What causes skin cancer?

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The majority of skin cancer is caused by overexposure to ultraviolet (UV) radiation from the sun and artificial sources such as solariums. UV radiation is strong enough to damage skin cells and cause skin cancer.

UV radiation

Sunlight is made up of light, heat and ultraviolet (UV) radiation. Visible rays of the sun are light-giving rays, while infrared rays provide heat.

UV radiation is the part of sunlight that causes sunburn and skin damage and leads to premature ageing and skin cancer. There are three types of naturally occurring ultraviolet rays - UVA, UVB and UVC.

- UVA radiation penetrates deep into the skin, affecting the living skin cells that lie under your skin's surface. UVA causes long-term damage like wrinkles, blotchiness, sagging and discoloration, and also contributes to skin cancer.
- UVB radiation penetrates the top layer of skin and is the cause of skin tanning, sunburn, and skin cancer.

UVA and UVB are of concern because of their potential to cause skin cancer. UVC does not reach the earth's surface and is absorbed or scattered in the atmosphere.

Can I feel UV radiation?

UV radiation can not be seen or felt. UV levels are not related to air temperature; maximum UV levels occur around midday when the sun is directly overhead. High levels of UV radiation also occur on cool days.

Remember, you can still get burnt on cloudy days, especially if cloud cover is thin. Cloud scatters the UV radiation in all directions and although you receive less direct UV radiation, you may receive more indirectly. Heavy cloud does decrease the amount of UV radiation, while scattered patchy cloud has little or no effect on UV radiation levels.

When is UV radiation most damaging?

UV radiation is dangerous for skin when it reaches a UV Index level of three or above. UV radiation levels are strongest over the middle hours of the day – between 10 am and 3 pm – but are also strong enough outside of these hours to cause skin damage. UV radiation is strongest during the months that the sun is directly overhead. In South Australia, from August to May, UV levels across the day range from moderate to extreme on most days.
How is UV measured?

UV radiation levels are divided into low (one to two), moderate (three to five), high (six to seven), very high (eight to 10) and extreme (11 and above). Once UV reaches a moderate level it is strong enough to cause damage to the skin.

A UV Index level of three is high enough to cause skin damage, so it is important to protect your skin when the UV radiation level is three and above. The higher the UV radiation levels, the less time it takes for skin damage to occur.

The Bureau of Meteorology predicts UV levels with the weather forecast every day and produces the SunSmart UV Alert.

This shows the times during the day (ie 9:35 am to 4:12 pm) that the UV radiation levels are three and above, which is when you need to protect your skin. It is a useful tool for anyone planning outdoor activities.

Stay up to date on the skin protection needs for yourself and your family by checking the UV Alert every day. You can also download the free SunSmart App and stay up to date on sun protection times at www.sunsmart.com.au/resources/sunsmart-app/, or add the free SunSmart widget to your website www.cancersa.org.au/aspx/sunsmart.aspx.

Sunburn

Whenever you are out in the sun, UV radiation will pass deep into your skin’s layers. If you stay in the sun long enough, UV radiation will burn your skin.

Your skin will go red within two to six hours of being burnt and it may keep getting redder for the next few days.

Remember - a sunburn may fade but the damage to your skin lasts a lifetime.
Danger times for skin damage and sunburn
It does not need to be hot for you to get sunburnt. In South Australia, UV radiation levels are highest from August to May, with peak levels over the middle of the day.

It does not take long to get burnt. On a fine January day in Australia, you can get burnt in less than 15 minutes.

Protect your skin in five ways: slip on some sun protective clothing, slop on some SPF 30 or higher sunscreen, slap on a hat, seek shade, slide on some sunglasses!

Suntanning and sunburn – increasing skin cancer risk
All types of sun tanning and sunburn cause permanent and irreversible damage to your skin. Your skin cancer risk increases as skin damage builds up every year. The amount of sun tanning or sunburns you have received, especially during childhood, increases your risk of developing skin cancer, melanoma being the most dangerous.

Tanning
Any exposure to ultraviolet (UV) radiation damages your skin, whether it is from the sun or through an artificial source, such as a solarium.

A tan is skin cells in trauma. Even a light tan is a sign that the skin has been exposed to enough UV radiation to be damaged. Exposure builds up over your lifetime, increasing skin damage and your risk of skin cancer.

When your skin is exposed to UV radiation, a pigment called melanin is released. Melanin is in the skin’s top layers and is what makes your skin change colour and tan. The release of melanin is your body’s way of trying to protect itself from UV radiation.

Fake tans
Fake tanning lotions, sprays and creams contain a dye that temporarily stains the skin, giving you a tanned appearance. The dye binds to the skin and comes off when the dead skin cells flake off.

Using a fake tanning lotion, spray or cream is a safer alternative to exposing your skin to UV radiation to get a tan.

A fake tanning product will not protect your skin from the sun. Some fake tanning products do contain a sunscreen, but this only gives sun protection for the first couple of hours after applying it, not for the time the product lasts on your skin.

Solariums
A solarium is an artificial tanning machine that uses high levels of UV radiation to induce a tan. Solariums emit UVA and UVB radiation, both known causes of skin cancer. According to the Australian Standard, solariums may emit much higher concentrations of ultraviolet (UV) radiation than the sun – up to three times as strong as the midday summer sun.

The use of solariums has been clearly linked to the development of skin cancer, in particular melanoma. A 2006 International Agency for Research on Cancer (IARC) report stated that the risk of melanoma was increased by 59 per cent for those people that had used a solarium before the age of 35. It has been estimated that each year in Australia 281 new melanoma cases, 43 melanoma-related deaths and 2,572 new cases of squamous cell carcinoma are attributed to solarium use.

Due to the health risks caused by solariums, Cancer Council SA does not recommend the use of solariums for tanning. The use of solariums is also not recommended to boost vitamin D levels.

No solarium can provide a safe tan.
Solarium regulations

Currently the solarium industry in Australia is regulated on a state-by-state basis.

The solarium industry in South Australia has been regulated since 2008.

Some of the key points in the SA government regulations (Radiation Protection and Control (Cosmetic Tanning Units) Regulations 2008) include:

- minimum age of 18 for solarium or sun bed use.
- health warning that solariums can cause skin cancer must be displayed.
- people with fair skin cannot use solariums.
- solarium operators must have training, including skin type assessments.
- clients must be supervised by a trained operator.
- informed consent sought from all clients.
- restrictions on frequency and duration of tanning session.

For further information, visit http://www.epa.sa.gov.au/environmental_info/radiation/solaria

A revised Australian Standard (AS/NZS 2635:2008 Solaria for cosmetic purposes) for solariums was released in January 2009. Major features include:

- recommending maximum UV intensity for sunbeds be cut by 40 percent
- restricting the use of sunbeds to people over 18
- requiring all operators to warn clients that radiation from tanning units contributes to cancer
- banning unsupervised operations and ensuring people supervising sunbeds have undertaken appropriate training in the operation and use of equipment and assessment of skin photo types.
- ensuring all clients complete a skin type assessment and consent forms
- banning people with skin that always burns and never tans from using sunbeds
- ensuring protective eyewear is always worn
- making no claims of non-cosmetic health benefits or that solaria use is safe
- keeping client records for at least two years covering date, time of visit, skin type assessment and level of exposure.

In October 2012 a statewide ban of solariums was announced. The ban will come into effect on 31 December 2014.

More information

www.cancer.org.au/cancersmartlifestyle/SunSmart/sunsmart/faketans.htm position statement from Cancer Council Australia

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