THE AUSTRALASIAN COLLEGE OF DERMATOLOGISTS

How do I protect my skin from the sun?

Australia has one of the highest skin cancer rates in the world. At least 2 in 3 Australians will be diagnosed with skin cancer in their lifetime.[1]

Most skin cancer cases in Australia are due to excessive exposure to ultraviolet radiation (UV),[2] making skin cancer one of the most preventable cancers. Increasing community awareness of skin cancer prevention, good sun protection behaviours and early detection are key to reducing the risk of skin cancer.

The Australasian College of Dermatologists (ACD) has developed a fact sheet that provides information on sun protection, and the safe and effective use of sunscreen in Australia.

For more information about skin cancer statistics in Australia, see College's statement on the Impact of Skin Cancer in Australia.

ACD Recommendations

- Reduce your risk of skin cancer by minimising your exposure to excessive UV from the sun.
- Use a combination of sun protection measures at all ages, including ***slip*** on sun protective clothing, ***slop*** on SPF50 (or higher) sunscreen, ***slap*** on a broad-brimmed hat, ***seek*** shade and ***slide*** on sunglasses during times when the UV reaches 3 and above to reduce your risk of skin cancer.
- Use a sunscreen that is SPF50 or higher, broad-spectrum and water-resistant.
- Babies under six months of age should avoid direct sunlight, wear protective clothing and hats and using a physical sunscreen on exposed areas as their skin is more sensitive than adults.

[1] Olsen CM, Pandeya N, Green AC, Ragaini BS, Venn AJ, Whiteman DC. *Keratinocyte cancer incidence in Australia: a review of population-based incidence trends and estimates of lifetime risk.* Public Health Res Pract 2022 Mar 10; 32(1) Available from: http://www.ncbi.nlm.nih.gov/pubmed/35290995

[2] Olsen CM, Wilson LF, Green AC, Bain CJ, Fritschi L, Neale RE, et al. *Cancers in Australia attributable to exposure to solar ultraviolet radiation and prevented by regular sunscreen use.* Aust N Z J Public Health 2015 Oct;39(5):471-6 Available from: http://www.ncbi.nlm.nih.gov/pubmed/26437734.

What is sun protection?

Sun protection aims to reduce excessive exposure to ultraviolet (UV) radiation from the sun and is recommended during times when the UV Index reaches 3 and above. By using effective sun protection measures you can enjoy outdoor activities that are important for healthy growth and development while reducing your risk of skin diseases related to overexposure to sunlight, including skin cancer.

Effective sun protection involves a combination of the following:

- Physical protection
  - **Slip** on sun protective clothing that covers as much skin as possible, such as tightly woven longer sleeved clothing, and rash vests and wetsuits when swimming or undertaking other water activities
  - **Slop** on broad-spectrum, water-resistant SPF 50 (or higher) sunscreen. Put it on 20 minutes before you go outdoors and at least every two hours afterwards. Make sure it has been stored correctly and is still in date.
  - **Slap** on a broad-brimmed hat to protect your face, head, neck and ears.
  - **Seek** shade
  - **Slide** on sunglasses, preferably close-fitting, wrap-around style. Make sure they meet Australian standards.
- Avoiding sun exposure during the middle of the day when UV radiation levels are at their highest.

For infants, sun protection is best provided with shade, clothing and hats and by avoiding prolonged outdoor exposure during the middle of the day.

Why is sun protection important?

Australia has a very high incidence of melanoma and keratinocyte (non-melanoma) skin cancers (basal cell carcinoma and squamous cell carcinoma). This is mainly because of the high levels of everyday UV exposure, making sun protection important.

Other risk factors for skin cancer include fair complexion, increased number of common moles or unusual moles, weakened immune system or a personal or family history of skin cancer.

Sun protection is also important as UV exposure over time accumulates to produce premature ageing changes in the skin of all ethnic groups.

What is ultraviolet radiation?

UV radiation is a type of energy produced by the sun and can damage DNA in cells, leading to cancer.

UV is divided into 3 types according to its wavelength – UVA, UVB and UVC.

- UVC is the most dangerous but is screened out before reaching the earth's surface by the ozone layer.
- UVB is more energetic, is blocked by window glass and is the main cause of sunburn.
- UVA is less energetic but penetrates more deeply into the skin. UVA is not blocked by window glass.

