



Ultraviolet radiation from quartz halogen desk lamps and down lighting

Environmental health guide

Desk lamps and down-lighting systems incorporating quartz halogen globes (also known as tungsten halogen globes) are now widely available.

What is Different about Halogen Globes?

These globes have greater luminous efficiency and are longer lived than conventional incandescent globes.

However, the quartz halogen globe has a high filament temperature which produces ultraviolet radiation (UVR) and a quartz envelope which, compared with ordinary glass, is a good transmitter of UVR.

Exposure to UVR from halogen globes

The UVR hazard to skin and eyes is comparable to exposure from strong sunlight. In the midday summer sun, the daily exposure limit for UVR is reached in about 10 minutes. At 25cm, a bare 50W quartz halogen globe will deliver the same amount of UVR in about 10 minutes also.

See appendix for exposure limits from a 50W globe.

For two globes close together, the exposure limit per day is reached in half these times;

for three globes close together, one third of these times, etc. Similarly, for lower wattages, the time to reach the exposure limit is proportionally extended.

When lighting products incorporating quartz halogen globes were first marketed they did not provide any protection from the UVR component.

Protection from UVR

Protection is now provided in the form of a clear glass filter in front of the globe. Because of the high temperature at which these globes operate, it is necessary to leave a small air gap between the filter and the lamp reflector.

If you intend to purchase a desk lamp or down-lighting system incorporating quartz halogen globes, you should ensure that a filter is provided for each globe.

If you need to use a lamp with an unfiltered quartz halogen globe, you should consider protective options which include one or a combination of:

- (i) ensuring that you are at an adequate distance from the lamp (see appendix)
- (ii) restricting exposure time per day if working close to the lamp (see appendix)
- (iii) covering or shading the skin with UVR protective clothing or sunscreen cream



Further information

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Appendix

| Distance to unprotected skin | Approximate time per day to reach exposure limit |
|-------------------------------------|---|
| 50cm | 40 min |
| 100cm | 2hr 40 min |
| 175cm | Full working day |

(Calculations taken from measurement data of the Australian Radiation Laboratory and the National Radiological Protection Board of the United Kingdom)