

ethical [✓]living

For consumers who care

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**SEEING
DAYLIGHT**
*South Africa's
hottest
sunscreens*

WE RECOMMEND
2012's
most ethical buys

CHANGE
THE WAY
YOU SHOP,
CHANGE THE
WORLD

**A HEADS UP
WHOSE BREW
IS THE BEST?**



A *burning* ISSUE


IN SOUTH AFRICA, SUMMER IS SYNONYMOUS WITH SUNSCREEN, AND WITH SKIN CANCER ON THE INCREASE, THERE CAN BE NO DOUBT THAT WE SHOULD COVER UP. CATHLEEN O'GRADY INVESTIGATES AND FINDS THAT NOT ALL SUNSCREENS ARE EQUAL AND THAT SOME MAY BE DOING MORE HARM THAN GOOD

With the first few really hot days of summer already upon us, many of us will be reaching for last year's caked-up, sandy bottles of sunscreen to tide us over for the first few weeks. South Africans, in general, tend to be relatively sun smart, but there are still those who choose to cover themselves in coconut oil and bake in the sun in order to achieve that perfect tan.

However, tanning methods have come a long way since the old-fashioned sun-baking days, and many opt for sunbeds or spray-on tans as their methods of choice. The dangers of sunbeds, while still being researched, seem to be similar to the dangers of >>







natural sunlight. The dangers of self-tanning methods lie primarily in the ingredients contained in the cosmetics themselves.

Being a cosmetic product, sunscreen obviously comes with a host of concerns about animal testing, destructive ingredients such as palm oil and parabens, but it is also vital to remember that there are important questions surrounding the efficacy of sunscreens, and the safety of common sunscreen ingredients. We look at all the dangers, so that the next time you're looking for your perfect cover-up, you can make a truly sun-smart choice.

UNDER THE AFRICAN SUN

South African shelves are packed with imported and locally manufactured sunscreens. Some of the locally produced brands, however, are affiliated with multinational corporations, such as Johnson & Johnson and Beiersdorf.

Cansa has compiled a list of sunscreens that meet the conditions for its seal of approval. In order to receive this certification, sunscreens have to have a sun protection factor (SPF) of between 20 and 50, provide protection against both UVA and UVB, and meet the standards determined by the SABS.¹ It is interesting to note that some of the most popular SA brands, such as Piz Buin, EverySun, and Tropitone are not on the list. Unfortunately, the list is not exhaustive, excluding some imported brands that you may want to consider. Nevertheless, it is an excellent resource www.cansa.org.za/files/2012/09/CSOR-PARTNERS-31Aug2012.pdf. Many of the sunscreens that are considered to be more ethical are imported, forcing you to trade ethics off against carbon footprint. Badger, for example, is imported from the USA, Natur&Sun from Italy, and Eco Suncare from Germany. These brands also tend to be more expensive, in comparison to multinational brands such as Island Tribe. AnniQue, a locally manufactured brand, does not test on animals and is certified by Cansa, but has questionable policies surrounding palm oil use and genetically modified ingredients.

A RAY OF SUNSHINE

A certain amount of sunlight is vital for our health: Vitamin D, an essen-

SUNSCREEN

BRAND	EL SCORE (out of 20)	Environment		Animals		People				Politics		+ve		COMPANY GROUP						
		Environmental Reporting	Nuclear Power	Climate Change	Pollution & Toxics	Habitats & Resources	Animal Testing	Factory Farming	Other Animal Rights	Human Rights	Workers' Rights	Supply Chain Management	Irresponsible Marketing		Armaments	Genetic Engineering	Boycott Call	Political Activity	Anti-Social Finance	Company Ethos
Badger	17	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1	2	WS Badger
Eco Suncare	17	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1	2	Eco Cosmetics
Sunumbra	14	✓	✓	✓	✓	■	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1		Organic Products LLC
Safe In The Sun Block	12	■	✓	●	●	●	✓	✓	✓	●	✓	■	✓	✓	✓	✓	✓	1	1	Annique Theron
Dr Hauschka	11	■	✓	✓	✓	●	✓	✓	●	●	✓	■	✓	✓	✓	✓	●			Wala-Stiftung
Epi-Sun	10.5	■	✓	✓	●	✓	■	✓	✓	✓	■	✓	✓	✓	✓	✓	✓			Episcience
Natur&Sun	10	■	✓	●	✓	●	✓	✓	●	✓	■	✓	✓	✓	✓	✓	✓			Berna Bio Cosmetics
Palmer's Cocoa Butter	10	■	✓	●	●	●	✓	✓	●	✓	■	✓	✓	✓	✓	✓	✓			Palmer's Cosmetics
EverySun, Tropitone	9.5	■	✓	●	✓	●	■	✓	✓	●	✓	■	✓	✓	✓	✓	✓			Incolabs
IQ	9	■	✓	●	●	●	■	✓	●	✓	■	✓	✓	✓	✓	✓	✓			IQ Laboratories
Techniblock	8.5	■	✓	●	✓	●	■	✓	●	✓	■	✓	✓	✓	✓	✓	✓			Technikon Laboratories
Clarins Sun Care	8.5	■	✓	●	✓	●	■	✓	●	✓	■	✓	✓	✓	✓	✓	●			Financière FC
Dis-Chem	8.5	■	✓	●	●	■	■	✓	●	✓	■	✓	✓	✓	✓	✓	✓			Dis-Chem Pharmacies
Island Tribe	8	■	✓	●	●	●	■	✓	●	✓	■	✓	✓	✓	✓	✓	✓			Creighton Products
Sun Protect	7	■	✓	●	●	■	■	✓	●	✓	■	✓	✓	✓	✓	✓	●			Clicks Group Limited
Sun Sure	6.5	●	✓	●	●	●	■	■	■	●	✓	■	✓	■	✓	✓	✓			Pick n Pay Holdings Ltd
Nivea Sun Lotion	6.5	■	✓	●	●	●	■	✓	■	■	■	●	✓	■	✓	✓	●			Beiersdorf AG/Maxinvest AG
Sola	6	■	✓	●	●	●	■	■	■	■	■	✓	■	✓	✓	●	✓			Spar Group Ltd
Piz Buin	3.5	●	✓	✓	■	✓	■	■	■	■	■	■	■	■	■	■	■			Johnson & Johnson

tial nutrient, is synthesised by the body when ultraviolet (UV) light penetrates the skin. The high levels of melanin found in darker skin slows down this synthesis, while people with lighter skin produce Vitamin D more quickly.² Vitamin D deficiencies have been tentatively linked to an increased cancer risk, and concerns have been raised that the consistent use of sunscreens could reduce the body's ability to produce Vitamin D to the point of causing a deficiency.

However, double-blind studies testing Vitamin D production in a group using sunscreen, in comparison with a group using a placebo cream, showed similar levels of Vitamin D before and after application and sun exposure. In studies on sunscreen use in healthy adults, Vitamin D levels actually rose in conjunction with sunscreen use, presumably because people who use sunscreen also tend to spend more time in

the sun.² While those of us with dark skin may need to spend more time in the sun in order to produce Vitamin D, the current evidence indicates that sunscreen use does not limit Vitamin D production. Only 10 minutes of exposure to sunlight, three times a week, is enough for the body to produce sufficient Vitamin D, and there are numerous dietary sources of the vitamin that can be used to supplement sun exposure.³ A far greater risk factor is over-exposure to sunlight, and in particular, to ultraviolet radiation. Ultraviolet rays, which have a wavelength outside the visible spectrum, are identified as carcinogenic by the World Health Organization (WHO). Until recently, ultraviolet B (UVB) rays have been highlighted as the main cause of sunburn and skin cancer. Excessive exposure to UVB can cause DNA damage, which leads to melanin production (this is what causes a tan), sunburn, and, if this damage accumulates, cancer.³

Ultraviolet A (UVA) rays have previously been thought of as the UV rays that cause ageing, due to the damage >>

