



Sun Exposure and Health

There is well established evidence that exposure to ultraviolet radiation (UVR) from the sun can lead to skin cancer and eye damage. For best protection use a combination of sun protection measures.

Introduction

Australia is the skin cancer capital of the world. At least two in three Australians will be diagnosed with skin cancer by the age of 70. The major cause of skin cancer is exposure to ultraviolet (UV) radiation from the sun.

Fortunately, skin cancer is almost entirely preventable and high profile awareness and information campaigns telling Australians how to save their skin have been in place for several decades.

What is UV radiation?

The sun emits many types of radiation. At the earth's surface we receive mostly visible radiation (light) and infrared radiation (heat). Ultraviolet radiation (UVR) is also present but we cannot see it or feel it. Ozone in the atmosphere absorbs much of the UVR before it reaches the ground but we can still receive enough to cause sunburn as well as more serious health problems.

What are the risks from UVR exposure?

Overexposure to UVR can cause sunburn, skin damage and skin cancer. UVR exposure also places our eyes at risk of photokeratitis, photoconjunctivitis and cataracts. The most obvious short-term effect of overexposure to UVR is sunburn, also known as erythema. The more UVR exposure, the worse the sunburn becomes. A person's cumulative exposure to UVR along with the number of severe sunburns they have received, especially during childhood, increases their risk of developing skin cancer. Skin cancers affect people of all skin types.

Melanoma, the least common of the skin cancers but the most dangerous, is related to severe exposure to solar UVR at an early age. Malignant melanomas



For further information visit SunSmart.com.au or call 13 11 20



may appear without warning as a dark mole or other dark spot on the skin. Any concerns regarding moles or skin spots should be referred to a doctor or skin clinic. Further information about skin cancers can be obtained from the Cancer Councils.

Prolonged exposure to solar UVR can have serious consequences for the eyes. Cataract is one of the most common types of eye damage in Australia. Cataract is the clouding of the lens of the eye, which is responsible for focusing light and producing sharp images. Without intervention cataract can lead to blindness.

Due to Australia's geographical location our country receives high levels of UVR. Relatively clear skies and poor use of sun protection measures during outdoor work and leisure means that our mainly fair skinned population has a high exposure to UVR. Australians have the highest rate of skin cancer in the world - over 400 000 new cases of non-melanoma skin cancer are reported each year resulting in more than 500 deaths and over 12 000 cases of melanoma of which 1500 will be fatal.

The risk of a person eventually developing skin cancer is related to the amount of UVR they are exposed to over their lifetime, particularly in childhood.

How do we measure UVR?

The ultraviolet index or UV Index is an international standard measurement of the strength of UVR from the sun on the ground at a particular time. The UV Index is an important vehicle to raise public awareness of the risks of excessive exposure to UV radiation, and to alert people about the need to adopt protective measures. Encouraging people to reduce their sun exposure can decrease harmful health effects and significantly reduce health care costs.

As the UV Index increases the hazard increases. There are a number of categories ranging from low exposure to extreme as shown in the table.

Relationship between UV Index and UV Exposure Category

UV Index	Exposure Category
2 or less	Low
3 to 5	Moderate
6 to 7	High
8 to 10	Very High
11+	Extreme

The exposure categories are based on the response to fair-skinned people exposed to UVR. The UV Index may be either a prediction or a measurement.

ARPANSA obtains the measured UV Index from a detector that responds to UV radiation in much the same way as human skin does. The measurements take into account cloud cover and other environmental factors that computations can only approximate. The Bureau of Meteorology (BOM) calculate the predicted value from a radiative transfer model using parameters of date, time, latitude, temperature and ozone concentration. The skin's response to UV radiation is required for calculating the predicted solar UV Index.

What is your skin type?

Skin is classified by sensitivity to UV radiation. If you are very fair skinned (white skin) and tend to burn easily in the summer sun and find it difficult to achieve a tan you have skin type 1. People with skin type 1 have the highest risk of premature skin aging and greatest risk of developing some form of skin cancer. If you are of this type then you should limit your exposure to the sun and always dress to minimise sun exposure, wear a hat and use sunscreen.

For other skin types from very fair to dark please refer to the Skin Chart available on the ARPANSA website based on the research of Fitzgerald.

How can you reduce your UVR exposure?

Even for very sensitive fair-skinned people, the risk of short-term and long-term UV damage below a UV Index of 2 is limited, and under normal circumstances no protective measures are needed. If sun protection is required, this should include all protective means, i.e. clothing and sunglasses, shade and sunscreen.

For best protection, we recommend a combination of sun protection measures:

- Slip on some sun-protective clothing that covers as much skin as possible.
- Slop on broad spectrum, water resistant SPF30+ (or higher) sunscreen. Put it on 20 minutes before you go outdoors and every two hours afterwards.
- Slap on a hat – broad brim or legionnaire style to protect your face, head, neck and ears.
- Seek shade.
- Slide on some sunglasses – make sure they meet Australian Standards.

A balance is required between avoiding an increase in the risk of skin cancer by excessive sun exposure and achieving enough exposure to maintain adequate vitamin D levels. Cancer Council Australia provides further advice on vitamin D.

Protection Messages

The Cancer Council Australia provides further protective advice through national, state and territory Sunsmart programs and activities.

Links

World Health Organization – provides international advice on sun protection
www.who.int/uv/sun_protection/en/

Cancer Council Australia – provides advice on preventing cancer in Australia
www.cancer.org.au

ARPANSA Fitzpatrick Skin Type Chart – scheme to classify a person's skin type
www.arpansa.gov.au/pubs/RadiationProtection/FitzpatrickSkinType.pdf