

So far, no health risks dim LED lights' bright future



Chances are, you are reading this on a computer screen, tablet or mobile phone that uses LED (Light Emitting Diodes) lights, and you probably use LEDs in many other ways in your daily life. Because they are so energy efficient, durable,

compact and do not emit heat, they have countless applications. Because their use is so widespread, the European Commission asked its Scientific Committee on Health, Environmental and Emerging Risks (SCHEER) to determine whether or not the use of LED lights might pose any risks to human health.

→ WHAT ARE LED LIGHTS?

LED lights are tiny light bulbs in an electrical circuit that produce optical radiation when electrons move inside a diode, or semi-conductor device. In most lighting applications, some of the light from the LED is converted to another colour using a phosphor. As such, LEDs produce light in an entirely different way than a traditional light bulb consisting of a glass enclosure containing a tungsten filament that produces optical radiation by heating.

→ POSSIBLE HEALTH RISKS

LED devices emit optical radiation that does not penetrate the body but could potentially damage the eyes and skin depending on many variables like the duration of exposure, the wavelength and the intensity of the light.

Studies show that the radiance from LED screens in TVs, laptops, phones, tablets and toys is less than 10% of the maximum amount within safe limits set to protect the retina from injury. That means they pose no risk to the eyes in normal use.

Nevertheless, unlike traditional lights, most currently used LED lights emit little or no infra-red, which may affect some bioprocesses in humans and is currently being researched.

Typical exposure to optical radiation from LEDs is likely to be insignificant compared with that produced by the sun. Other types of lighting also emit optical radiation, which is a natural part of the electromagnetic spectrum.

→ LED STREET LIGHTS AND VEHICLE LIGHTS

Some older types of LED street lights can cause glare if looked at straight on, but this can be avoided if the LED elements are placed differently or diffused. Vehicle LED lights, particularly daylight running lights and headlights, can also be a source of glare, especially for older people.

→ VULNERABLE POPULATIONS

Children have a higher sensitivity to blue light and although emissions may not be harmful, blue LEDs may be very dazzling for young children. Older people may experience more problems with glare. Some people appear to be susceptible to flicker and many people experience the phantom array effects caused by flickering LEDs when they move their head or eyes.

→ SLEEP DISTURBANCE

All light impacts the circadian rhythm; particularly the natural light (day) and dark (night) phase but also artificial light. There is some evidence that the use of LEDs in the evening may influence sleep quality, but the activity being carried out when the lights are used should also be taken into account. For example, if someone watches a film on a tablet, it might be the film and not the LED light that impacts their sleep.

→ SAFETY REGULATIONS

Exposure limits for optical radiation are set by the International Commission on Non-Ionizing Radiation Protection. There is also a legal framework at EU-level that aims to minimise any risks to workers posed by LEDs.

→ THE SCHEER'S CONCLUSIONS

There is no evidence that the general public is at a risk of direct adverse health effects from LEDs when the lights are in normal use. However, there is insufficient research on the health effects of LED lighting and many topics should be investigated further, particularly the effects of flicker. Since the use of LED technology is still evolving, the SCHEER would like to see continued monitoring of LED lights and of any health risk they might pose to the general public.

This factsheet is based on the Opinion of the independent Scientific Committee on Health, Environmental and Emerging Risks (SCHEER): 'The potential risks to human health of Light Emitting Diodes (LEDs)'.

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This opinion is available at:
https://ec.europa.eu/health/scientific_committees/scheer/opinions_en