USING THE TABLES

EL SCORE: the higher the score, the better the company across the criticism categories.
 ■ bottom rating ● middle rating ✓ top rating (no criticisms)

POSITIVE RATINGS (+VE):

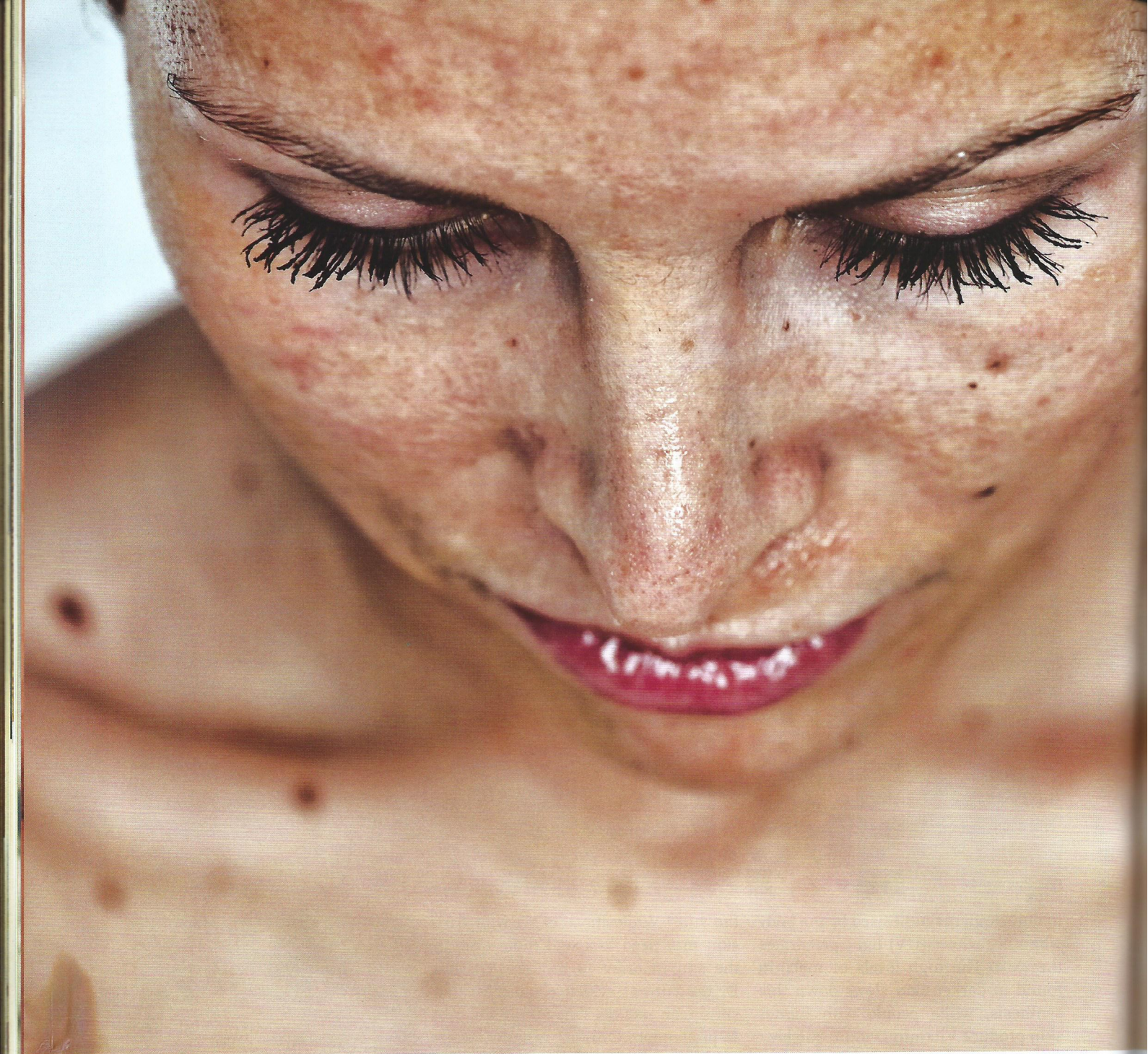
COMPANY ETHOS:

★ full mark ☆ half mark

PRODUCT SUSTAINABILITY:

Maximum of five positive marks

ABOVE 15: EXCELLENT. This product is likely to be ethically made by an ethical company
11 - 15: AVERAGE
6 - 10: BELOW AVERAGE
0 - 5: POOR



Skin cancers, are not all equally dangerous. Carcinomas are a type of cancer commonly found on sun-exposed regions of the body, and although they are diagnosed commonly, they are rarely fatal. They do, however, require surgery to be removed

they cause to collagen in the skin, but it has now been established that these rays can also cause indirect DNA damage by speeding up the production of free radicals and reactive oxygen species (chemically reactive molecule containing oxygen). UVA is also associated with immunosuppression, which can create an environment in which cancer cells thrive. Because of this, UVA exposure is now considered a risk factor for cancer. And since UVA is far more prevalent than UVB, constituting up to 95% of the radiation that penetrates the Earth's atmosphere, this is far more concerning.⁴

Skin cancers, are not all equally dangerous. Carcinomas are a type of cancer commonly found on sun-exposed regions of the body, and although they are diagnosed commonly, they are rarely fatal. They do, however, require surgery to be

removed. Melanomas, while far less common, frequently spread to other parts of the body and have a much higher fatality rate. If the tumour is detected before it spreads, the survival rate is around 98%, but once the tumour has spread to other organs, this rate can fall to as low as 15%.⁵

Exposure to ultraviolet radiation is thought to cause almost 90% of melanomas, with sun damage accumulating over time and manifesting as melanoma, years after the initial damage has occurred. The chances of developing melanoma are doubled by a single blistering sunburn, or more than five sunburns in total. Both types of ultraviolet radiation are associated with eye damage, including cataracts and ocular melanoma. Genetics also play an important role in skin cancer risk, meaning that people with fair hair, fair skin

SKIN CANCER

According to the World Health Organization (WHO), approximately 132 000 melanoma skin cancers occur globally each year. This is a malignant cancer, which is the leading cause of skin cancer-related deaths, with survival rates highly dependent on early diagnosis. Non-melanoma cancers, which are rarely lethal but nevertheless require removal, occur at a rate of between two and three million diagnoses per year.

In South Africa, more than 20 000 people are diagnosed with skin cancer each year, and approximately 700 people die of the disease, annually. After Australia, this is the second-highest rate of skin cancer worldwide, and is partially attributable to the aggressive levels of radiation in South Africa because of the thinner ozone layer. Ozone depletion is a major risk factor for high exposure to radiation because,

as ozone levels decrease, the Earth's atmosphere becomes less effective as a protective filter for ultraviolet rays. It is predicted that there will be a worldwide increase of 4 500 cases of melanoma and 300 000 cases of non-melanoma for every 10% reduction in ozone levels.

Inspect your body regularly to determine if marks or moles on your body have changed size or shape, or are developing irregular borders. Other warning signs include a change in colour or a mixture of different colours. Early detection can significantly improve your chances of recovery, so if you suspect an irregularity, visit your doctor to have it screened.

www.capechameleon.co.za/printed-version/issue-7/healthz

www.who.int/uv/faq/skincancer/en/index1.html

ly exposure to tanning beds can increase the risk of melanoma by up to 75%.⁵

REFLECTORS AND ABSORBERS

There are two main types of sunscreen (absorbers and reflectors), which provide protection in different ways. Mainstream brands, in general, are chemical sunscreens, which absorb the sun's rays rather than reflecting them. Common absorbers are oxybenzone and ethylhexyl p-methoxycinnamate.⁷ Chemical sunscreens such as these are absorbed into the skin, which raises some safety concerns. Absorbers are typically also not very effective at protecting the skin from UVA.⁸

Many alternative sunscreens, and some mainstream products, are physical or mineral sunscreens, which reflect both UVA and UVB. This is done by using zinc oxide or titanium dioxide particles, which are too big to be absorbed by the skin, and therefore form a barrier that reflects harmful radiation. Barrier sunscreens cause fewer skin reactions because they are not absorbed into the skin, but they do leave a residue, which may not be practical for everyday sunscreen purposes. There are also some concerns about the safety of the primary ingredients in these sunscreens.⁸

The most effective sunscreens are said to be those that combine chemical and physical methods, and provide broad spectrum protection against both UVA and UVB. Many of these, however, include problematic ingredients.

