



How does the sun affect the eyes?

Ultraviolet radiation (UVR) from the sun can cause damage to the eyes and the sensitive skin around them.

Acute exposure to too much UVR can cause temporary effects which usually go away within 48 hours. These include:

- mild irritation
- feeling there is something in the eye
- photoconjunctivitis—inflammation of the conjunctiva
- photokeratitis—known as ‘snow blindness’, which causes inflammation of the cornea and is like sunburn of the eye.¹

Regular exposure to too much UVR can cause serious damage to the eyes including:

- increased risk of cataracts—clouding of the lens^{2,3}
- pterygium—a white or creamy fleshy growth on the surface of the eye^{2,3}
- rarely, cancer of the cornea or conjunctiva²
- basal cell carcinoma (skin cancer) of the skin surrounding the eye.

How can I protect my eyes from UVR exposure?

Wear a hat—a broad-brimmed hat can reduce the amount of UVR reaching the eyes by around 50 percent.³

Wear sunglasses—the level of UVR protection will depend on the type of lens and the style of sunglasses. It is particularly important to wear sunglasses, when around surfaces that reflect a lot of UVR.

Choosing sunglasses

Choose sunglasses that meet the Australia/ New Zealand Standard for Sunglasses and fashion spectacles (AS/NZS 1067:2003).⁴ Check the label or ask the retailer whether the sunglasses meet this standard.

To protect your eyes from UVR which can pass round the edge of sunglasses, choose ones that are close-fitting, wrap-around and meet the sunglasses standard.

The colour of the lens does not relate to the amount of UVR protection the sunglasses give, so check the label for the UVR protection level.

Wearing sunglasses in combination with a broad-brimmed hat (minimum 7.5 cm brim) or bucket hat (deep crown, minimum 6 cm brim) can reduce the amount of UVR that reaches the eyes by up to 98 percent.

What about prescription glasses?

If you wear prescription glasses, there are several options to protect your eyes from UVR. These include having a UV protective treatment when your glasses are made; having photochromic (transition) lenses which are clear indoors but darken in response to sunlight; having prescription sunglasses made; or wearing protective sunglasses over your prescription glasses. Wear sunglasses if you have contact lenses.

Children and sunglasses

Sunglasses are available for children. Check they meet the sunglasses standard and that they will stay on securely. Children’s fashion or toy glasses should not be used to protect children’s eyes from UVR as they do not provide an adequate level of protection.

- Children should be encouraged to wear a sunhat while playing outside. A legionnaire, broad-brimmed (minimum 7.5 cm brim) or bucket (minimum 6 cm brim) hat provides considerable protection for the eyes. When around very reflective surfaces (such as water or snow), it is extremely important for children's eyes to be protected.

Eye protection for outdoor workers

Wear sunglasses/goggles that meet the Australia/New Zealand Standard (AS/NZS 1067:2003).⁴

If you require safety sunglasses/goggles to protect your eyes, check that they provide UVR protection. If you will be working in full sunlight or near highly reflective surfaces, tinted safety glasses will usually be required.⁵

Reflected UVR

As well as UVR from the sky, UVR is reflected off many surfaces. Sand will reflect about 15 percent of UVR, surf about 25 percent and fresh snow about 80 percent.^{6,7} Remember to wear sunglasses when in snow, at the beach, around water or sand, for example, when boating and/or fishing.

The Ultraviolet Index (UVI)

The UVI is an international, scientific measure of the level of UVR in the environment. The higher the number, the greater the risk of skin damage.

The Cancer Society advises sun protection between September and April (especially between 11 am and 4 pm) or when the UVI is 3 or above. Cover up with a hat and protective clothing; wear sunglasses if possible; and use sunscreen on exposed skin.

UVI levels can be found in daily newspaper weather forecasts (during daylight saving months), on the SunSmart website: <http://www.sunsmart.org.nz/uvi> and the NIWA website: <http://www.niwa.co.nz/our-services/online-services/uv-and-ozone/forecasts>

References

- 1 Young, A. R. (2006). Acute effects of UVR on human eyes and skin. *Progress in Biophysics and Molecular Biology*, 92(1), 80-85. doi: 10.1016/j.pbiomolbio.2006.02.005v
- 2 World Health Organization. (2009). *Ultraviolet radiation and human health*. Fact sheet No. 305, from <http://www.who.int/mediacentre/factsheets/fs305/en/index.html>
- 3 Taylor, H. (1989). The biological effects of UVB on the eye. *Photochemistry & Photobiology*, 50(4), 489-492.
- 4 Standards New Zealand. (2003). Australia/New Zealand Standard: AS/NZS 1067:2003. *Sunglasses and fashion spectacles*. <http://standards.co.nz>
- 5 Australian Radiation Protection and Nuclear Safety Agency. (2010). Australian sunglass and safety glass standard, from http://www.arpansa.gov.au/uvrg/rinfo_p18.cfm
- 6 World Health Organization. (2010). *Global Solar UV Index*, from <http://www.who.int/mediacentre/factsheets/who271/en/>
- 7 Greenwood, J. S., Soulos, G. P., & Thomas, N. D. (1998). *Undercover: Guidelines for shade planning and design*. Sydney: NSW Cancer Council and NSW Health Department. Adapted for New Zealand use by the Cancer Society of New Zealand, 2000 from http://www.cancernz.org.nz/assets/files/docs/info/Information sheets/Guidelines_Under_Cover.pdf