Both UVA and UVB radiation contribute to:

- Precancerous changes (sunspots, actinic keratoses) in the skin
- Cancerous changes in the skin (basal cell carcinoma, squamous cell carcinoma and melanoma)
- Ageing effects on the skin such as skin dryness, dyspigmentation, fine lines, wrinkling and loss of elasticity (photoaging) and lustre.

Australia has some of the highest levels of UV in the world. You cannot estimate UV levels by the temperature or the amount of cloud cover, but you can find out what the UV index and sun protection times for your location are. It is recommended that you refer to the following sites to check the daily UV Index:

- SunSmart MyUV: http://www.myuv.com.au/
- Bureau of Meteorology: http://www.bom.gov.au/

What does SPF mean and what SPF should I use?

SPF stands for Sun Protection Factor. It indicates the amount of UVB radiation that can reach the skin with sunscreen compared with no sunscreen.

The SPF level of a sunscreen is determined in scientific laboratory conditions and is highly regulated in Australia through the Therapeutic Goods Administration to ensure strict labelling and safety for consumers.

As SPF is the measurement of protection against UVB only, sunscreens with the same SPF may not offer the same levels of protection against UVA radiation. It is recommended you use a broad-spectrum sunscreen – one that protects against both UVA and UVB.

You should use sunscreen that is at least SPF50. While the difference in UV protection between SPF 30 and SPF 50 in laboratory conditions is small, sunscreens with higher SPF have been shown in real world settings to be more resistant to wearing off due to factors such as sweating, wiping off with towels, and not applying sunscreen thickly enough.

The SPF level should not be used as a guide for how long you can stay in the sun before you get sunburnt – all sunscreens, even when applied correctly, will still allow some UV to get into the skin.

How do sunscreens work?

Sunscreens work in two ways:

- By blocking or reflecting the UV radiation away from the skin. These are known as **reflectant or physical sunscreens**, such as zinc oxide and titanium dioxide. Reflectant sunscreens may have a milky-white appearance you apply them to your skin.
- By absorbing UV radiation which prevents it from getting into skin cells. These are called **absorbent or chemical sunscreens** and usually contain a mixture of synthetic chemicals, such as cinnamates, dibenzoylmethanes (salicylates) and benzophenones. Absorbent sunscreens are usually invisible when you apply them to your skin.

Sunscreen ingredients are mixed in different bases to provide the large variety of available products. Sunscreen bases also contain other chemical additives that are needed to ensure stability, adequate mixing, a pleasant feel on the skin, a pleasant odour and adequate antimicrobial activity.

How ‘waterproof’ are sunscreens?

In Australia, sunscreens are labelled for water resistance – that is the ability of the sunscreen to remain effective on the skin after repeated or prolonged exposure to water.

No sunscreen is ‘waterproof’ and all sunscreens become less effective after exposure to water.

When should you apply sunscreen?

If you live in Australia and New Zealand, always apply sunscreen to the face, head and neck and all parts of the body not covered by clothing, on all days when the UV index is forecast to be 3 or higher, irrespective of what activities you anticipate doing.

For planned outdoors activities, use sunscreen alongside other sun protection measures.

How should you apply sunscreen?

The effectiveness of your sunscreen depends on how well you apply it. Most people do not apply adequate amounts of sunscreen which reduces its effectiveness.

- Apply sunscreens liberally to the skin at least 20 minutes before going outdoors. This allows the product to be evenly dispersed and absorbed into the outer layers of the skin.
- Apply at least 1 teaspoon (5mL) of sunscreen to each body part (face and neck, each arm, each leg, front of body, back etc). Don't forget ears, hands and feet, and the back of the neck).
- Reapply sunscreen every 2 hours.
- Use a water-resistant sunscreen when swimming, exercising or sweating while outdoors. Always reapply sunscreen after exposure to water to ensure adequate protection. UV protecting garments such as T-shirts, rash vests and wetsuits offer better protection than sunscreens.

What are the common side effects of sunscreens?

Synthetic chemicals used in sunscreens have been tested extensively for the risk of side effects. Reactions can occur occasionally because of sensitivity or allergy to sunscreen ingredients. However, there are very few reports of chronic or long-term effects related to regular sunscreen use.