THE SUNSCREEN-MELANOMA MYTH

Certain studies have shown that, far from cancer rates reducing with increased >>

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and light eyes are more at risk than those with naturally darker pigments – but this does not mean that people with darker skins need not fear sun damage. For people with dark skins, cancers most commonly occur on areas of scarring or on lighter areas such as the hands, feet, and eyelids.⁵

South Africa has exceptionally high levels of UV radiation because we are exposed to a thinner portion of the ozone layer. This means that not only should we avoid baking in the sun, but also that we need to be extra careful of even ambient sunlight, which is the exposure we have to sunlight in our cars, or walking from building to building.⁵ Tanning beds are also a concern, since they produce high intensities of both UVA and UVB, as well as UVC (which is normally blocked by the Earth's atmosphere).⁶ Ear-



BRONZE AGE

Tanned skin as a mark of attractiveness is a relatively recent phenomenon in western societies: less than a century ago, tans were considered to be the mark of working-class people who spent a good deal of time out doors, while fair skin was considered to be a sign of sufficient wealth to be mostly occupied indoors. The change came when tans became associated with holidays, where one achieved a “healthy glow” by spending time lounging in the sun.

The desire to achieve the perfect golden tan is a reflection of general

beauty standards in society, today. But, as with all beauty standards, what one group considers normal or attractive is remarkably inconsistent with another group’s ideas of beauty.

In many western, cooler countries, tanning is considered so mandatory for attractiveness that people – especially women – expose themselves to the dangers of sunbeds in order to achieve an even tan, sometimes even falling victim to “tanorexia”, an obsessive tanning disorder.

Conversely, Black-American models commonly have their skin digitally

altered to appear lighter, and skin lightening creams containing a range of potentially dangerous ingredients are widespread across Africa and India. In the Far East, pale skin is still considered a mark of beauty, with women going so far as to sport “face-kinis”, swimsuits which cover not only the whole body, but the face as well (with holes for the eyes and mouth).

<http://tvtropes.org/pmwiki/pmwiki.php/Main/ButNotTooWhite>
www.huffingtonpost.com/2012/08/21/facekini-face-mask-bathing-suit-china_n_1817497.html

use of sunscreen, sunscreen use is actually correlated with a higher incidence of melanoma.” While this result is certainly alarming, a number of explanations are offered. The methodology of the studies in question has been criticised. One criticism, for example, is that the people most likely to use sunscreen are those with fair skin, who spend a lot of time in the sun. This means they have the highest risk of melanoma, and so an increased rate of melanoma in this group is unsurprising.

Part of the problem could also be the inadequate application of sunscreen.

People frequently seem to miss certain spots (such as the ears and the back of the neck) and apply sunscreen infrequently and in insufficient amounts. It has been suggested that sunscreens provide people with a false sense of security: after applying them (perhaps inadequately), people feel more at liberty to stay in the sun, and so expose themselves to radiation much more than they might have done had they not been wearing sunscreen.⁸ People who use sunscreen are also not very concerned about the areas of their bodies that are covered by clothes, but clothes



generally do not provide as much protection as a high SPF. For example, plain white T-shirts have an SPF of approximately 7.¹²

More recently, a study conducted on more than 1500 Australians showed that a group who applied sunscreen every day for four years showed a 50% reduction in melanoma rates compared to members of a group who applied sunscreen at their own discretion, over the same period. Based on the current evidence, it does appear that sunscreen plays an important role in reducing the risk of melanoma, but it should by no means replace other cautionary measures such as hats, UV-resistant clothes, and shade.¹⁰

SPF

While sunscreen is widely considered to be a vital ingredient in the battle against cancer, it is no magic bullet. Products are often marketed as being super-strong, waterproof, or otherwise extra effective, but the truth is that sunscreens have been shown to be less effective than their marketing would suggest.⁸

Sunscreens with a high sun protection factor (SPF) are considered by many to provide protection for the entire day. This is due in part to the widespread publication of misleading rules about how long the protection of an SPF lasts. The supposed rule of thumb

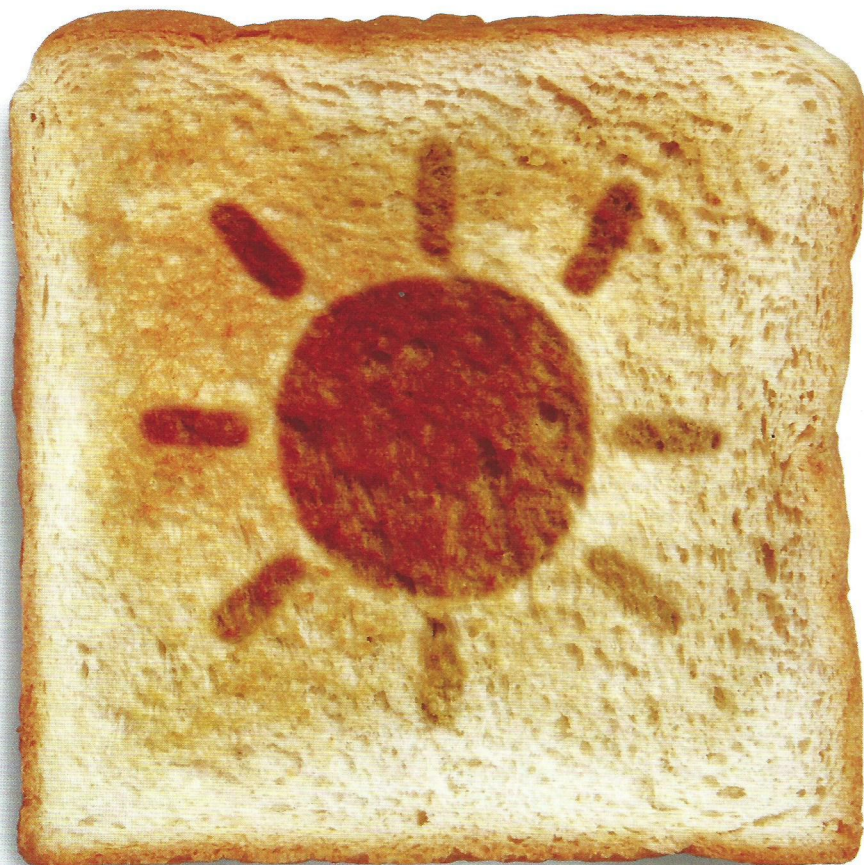
is that the normal length of time taken to burn should be multiplied by the SPF, to establish the length of time that the sunscreen will offer protection for. That is, somebody who normally burns in 10 minutes, wearing a sunscreen with an SPF of 15, should take 150 minutes to burn. This rule, however, is misleading. The protection that sunscreen really offers is based on a broad variety of factors, from the amount applied to the intensity of the solar radiation.

The mislabelling of sunscreens has caused many countries to implement labelling policies that restrict the levels of SPF that can be advertised. Australia, for example, allows sunscreens with an SPF greater than 30 to be advertised only as "30+."⁹ Regulations put in place by the Federal Drug Administration (FDA) include disallowing the terms "sweatproof" and "waterproof", with products rather being labelled as "water resistant". Water resistant products must also be labelled with an estimate of the time that can safely be spent in the water before re-application (either 40 or 80 minutes) is necessary. The term "sunblock" is no longer allowed by the FDA, based on the reasoning that it could imply a higher degree of protection than is actually offered.¹⁰

Critically, SPF sometimes only refers to protection against UVB, with only >>

People who use sunscreen are also not very concerned about the areas of their bodies that are covered by clothes, but clothes generally do not provide as much protection as a high SPF. For example, plain white T-shirts have an SPF of approximately 7

broad spectrum or full spectrum sunscreens providing protection against UVA. According to EU guidelines, the UVA protection factor should be at least a third of the UVB protection factor, meaning that a product with an advertised SPF of 30 should also have a UVA protection factor of 10. These guidelines are currently voluntary in the EU, and although they are not enforced in South Africa, the sunscreens on the Cansa-approved sunscreen list meet EU standards.

