraction of the emissions from natural daylight, and similar to emissions from the other light sources like Incandescent, halogen and energy savers or fluorescent lamps. As a comparison, daily exposure to blue light on a summer day is at least 1000 times stronger compared to artificial light indoors.

The ELC member companies comply with all relevant legislation. This legislation includes the CE conformity marking, the General Product Safety Directive and the Directive on the protection of workers from the risks associated with physical agents.

Question 2: You mean that natural light is more dangerous than artificial light?

Answer: The blue light photochemical retinal hazard is assessed on the basis of IEC standard 62471. It classifies light sources into risk groups 0, 1, 2 and 3 (0 = low; 3 = high). According to this classification, the sun would fall into the high risk groups 2 or 3 respectively, hence the recommendation to wear appropriate safety glasses when looking into the sun for a long period, for instance when observing a solar eclipse. The LED lights for the consumer market from ELC members, as with all other artificial light sources like traditional incandescent, halogen and energy savers, fall into category 0 and 1. For this reason these products require no special measures.



Question 3: What exactly is the issue raised by the ANSES?

Answer: On October, 25th ANSES, the French agency for food, environmental and occupational health & safety, published a report on the "risk of blue-light photochemical damage" caused by light-emitting diodes (LEDs). The report focuses on the risk of damage to the retina caused by looking directly into light sources, irrespective of duration and intensity - known as blue light photochemical retinal hazard. Consumers are familiar with the phenomenon from gazing directly at the sun. However, we humans have a natural reflex to protect ourselves - we close our eyes or look away.

Question 4: Is LED light more dangerous than traditional light bulbs or energy savers?

Answer: LED light emits similar amounts of blue light as other light sources, like traditional incandescent, halogen and energy savers. Cool white lamps contain more blue light than warm white lamps, this is similar for LED and energy savers.

Question 5: Does it involve LED lamps and LED luminaires?

Answer: The LED light solutions from the ELC members comply with regulations, such as the EU regulations, and are safe to use.

Question 6: Does the lighting industry need to provide guidance to consumers?

Answer: The lighting solutions from ELC members comply with existing regulations, such as EU regulations, and therefore no special measures are required. It is essential to have a good market surveillance system in place to provide transparency to consumers to reassure them that the products comply with the regulations which are in place.

Question 7: Is LED light dangerous for people who suffer from diseases, like lupus and other sensitivities for light for blue/UV light ?

Answer: A small part of consumers may suffer from diseases like Lupus, and for them the advice is to shelter from direct sunlight. For artificial light this means using low levels of – indirect - lighting, such as covering the lamp with a lamp shade. Special covers can be used to filter any remaining radiation from the lamps that is harmful for these users.

People sensitive to blue light and want to use energy saving lamps will be helped by using LED lamps or energy savers with warm color tones (low correlated color temperature) which contain the lowest quantity of blue light.

Question 8: What is the Blue Light Hazard? What is the effect of blue light to people's eyes?

Answer: When being exposed to blue light in an unusual way like gazing too long into the sun or a very bright light source, the blue light can damage a part of the retina. A known case is looking to the solar eclipse for a time without any eye protection. However, people have a natural reflex mechanism to prevent this from happening, and instinctively they will look away from the source.

Looking into a strong pure blue light or UV source should be always prevented by protective measures in the professional installations where these sources are used in and must comply with the regulations.

Question 9: Why can blue light be dangerous for children?

Answer: Babies' eyes are somewhat more sensitive to blue light. This is a known fact and nothing to be worried about. Note that natural daylight contains much more blue light than artificial light.

Question 10: Why give LED lamps such a cool white light compared to halogen or incandescent lamps that give a warm white light?

Answer: LEDs can be made in cool white and warm white light. By adding more red light we create a warmer white light, whereas the addition of blue light makes the light cool white. Note that the amount of blue light added is still of a low magnitude, much lower than the amount of blue light in natural daylight conditions.

Question 11: Are LED lamps that replace reflector Halogen or incandescent lamps more dangerous for the eye?

Answer: LED lamps are not more dangerous than the lamps they replace as the intensity and spectrum will be similar to the lamps they are replacing.

Question 12: When more LED's are brought together to make one light source, will this increase the radiation level/blue light level?

Answer: At this moment, more LED's are needed to create the same light output and a similar spectrum as a traditional lamp, so there is hardly any difference between the sources with similar light outputs.

Question 13: What does it mean for people if they are in a room in which a lot of directional LED lamps are placed?

Answer: This will be a similar situation as exists today when a room is lit by halogen or certain types of reflector lamps. It will already be a room with a lot of glare sources that are unpleasant for people to look into, and normally people will look away from the glare sources as an instinctive reaction. A good example of such a potentially glaring area is in shops where spot lights are used to highlight goods and features. For work places like offices norms are established to prevent glare: the UGR (Unified Glare Rating) should be less than 19 in such cases.

Question 14: There are different technologies to make white LED light. One is by using blue LEDs surrounded by a bulb with a phosphor that converts the blue light into white light. What about the risk for people if the surrounding bulb breaks and the people can look directly into the blue light of the LED's?

Answer: In the rare event of the bulb with the phosphor of such a lamp breaking, the blue light will be visible for the users of these lamps and the lamp should be replaced as soon as possible. For the users, the danger in such case is limited as the amount of blue light is lower than in outdoor conditions and it is unlikely that people will stare for a long time to the blue emitting LED's.