While uncommon, reactions can occur at first use, or after a few days or years of using the same product. These may include:

- *Irritation and sensitivity:* burning, stinging or redness can occur in certain areas of the skin, such as the face around the eyes, or occasionally on the hairy forearms. This is not an allergy to the sunscreen as the effect only occurs in certain areas, whereas it can be used without irritation on other areas of skin. This is the most common sensitivity reaction and is called *irritant contact dermatitis*.
- *Allergy:* A true allergic reaction to a chemical in a sunscreen product can occur but is less common.
    - *Allergic contact dermatitis* is where an itchy, blistering rash develops on the areas where the sunscreen has been applied. It can sometimes spread to other areas of the body.
    - *Photocontact dermatitis* is a reaction which may look like severe sunburn or eczema. It is usually a result of an allergy and occurs where the product has been applied and exposed to sunlight.

In most cases, allergic reactions are due to exposure to a chemical used in the base of the sunscreen such as a perfume or preservative, rather than the active sunscreen ingredients. Physical blockers, such as zinc oxide and titanium dioxide, have not been reported to cause contact allergy.

You can perform your own 'patch test' to check for a reaction to a sunscreen product:

- Apply a small amount on the inside of your forearm to see if the skin reacts, before applying it to the rest of the body.
- If irritancy or sensitivity occurs, it is recommended that another product is used.

Professional patch testing and assessment by a dermatologist may identify the ingredient in sunscreen that is causing an allergic reaction. If you have a known sunscreen allergy, the best way to avoid a reaction is to not use any product that contains the substances that you are allergic to. A dermatologist is best placed to diagnose a reaction and help determine which ingredients you should avoid.

Some sunscreens can cause acne-like eruptions (pimples, folliculitis) when applied to the skin. Again, this is usually caused by the base ingredients of the sunscreen. For those prone to eruptions, gels, lotions or products labelled “oil-free” or “non-comedogenic” are recommended.

Do sunscreens cause cancer?

To date, there is no scientific evidence to suggest that synthetic sunscreen chemicals cause cancer. A 2016 review of the safety of “nanoparticles” (zinc oxide and titanium dioxide) in sunscreens published by the Australian Government Therapeutic Goods Administration found no evidence of safety concerns.[3] Because skin cancer and melanoma have been linked to UV exposure, the benefit of sun protection is clear.

Are sunscreens safe for young babies?

As very young babies (less than six months of age) absorb more of any chemical applied to the skin than adults, the widespread regular use of chemical sunscreens is not recommended. Instead, avoiding direct sunlight, protecting with clothing and hats and using a physical sunscreen on exposed areas, is recommended.

Can I use aerosol sunscreens?

You should use sunscreen lotions and creams instead of aerosols. This is because they provide more coverage and longer-lasting protection as they are applied straight to the skin and are rubbed into the skin upon application.

With aerosol sunscreens, it is very difficult to obtain the amount of sunscreen to the body that is necessary to get good UV protection. Research has found that environmental factors, such as wind dramatically lower the amount of sunscreen that reaches the body and the ability of aerosol sunscreen to effectively provide protection against UV radiation.[4]

How can I maintain adequate vitamin D levels without too much sun exposure?

Sensible sun protection does not put people at risk of vitamin D deficiency.

During summer in Australia, when the UV index is 3 or above, most adults will maintain adequate vitamin D levels during typical day-to-day outdoor activities. In late autumn and winter in Australia, when the UV index is below 3, you should spend time outdoors in the middle of the day with some skin uncovered. Being physically active will also help boost your vitamin D levels.

If you are not able to access the sun exposure required to help maintain your vitamin D levels, speak to your GP who may advise supplementation. Overexposure to UV is never recommended, even if you have a vitamin D deficiency.

[3] https://www.tga.gov.au/resources/publication/publications/literature-review-safety-titanium-dioxide-and-zinc-oxide-nanoparticles-sunscreens
[4] https://www.arpansa.gov.au/sites/default/files/aerosol_sunscreen_report_november_2021_0.pdf

Other useful ACD skin cancer factsheets

For further information on skin cancer, the Australasian College of Dermatologists (ACD) has developed a suite of factsheets for consumers and health professionals available here, on:

- What types of skin cancers are there?
- Knowing your risk factors and monitoring your own skin
- When to see a health professional for advice?

This factsheet is also available online. For more topics, visit dermcoll.edu.au or scan the QR code.

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About us

Dermatologists are doctors who are the medical specialists in skin health.

The Australasian College of Dermatologists (ACD):

- Trains and supports dermatologists
- Advocates for better skin health for our communities
- Sets the clinical standard in dermatology

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