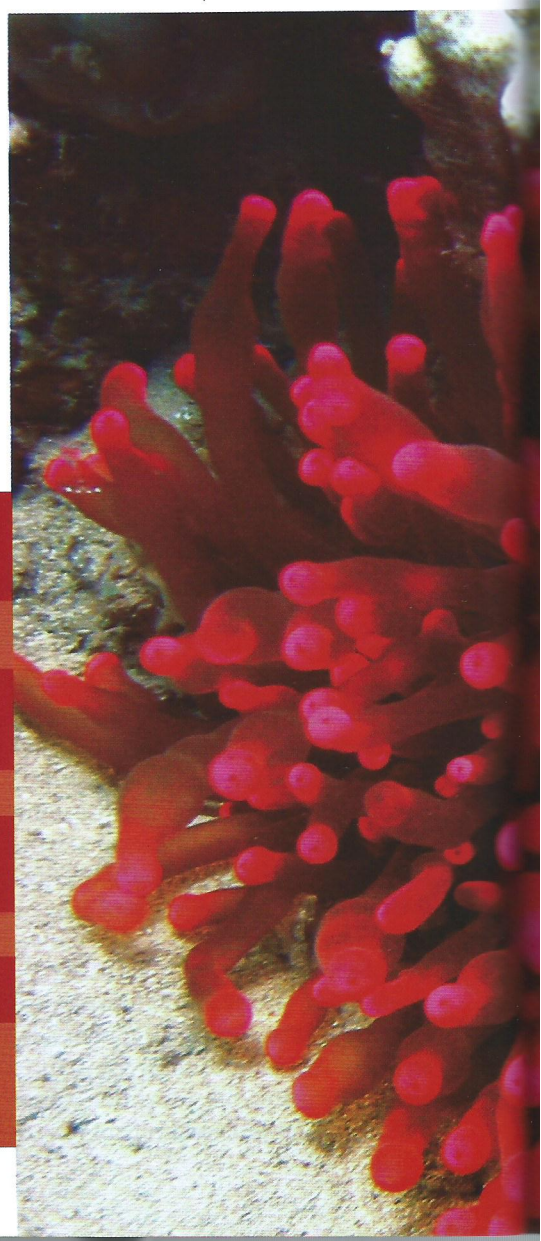


ENVIRONMENTALLY TOXIC

Concerns about how sunscreens may adversely affect our health are important, but we should also not forget the impact that it has on the environment. After applying sunscreen, whenever we bathe it washes off our skin and into the water system, where it has the potential to create a negative impact.

Coral reefs, one of the most spectacular sources of biodiversity in our seas and vital components of many ecosystems, are under threat from bleaching. This involves the loss of zooxanthellae, algae organisms that symbiotically provide nutrients for coral tissue via photosynthesis. Without this algae, coral loses its colour and can no longer gain nutrients, resulting in death. UV radiation, changing temperatures and disease are partly responsible for coral bleaching, but pollution can also play a role, and sunscreen in particular is problematic.

At a study conducted at the Polytechnic University of Ancona, Italy,



SUN SMARTS

IN ORDER TO LIMIT YOUR EXPOSURE TO RADIATION, REMEMBER:

- Choose the highest broad spectrum SPF available, no matter what your skin tone.
- Apply sunscreen at least 15 minutes before exposure, then again after about 30 minutes, and re-apply it as you sweat, swim, or when you see that it has rubbed off.
- Stay out of the sun in the heat of the day and wear a hat.
- Babies should not be exposed to the sun at all, especially because sunscreen has not been shown to be safe for children under the age of a year. Because a baby's skin is so porous, the risks associated with sunscreen are magnified.
- Protect your eyes by wearing sunglasses with UV protection.
- Water, snow and sand reflect radiation, making protection against over-exposure even more vital.
- Because the ingredients in sunscreen can degrade over time, make sure to replace your stock every year. Also, make sure to store it in a cool place away from direct sunlight.

coral samples incubated in virus-free water and exposed to sunscreen swiftly became virus-ridden. This has been attributed to commonly-found ingredients in sunscreen: cinnamate, benzophenone and parabens. Camphor derivatives have also been suggested as a possible cause. These ingredients appear to cause dormant viral infections inside zooxanthellae to replicate, killing the algae hosts and causing bleaching. The infections then spread to neighbouring coral communities.¹³

According to research, the 6 000 tons of sunscreen washing off bathers in coral areas annually threatens 10% of the world's coral reefs, which has enormous ecological implications.¹³ Apart from the carbon recycling and coastal erosion protection functions fulfilled by coral reefs, they are thought to hold huge potential for disease research, providing potential benefits for humans.

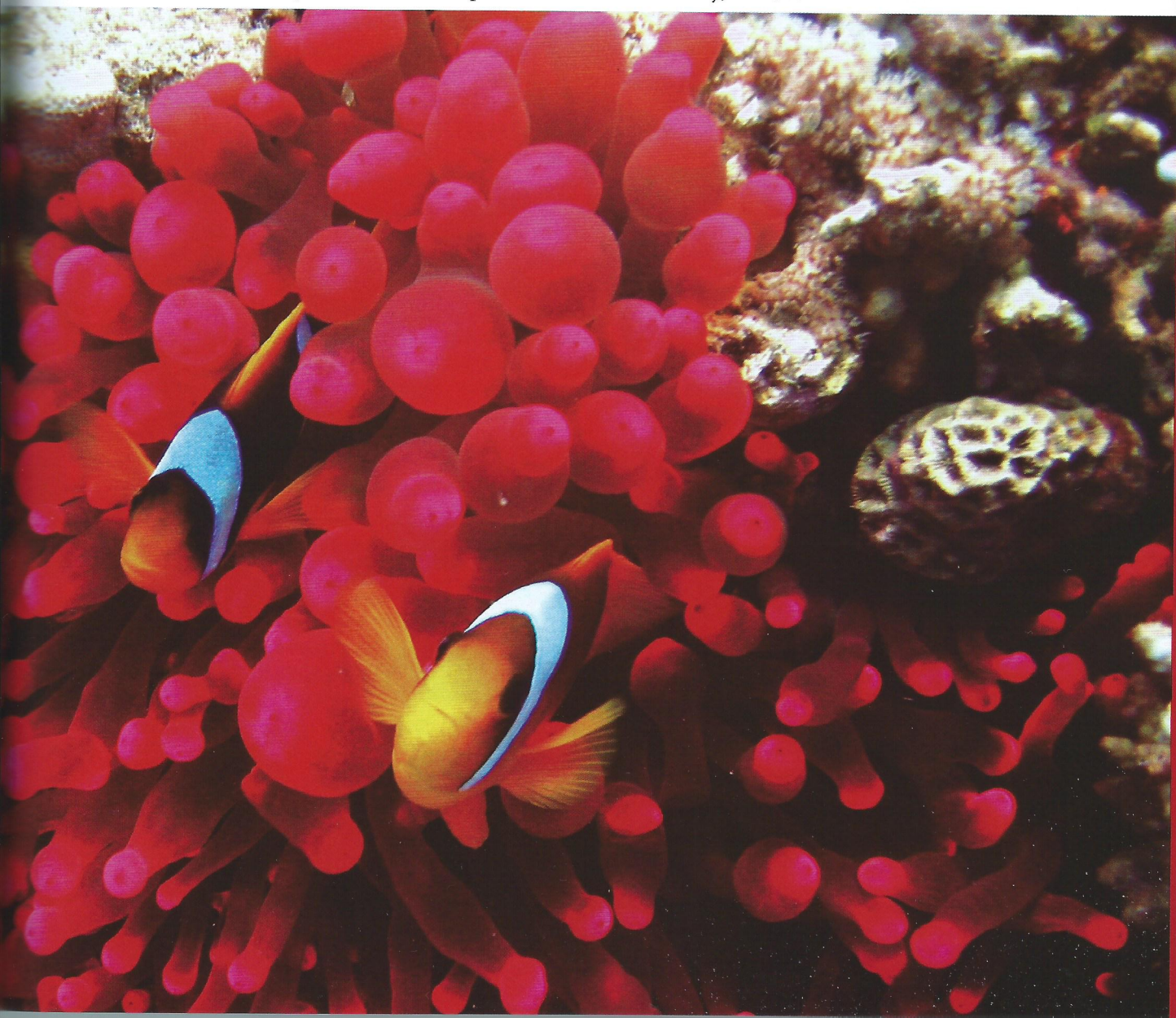
But the environmental impact of sunscreen extends beyond coral reefs.


