



Australian Government

Australian Radiation Protection
and Nuclear Safety Agency

Fact Sheet

Compact Fluorescent Lights and Health

There is no established evidence that the low levels of ultraviolet radiation from compact fluorescent lights are a risk to health for normal population skin types.

Many types of lighting sources used in our homes emit small amounts of ultraviolet radiation (UVR). Compact fluorescent lights (CFLs) emit slightly more UVR when compared to other light sources like halogen and incandescent light sources.

ARPANSA has measured the UVR and visible light emissions from a range of light sources, including CFLs, and have found that UVR levels are below the Australian limits and pose no risk to health for normal population skin.

UVR levels from light sources

In all, ARPANSA has tested twenty four different CFLs covering most of the well-known brands sold in Australia, including both single and double envelope units ranging from 5 Watts (W) to 28 W. For comparison purposes, three halogen lamps (10 W and 50 W) and eight incandescent globes (75 W and 100 W) were also tested. Measurements of emissions from the lights were made in the ultraviolet part of the spectrum (250 to 400 nm) and in the visible range (400 to 890 nm) at distances of 10, 25, 50, 100 and 200 cm.

At the measurement distance of 10 cm, which was considered to be the closest distance that people would be to the lamps, four of the CFLs had allowed exposure times shorter than eight hours, while a further two CFLs had times of approximately ten hours. For comparison, the allowed exposure limits will be exceeded in typical midday summer sunshine in about six minutes in Brisbane and seven minutes in Melbourne.



Typical compact fluorescent light bulbs.

The emissions from all of the light sources decreased rapidly with distance. At a distance of 25 cm, none of the CFLs had allowed exposures times shorter than eight hours, and therefore did not exceed the limits set in Australia by ARPANSA RPS12 and internationally by the International Commission on Non-Ionizing Radiation Protection. Although emitting some UVR, none of the single and double envelope CFLs or the incandescent and halogen lamps produced sufficient UVR to be a risk to health, even at the 10 cm distance.

The exposure limits of RPS 12 are conservative for normal population skin types, however they may not apply to people with medical conditions that may make them highly photosensitive. For distances in excess of 25 cm, both forms of CFLs are suitable for use. It is advisable for people to utilise double envelope or encapsulated CFLs for desktop use at distances closer than 30 cm.

Useful Links

ARPANSA Radiation Protection Series No.12 *Radiation Protection Standard for Occupational Exposure to Ultraviolet Radiation (2006)* - www.arpansa.gov.au/Publications/codes/rps12.cfm

International Commission on Non-Ionizing Radiation Protection. *Guidelines on Limits of Exposure to Ultraviolet Radiation of Wavelength between 180 nm and 400 nm (Incoherent Optical Radiation)*. Health Physics, 87 (2), 171-186, 2004 - www.icnirp.org/cms/upload/publications/ICNIRPUV2004.pdf