

## New lighting advice should improve health

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Daylight saving is a good reminder that light has a major influence on our sleep, alertness, mood, and cognitive functions. Last month, a group of international experts published the first evidence-based, consensus recommendations for how bright our living and working environments should be so people will stay alert during the day and sleep well at night.

Their guidance, published in the open access journal PLOS Biology, is really aimed at the lighting and electronics industries, so they can improve their products to better support our health.

One of the key barriers has been that the traditional ways of measuring the brightness of light is based on how we visually perceive it – using the rod and cone photoreceptors in our eyes. But studies have shown that mice and humans remain sensitive to light even when they lack these rods and cones. More important is a specialised type of neuron in the eye called intrinsically photosensitive retinal ganglion cells. These contain a light-sensitive protein called melanopsin which is most sensitive to blue light.

The experts recommend we need to stop thinking about light by its brightness and start thinking about how it impacts melanopsin. They are proposing a new light measurement standard, called the melanopic equivalent daylight illuminance (EDI) and are urging companies to assess their products against this new standard, so they can predict how the products will affect our body rhythms and health.

The experts also recommend that the light levels we should aim for should be based on this new measurement. During the daytime, we should aim for a minimum melanopic EDI of 250 lux indoors and that daylight should be used in the first instance to try to meet these levels.

If additional lighting is needed, the products used should ideally have a spectrum that is enriched in shorter wavelengths, which is better for activating melanopsin.

In preparation for sleeping, the experts recommend that starting at least three hours before bedtime, we aim for a maximum melanopic EDI of 10 lux using light depleted in those short wavelengths so it won't activate our melanopsin too much. At night, they recommend that the environment we sleep in is as dark as possible with a maximum melanopic EDI of 1 lux.

The next step is to integrate these recommendations into existing formal lighting guidelines that currently focus more on brightness levels for safety rather than on the nature of the light itself and how that impacts our health. Hopefully this way, we'll be able to balance both needs.