Unfortunately, studies on the pollutive effects of sunscreen in water systems are difficult to conduct, because while the effects of pollution are clear, it is difficult to determine the source of the substance causing the problem. Many ingredients in sunscreen that could be causing a problem are found in a variety of pollutants, so it is difficult to pinpoint sunscreen as the definite culprit.

Although reflector sunscreens appear to have the lowest impact when it comes to human health, their environmental impact is not as clear-cut. An experiment on the effect on plants of exposure to aged titanium dioxide nanoparticles did not find any significant adverse consequences, but it did note that titanium and aluminium had been absorbed by the plants, possibly causing long-term effects.¹³

For humans, the dangers of nanoparticle reflector sunscreens seem to be limited to inhalation or ingestion, which are both unlikely to happen with a cream. Similarly, while >>

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studies on the effects of oxybenzone, applied in small quantities to human skin, are still not entirely conclusive, the effects of oral ingestion in mice are established to cause hormonal problems. Therefore, this is not a substance that we should be washing into our water systems to be swallowed by animals.

Thankfully, not all reflector sunscreens have nanoparticles: plain zinc oxide products, while leaving a sheen on your skin, are probably your safest bet for yourself and the oceans.

INGREDIENTS

In many countries, including the US and Canada, sunscreen is classified as a medical product. Because of this, sunscreen testing must follow the procedures of other medical products. This includes a stage of *in vivo* testing on animals, usually mice. While this can have benefits for humans by highlighting certain causes for concern and allaying others, it does turn sunscreen into something of an ethical quagmire.

Different countries have different regulations regarding which ingredients are considered safe for use in

sunscreens. The FDA considers 16 commonly used compounds to be safe and effective, while the EU has approved a further 11. Many of these extra ingredients are specifically targeted at blocking UVA, meaning that EU-approved sunscreens are likely to provide broader-spectrum protection. Some of the most common ingredients used in sunscreen include:

- **AVOBENZONE (PARSOL 1789)** is one of the most widely used UVA absorbers, because it provides excellent protection against a very broad spectrum of UVA waves. However, this compound has been shown to be unstable in the presence of light, meaning that it can degrade, offering significantly less protection, in addition to potentially degrading other compounds used in the formula. It is usually combined with octocrylene in order to improve its stability, or alternatively, with substances which are not active sunscreens, such as diethylhexyl 2 and 6 naphthalate.¹⁴ The latter are not associated with any known health concerns.¹⁵
- **BENZOPHENONE-3 (OXYBENZONE)** is a synthetic form of oestrogen used to provide UVA protection and augment UVB protection.¹⁴ It is associated with a number of safety concerns. Apart from triggering occasional allergic reactions, oxybenzone is absorbed by the skin relatively easily. This ingredient is found in many sunscreens, the use of which on children is especially cautioned, given the ease with which young children absorb compounds through the skin. Oxybenzone has been connected to hormonal disruptions in mice, causing weight gain and problems with the reproductive system; however, the study that produced the worrying results administered the ingredient orally, in high doses, so it is difficult to draw conclusions about how low-dose topical application may affect humans. In a recent study, oxybenzone was found to have been absorbed by 95% of the population studied (2 000 individuals), but it is not clear what the effect of this may be in the long-term. A study conducted on pregnant women in the US showed that high levels of oxybenzone were associated with a low birth weight for baby girls.¹⁶ Although no adverse effects have been established conclusively, and the ingredient is still con-

sidered safe by the FDA and the EU, there are many sunscreens available that do not contain this ingredient. As with most potentially problematic substances, it is always better to err on the side of caution by avoiding application on the skin.

- **BENZOPHENONE-8 (DIOXYBENZONE)** is another form of benzophenone that is also used to provide protection against UVA and UVB rays. At this stage, little is known about this ingredient, although it has been shown to have mutagenic properties in some cells. It is unclear whether this has any implications for its safety in sunscreens.¹⁷
- **ECAMSULE (TEREPHTHALYLIDENE DICAMPHOR SULFONIC ACID, MEXORYL SXHOMOSALATE, ANTI-HELIOS)** is used to absorb UVA rays. It is water soluble, meaning that it does not provide good water resistant protection. Like avobenzene, it can be unstable in the presence of light, and is often combined with octocrylene in order to combat this.¹⁴
- **MENTHYL ANTHRANILATE (MERADIMATE)** is a UVA absorber that is less effective than other alternatives, such as benzophenone.¹⁴ However, there are no known concerns about the safety of menthyl anthranilate, whereas benzophenone-3 has been associated with increased production of reactive oxygen species.¹⁸ Menthyl anthranilate is also a weak absorbent of UVB.
- **OCTINOXATE (OCTYL METHOXYCINNAMATE)** is a very commonly used UVB absorber. Although it is less potent than PABA or Padimate O, it has a better safety profile.¹⁴ However, research has shown that this ingredient is associated with higher production of reactive oxygen species than is normally produced by skin in sunlight. Although much more research would need to be conducted in order to determine whether this poses a significant cancer risk, reactive oxygen species have been connected to cell damage.¹⁸
- **OCTISALATE (OCTYL SALICYLATE)** is a weak UVB absorber but has a good safety profile. It is commonly used with other salicylates in order to provide higher UVB protection.¹⁴
- **OCTOCRYLENE** serves two main purposes in sunscreen. Firstly, it increases the SPF of formulas, including those that contain other >>

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¹³www.ncbi.nlm.nih.gov/pmc/articles/PMC2291012

¹⁴<http://emedicine.medscape.com/article/1119992-overview#aw2aab6b4>

¹⁵www.goodguide.com/ingredients/206119-diethylhexyl-2-6-naphthalate

¹⁶<http://breakingnews.ewg.org/2012sunscreen/sunscreens-exposed/nanomaterials-and-hormone-disruptors-in-sunscreens>

¹⁷www.sciencelab.com/msds.php?msdsId=9927097

¹⁸www.sciencedirect.com/science/article/pii/S0891584906004138

¹⁹www.sciencenews.org/pages/sn_arc98/6_6_98/bob2.htm

²⁰www.sciencelab.com/msds.php?msdsId=9923058

²¹www.sciencelab.com/msds.php?msdsId=9925314

²²<http://breakingnews.ewg.org/2012sunscreen/sunscreens-exposed/sunscreens-exposed-9-surprising-truths>

UV absorbers. And, secondly, it improves the stability of formulas that include ingredients that break down in sunlight (e.g. avobenzene).¹⁴ Like octinoxate, octocrylene has been linked to a higher-than-natural production of reactive oxygen species in skin exposed to sunlight. At this stage, it is not a proven cancer risk, but more research is required.¹⁸

- **PADIMATE O** is a water-insoluble derivative of para-aminobenzoic acid that has been shown to produce free radicals, which are associated with increased cancer risk.¹⁹
- **PARA-AMINOBENZOIC ACID (PABA)** is a compound that absorbs UVB. It has been shown to reduce damage from UV rays and to reduce the risk of skin tumours, but, it has also been known to cause allergic reactions. Recently, PABA has become less widely used because of evidence indicating that it could increase the risk of cell damage.¹⁹
- **PHENYLBENZIMIDAZOLE SULFONIC ACID (ENSULIZOLE)** provides adequate protection against UVB, but minimal protection against UVA, and should therefore always be paired with a UVA protectant such as zinc oxide or titanium dioxide. It is water soluble, making it feel less oily than other UVB protectants.¹⁴
- **RETINYL PALMITATE** is a form of Vitamin A over which many concerns have been raised. Although it is not an active sunscreen ingredient, it is commonly added as an emollient. In a study using mice, those who were exposed to the sun after being treated with a cream containing retinyl palmitate developed more cancer cells than mice who were not treated with the cream. A serious criticism of this study, however, is that the mice used were specifically bred to be extremely prone to skin cancer, and that the cream that was applied to them did not contain any sunscreen ingredients. As with other studies, more research is probably required to establish exactly how retinyl palmitate affects humans. While the study on mice may not show anything conclusive, it is perhaps relevant that forms of vitamin A are generally used in night creams because they are known to make the skin more sensitive. Although this ingredient is considered safe, ingredients such as vitamins which are commonly

thought of as “natural” are often subjected to less stringent testing by bodies such as the FDA than synthetic compounds. So, again, it is probably better to be cautious and try to avoid sunscreens containing retinyl palmitate. Pregnant women in particular are often advised to avoid this ingredient, since the retinoids produced when retinyl palmitate reacts with human skin have been associated with birth defects. The good news is that because retinyl palmitate is added to sunscreens as an ancillary ingredient, to condition the skin, sunscreens without it do not have reduced efficacy.¹⁰

- **SULISOBENZONE** is used to absorb UVA and UVB and can act as a skin irritant. It is also very hazardous if inhaled or ingested. Spray-on sunscreens containing sulisobenzone should therefore be applied with care and definitely not used near the face.²⁰
- **TITANIUM DIOXIDE** is added to physical or mineral sunscreen to act as a barrier against UVA and UVB rays. The use of substances like oxybenzone and retinyl palmitate in chemical sunscreens is worrying partly because these sunscreens are designed to be absorbed by the skin in order to reflect UV rays. Titanium dioxide consists of large particles that have very limited ability to penetrate the skin. Unfortunately, these microparticles tend to leave a white residue on the skin, and for this reason they are very often modified in order to produce a greater cosmetic appeal. Titanium dioxide nanoparticles (particles smaller than 100nm), are a cause for concern, due to a higher risk of these particles being absorbed. Even with smaller particles, however, skin penetration of these ingredients is very limited²² and the health concerns linked with nanoparticles centre mainly around the dangers of swallowing or inhaling.¹⁰ Nevertheless, because of this, it is advisable to opt for a lotion-based sunscreen rather than a spray-on. In addition to carrying fewer health concerns, mineral sunscreens tend to have a higher rate of UVA protection, making them an all-round better choice.
- **TROLAMINE SALICYLATE** is used to absorb UVB rays. Although it can act as an irritant, it has not been linked with any other health concerns.²¹

• **ZINC OXIDE**, like titanium dioxide is added to physical or mineral sunscreen, in microparticle form, so that the sunscreen acts as a barrier against UVA and UVB rays. Zinc oxide nanoparticles (particles smaller than 100nm), are also a cause for concern, due to a higher risk of these particles being absorbed.²² As with sunscreens that contain titanium dioxide, they tend to have a higher rate of UVA protection, but it is advisable to opt for a lotion-based sunscreen rather than a spray-on.

As with any other cosmetic product, one of the most prominent ethical concerns with sunscreen comes from the fact that a large proportion of products and ingredients are tested on animals. Unlike make-up or shampoo, though, the issue of animal testing with sunscreen could be argued to be more complex, because of the role sunscreen plays in cancer prevention and therefore human health.

Many proponents of animal welfare – or the idea that animals should always be treated humanely – may argue that in matters of human health, a limited degree of animal testing is justifiable, within strict controls. Animal rights proponents, on the other hand, would argue that this mentality is akin to the 19th century idea that slavery was necessary for the wellbeing of slave owners, and that it is never acceptable to sacrifice one group for the wellbeing of another.

A dilemma arises with sunscreen because boards such as the FDA, which are responsible for accepting or denying the safety of certain ingredients, base their decisions on the results of animal tests. To circumvent this debate, look for products whose ingredients are certified, but that do not contain ingredients that have been tested on animals.

Research on the ingredients and effects of sunscreen is ongoing, and at this point, unfortunately, decisions about sunscreen have to take a multitude of factors into account, together with the latest research. Given the strong links between UV radiation and skin cancer, and the enhanced risks associated with living in South Africa, forgoing sunscreen entirely does not seem like a wise choice. Prioritising covering up and staying out of the sun is a good place to start, and should be combined with a carefully chosen sunscreen. ✓



ETHICAL LIVING RECOMMENDS

As with many of the pharmaceutical and beauty products we've looked at over the last year, there are many things to take into consideration when choosing a sunscreen. Badger products, although imported, are safe in terms of toxic ingredients, certified organic, and are not tested on animals. WS Badger also receives excellent scores when it comes to environmental reporting and palm oil policies. *Ethical Living* therefore recommends Badger sunscreens, which are available at Dis-Chem and health stores nationwide. An excellent alternative is Eco Suncare, which can be purchased online at www.faithful-to-nature.co.za.



Company Profiles

Although Beiersdorf has released a statement that it does not test on animals, it has not been certified as such and has been the subject of a boycott call this year

ANNIQUE THERON SAFE IN THE SUN BLOCK

Annique Theron is a South African company that manufactures skincare products, cosmetics, fragrances, and supplements. Its products are endorsed by Beauty Without Cruelty as not tested on animals. However, some of its products contain parabens and unsustainably-sourced palm oil. Annique Theron did not respond to a request for information, and no information pertaining to its environmental report, supply chain management or genetic modification policy could be found.

BEIERSDORF AG/ MAXINGVEST AG NIVEA

Beiersdorf is a multinational cosmetics company and the manufacturer of Nivea skin creams. Although Beiersdorf has released a statement that it does not test on animals, it has not

been certified as such and has been the subject of a boycott call this year. It also has no restrictions on using ingredients that have been tested on animals and no fixed cut-off date for abandoning the use of such ingredients. Nivea sunscreens contain titanium dioxide nanoparticles.

Beiersdorf's current environmental report details its policies for reducing its environmental impact; however, the report does not fully disclose its carbon footprint, or include fixed reduction targets. Beiersdorf aims to use only sustainable palm oil sources, by 2015, and is a member of the Roundtable on Sustainable Palm Oil. It has also purchased sufficient Green Palm certificates to cover its current palm oil usage. The company has a supply chain management policy detailing fair working conditions for all suppliers and subcontractors but operates in a number of oppressive regimes and tax havens.

BEMA BIO COSMETICI NATUR&SUN

Bema Bio Cosmetici is a small Italian company that manufactures cosmetics using organic and natural ingredients. The company states that it does not test on animals, does not use ingredients that are tested on animals, and does not use animal derivatives, although it has not been certified in terms of these claims. It is, however, certified by the *Istituto Certificazione Etica e Ambientale* (ICEA) as an eco-friendly organisation that does not use harmful ingredients, does use organic ingredients, produces recyclable packaging and works to reduce its environmental impact.

CLICKS GROUP LIMITED SUN PROTECT

Clicks, one of the largest cosmetic and pharmaceutical retailers in South Africa, manufactures Sun Protect, an in-house brand of sunscreen. Clicks does not have any policies pertaining to animal testing or the use of animal-tested ingredients in its in-house products. Some of Clicks's products contain palm oil. Because the company has no

policy on the sustainable sourcing of palm oil, this implicates it in climate change and habitat destruction.

Although Clicks participates in a carbon disclosure project it does not have any set targets for reducing its footprint, and even though the company has an environmental management committee, it has no environmental report.

CREIGHTON PRODUCTS ISLAND TRIBE

Creighton Products manufactures its own line of sunscreens, Island Tribe. It also manufactures sunscreens for other retailers including Spar (Sola) and Pick n Pay (Sun Sure). Creighton Products did not respond to our request for information, and no environmental report, supply chain management, genetic modification or animal testing policies could be found.

DIS-CHEM PHARMACIES DIS-CHEM

Dis-Chem Pharmacies manufactures a variety of different in-house cosmetic and pharmaceutical brands, including sunscreen. The company has no >>

Dis-Chem Pharmacies manufactures a variety of different in-house cosmetic and pharmaceutical brands, including sunscreen. The company has no environmental report or supply chain management policy, and no certification indicating that it does not test on animals

SUNSCREEN

BRAND	COMPANY	SIZE	PRICE	STOCKIST	CANSA
Badger	WS Badger	87ml SPF30	R185.95	www.freshearth.co.za	No
Clarins Sun Care	Financière FC	30ml-150ml	R310-R450	www.clarins.co.za	Yes
Dis-Chem	Dis-Chem Pharmacies	100ml SPF20	R190	Dis-Chem	Yes
Dr Hauschka	Wala-Stiftung	100ml SPF20	R226	www.freshearth.co.za	No
Eco Suncare	Eco Cosmetics (NBAT)	75ml SPF50+	R229	www.faithful-to-nature.co.za	No
Epi-Sun	Episcience	400ml SPF20+	R150	Clicks, Dis-Chem, Pick n Pay	No
Everysun	Incolabs	125ml SPF50	R85	Clicks, Dis-Chem, Pick n Pay	No
IQ	IQ Laboratories	150ml SPF50	R88	Clicks, Dis-Chem, Pick n Pay	Yes
Island Tribe	Creighton Products	125ml SPF30	R60	Clicks, Dis-Chem, Pick n Pay	Yes
Natur&Sun	Bema Bio Cosmetici	150ml SPF30	R254.95	www.freshearth.co.za	No
Nivea	Beiersdorf AG/Maxingvest AG	200ml SPF20	R80	Clicks, Dis-Chem, Pick n Pay	Yes
Palmer's Cocoa Butter	Palmer's Cosmetics	250ml SPF15	R50	Clicks, Dis-Chem, Pick n Pay	No
Piz Buin	Johnson & Johnson	200ml SPF50	R210	Clicks, Dis-Chem, Pick n Pay	No
Safe In The Sun Block	Annique Theron	30ml SPF50	R159	www.anniqueshop.co.za	Yes
Sola	Spar Group Limited	125ml SPF40	R69.99	Spar	Yes
Sun Protect	Clicks Group Limited	200ml SPF30	R79.99	Clicks	Yes
Sun Sure	Pick n Pay Holdings Limited	125ml SPF50	R89.99	Pick n Pay	Yes
Sunumbra	Organic Products LLC	100ml SPF40	R255.95	www.freshearth.co.za	No
Techniblock	Technikon Laboratories	75ml SPF40	R60	Clicks, Dis-Chem, Pick n Pay	Yes
Tropitone	Incolabs	200ml SPF40	R90	Clicks, Dis-Chem, Pick n Pay	No

Eco Cosmetics is one of the most ethical brands available in South Africa.

It is certified organic and vegan, and does not test on animals or use ingredients that have been tested on animals.

No palm oil, parabens, nanotechnology, paraffin or silicones are used in its products, which are formulated with well water instead of tap water, contributing to product sustainability

environmental report or supply chain management policy, and no certification indicating that it does not test on animals. Its in-house sunscreen contains titanium dioxide, with no indication of particle size, suggesting the possible use of nanoparticles. Dis-Chem Pharmacies lists palm oil as an ingredient in some of its products but has no policy on the sustainable sourcing of palm oil, thereby implicating it in habitat destruction and climate change.

ECO COSMETICS

ECO SUNCARE

Eco Cosmetics is one of the most ethical sunscreen brands available in South Africa. It is certified organic and vegan, and does not test on animals or use ingredients that have been tested on animals. No palm oil, parabens, nanotechnology, paraffin or silicones are used in its products, which are formulated with well water instead of tap water, contributing to product sustainability. Additionally, it offsets its direct and indirect carbon emissions by donating to PrimaKlima, an afforestation project. Finally, its packaging is made from recyclable materials.

EPISCIENCE

EPI-SUN

Epi-Sun is manufactured by Episcience and distributed by Genop. Its sunscreen is claimed to be not tested on animals, but it is not certified as such. Episcience did not respond to our request for information and no environmental report, supply chain management policy, genetic modification or animal testing policy could be found.

FINANCIÈRE FC

CLARINS SUN CARE

Based in France, this company's products have been found to contain toxic and hazardous ingredients. It is a known animal tester and purchases animal-tested ingredients. It has been fined for price fixing and operates in both oppressive regimes and tax havens. The company has no environmental policy and no supply chain management system, implying it neither understands nor tries to mitigate its impacts nor does it concern itself

with ethical suppliers. It has also been found guilty of irresponsible marketing: not informing consumers of the hazards of its ingredients and not disclosing these on its labels.

INCOLABS

EVERYSUN, TROPITONE

Incolabs sells products manufactured by well-known animal testers such as Unilever, and has no certifications to indicate that it has any anti-animal testing policies of its own. Incolabs did not respond to our request for information and no environmental report, supply chain management, genetic modification or animal testing policies could be found. It lists palm oil as an ingredient in its aqueous soaps but has no policy on the sustainable sourcing of palm oil, thereby implicating it in habitat destruction and climate change.

IQ LABORATORIES

IQ

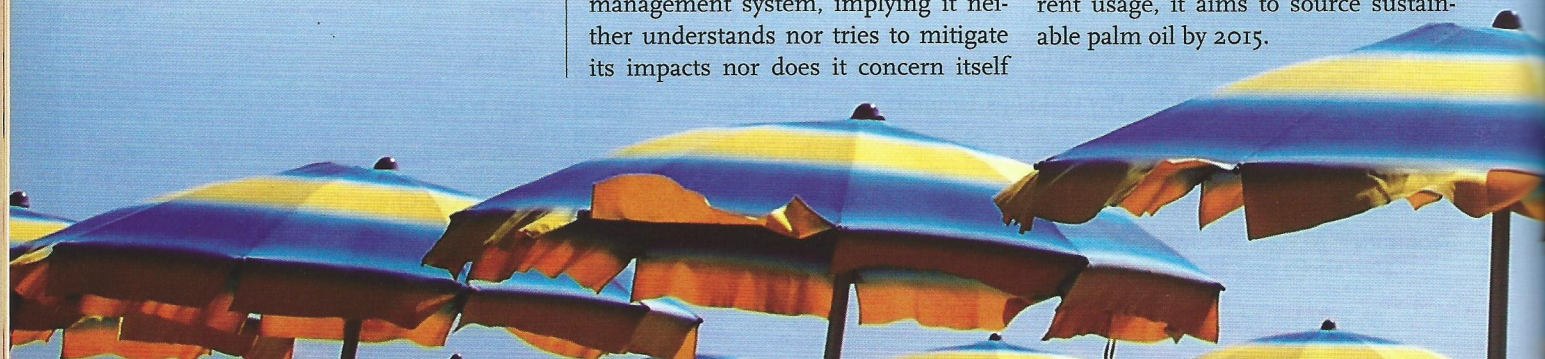
Although IQ bears the Cansa Seal of Recognition and is marketed as being suitable for sensitive skin, it contains parabens. IQ Laboratories declined to provide *Ethical Living* with information pertaining to its environmental report, supply chain management, genetic modification and animal testing policies.

JOHNSON & JOHNSON

PIZ BUIN

Johnson & Johnson is one of the largest, most unethical cosmetic manufacturers in the world. It is a known animal tester, even testing products for which animal testing is not a legal requirement, and many of its products contain animal by-products. It continues to use potentially toxic ingredients, nanoparticles, parabens and genetically modified ingredients in its products.

The company does, however, have meaningful environmental goals and a carbon reduction programme. It uses palm oil from unsustainable sources but is a member of the Roundtable for Sustainable Palm Oil and purchases Green Palm certificates to cover its current usage, it aims to source sustainable palm oil by 2015.



Johnson & Johnson has been linked to a number of human rights abuses, including the conduct of unethical clinical trials on impoverished people, blocking access to HIV treatment by refusing to engage in patent negotiations and improperly outlining the risks of its antipsychotic drug Risperdal in its marketing. It has a supply chain management policy; however, it shows minimal commitment to issues such as wages and working hours. A number of Johnson & Johnson's subsidiaries operate in oppressive regimes.

ORGANIC PRODUCTS LLC SUNUMBRA

Sunumbra contains no chemical filters and uses zinc oxide as its active sunscreen ingredient, providing protection against both UVA and UVB rays. The zinc oxide used is micronised, meaning that it is not nano-sized and is thus too big to penetrate the skin. Sunumbra is made with natural ingredients such as plant extracts, many of which are wild-sourced or certified organic by Ecocert. Organic Products did not respond to our request for information and no environmental report, supply chain management, genetic modification or animal testing policies could be found.

PALMER'S COSMETICS PALMER'S COCOA BUTTER

Palmer's Cosmetics Cocoa Butter range includes an SPF15 lotion with UVA and UVB protection. Although this product is marketed as natural and cruelty-free, the range includes ingredients such as oxybenzone and parabens and the company does not appear to be independently certified in terms of its stated opposition to animal testing. It does not have a policy on genetic modification and sources its palm oil from Cargill, which has been implicated in rainforest deforestation. Palmer's Cosmetics is a member of the World Cocoa Foundation, which works towards

sustainability and improved access to education, in communities involved in cocoa production. No environmental report or supply chain management policy could be found.

PICK N PAY HOLDINGS SUN SURE

Pick n Pay's Sun Sure sunscreen is manufactured by Creighton Products. Pick n Pay has no animal testing policy for its in-house products and is known to stock other products, including sunscreens, that are tested on animals, as well as meat and animal products that are factory farmed. The company uses unsustainably sourced palm oil in its products without any remediation strategy, and has no policy on genetic modification.

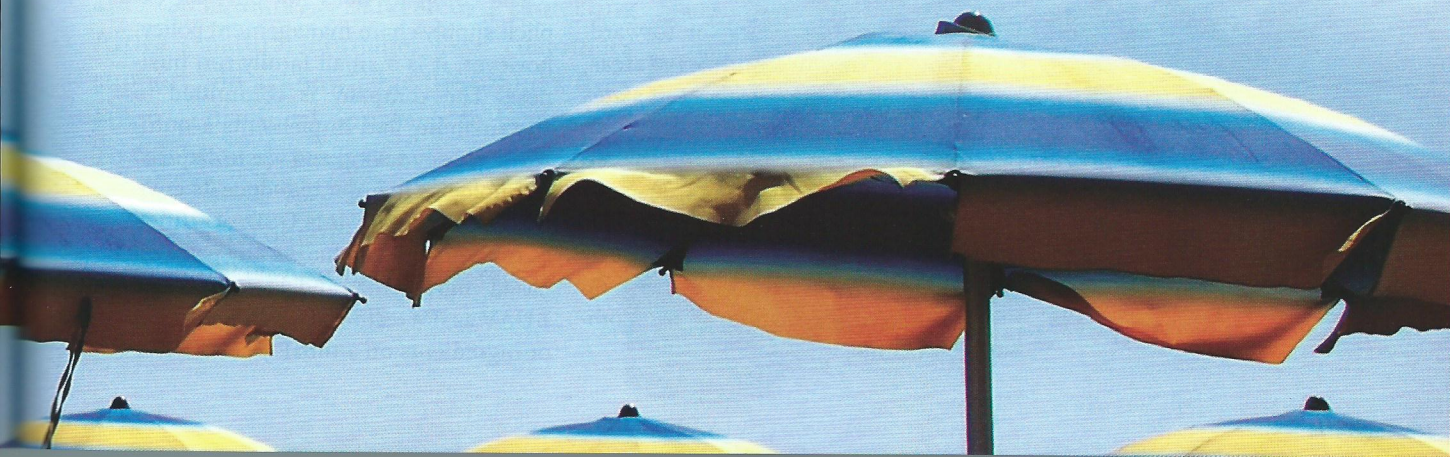
Pick n Pay does, however, have a comprehensive environmental policy, with evidence of significant reductions in a number of areas, including carbon emissions and waste management. The company also has a supply chain policy that deals with its employment practices and requirements for suppliers. The company prides itself on supporting local farmers and small businesses.

SPAR GROUP LIMITED SOLA

Spar's Sola sunscreen is also manufactured by Creighton Products. Spar has no animal testing policy for its in-house products and is known to stock other products, including sunscreens, that are tested on animals, as well as meat and animal products that are factory farmed. It is known to use palm oil in its in-house products without any goal to reduce its reliance on palm oil from unsustainable sources.

Spar does not have an environmental report, supply chain management or genetic modification policies. It operates in Zimbabwe, which is considered an oppressive regime and remunerates its directors excessively. >>

Pick n Pay has no animal testing policy for its in-house products and is known to stock other products, including sunscreens, that are tested on animals, as well as meat and animal products that are factory farmed





Unfortunately, Wala-Stiftung also has no palm oil policy, making its impact on habitat destruction unclear. It also has no supply chain management policy, which raises questions about the responsibility of its sourcing policies. Finally, it has a number of subsidiaries in tax havens

TECHNIKON LABORATORIES TECHNIBLOCK

Technikon Laboratories is a medium-sized South African operation that produces a range of pharmaceutical products, including sunscreens and medications, both for the local market and for export. Sunscreens produced by Technikon Laboratories are manufactured in accordance with the regulations of the targeted, international market: FDA for the USA, Colipa for Europe, and TGA for Australia. Currently, products sold locally are in line with FDA standards, but the European range, with additional active ingredients, will be launched soon.

The company complies with legal standards and standard procedures in terms of environmental management and requires this compliance from its suppliers and distributors. Although the company states that it does not test on animals, does not use ingredients tested on animals, and does not use genetically modified ingredients or palm oil, it has no certification for any of these policies.

WALA-STIFTUNG DR HAUSCHKA

Dr Hauschka has ethical or forward-thinking policies in a number of areas, but raises questions in others. It states categorically that it does not test on animals, does not use ingredients tested on animals, and has no affiliations with companies that do, but is not certified as such. While it is endorsed by Peta, this endorsement requires no independent verification of the company's claims.

The company has a thorough and up-to-date environmental policy with a commitment to sustainability and organic ingredients, but it also has strong affiliations with the biodynamics method. While biodynamics overlaps to a large extent with organic methods, its overall efficacy in promoting sustainability, and the implication of the method on the environment, have been questioned.

Unfortunately, Wala-Stiftung also has no palm oil policy, making its impact on habitat destruction unclear. It has no supply chain management policy, which raises questions about the responsibility of its sourcing policies. Finally, it has a number of subsidiaries in tax havens.

WS BADGER BADGER

WS Badger, which manufactures the line of Badger products, including sunscreens and sunscreen lip balms, is a small family-run company in the US. The sunscreens do not include any parabens, petrochemicals or nanoparticles.

The company does not have an explicit supply chain management policy, however, it is a small family-run business. The company is committed to sustainability and implements a number of energy-saving and waste disposal technologies in order to reduce its environmental impact. It is USDA-certified as 99% organic, including any palm-oil based ingredients, and is certified by BUAUV as not testing any of its products or ingredients on animals. ✓