



Sunscreen - To Wear or Not to Wear - *That is THE Question!*

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Introduction

The debate has raged on and on. Does sunscreen help prevent melanoma, the deadliest form of skin cancer? Or, as some have theorized, does it actually cause the disease? Unfortunately, the jury may still be out awhile.

Safest Approach:

The latest skin-cancer prevention advice is to stop trusting sunscreen as the front line of defense against harmful rays. Instead, wear sun-blocking clothing or stay out of the sun altogether.

But this advice will not likely sit well with many sun-loving, outdoorsy people - so the following article is intended to give you background and advice so you can make an informed decision on whether or not to use sunscreen and what type to use if you choose that route.

A. Why is sunscreen used?

Most of the chemical reactions that UVR [ultraviolet radiation] causes in the body are harmful...a sunburn is only the most immediately visible negative effect of UVR exposure. At the molecular level, UVR can damage DNA. Damaged DNA impairs cells' ability to grow and divide, and as more and more such impaired cells build up in the skin, skin cancer can result.

Sunscreens are chemical agents that help prevent the sun's ultraviolet (UV) radiation from reaching the skin. Two types of ultraviolet radiation, UVA and UVB, damage the skin and increase your risk of skin cancer. Chemical sunscreens are formulated to absorb UVB radiation, they let most of the UVA rays through. UVA rays penetrate deeper into the skin and are strongly absorbed by the melanocytes which are involved both in melanin production (sun tanning) and in melanoma formation. UVA rays also have a depressing effect on the immune system.

UVB is the chief culprit behind sunburn, while UVA rays, which penetrate the skin more deeply, are associated with wrinkling, leathery, sagging, and other effects of photo-aging. They also exacerbate the carcinogenic effects of UVB rays, and increasingly are being seen as a cause of skin cancer on their own. Sunscreens vary in their ability to protect against UVA and UVB.

Therefore, it is important to choose a sunscreen that is protective against UVA as well as UVB, as both hurt the skin (UVB causes sunburn and skin cancer over time, while UVA causes skin cancer and premature aging of the skin).

B. So, What's the Issue?

Although groups like the American & Canadian Cancer Society recommend sunscreen use to protect against skin cancer, some of the chemicals that show up in most sunscreen products may be just as dangerous as sunburn.

Some medical doctors have gone as far to say that sunscreens cause more deaths than they prevent. Various studies have linked sunscreen usage with high incidence of melanomas, birth defects, sterility, and uterine conditions such as endometriosis. It is suspected that the countries promoting heavy sunscreen usage (Australia, USA) have the biggest increase in skin cancers.

Whether some or all of the ingredients found in sunscreens are toxic remains controversial and there are studies on either side of the issue. However, a study in the April 2004 Journal of Chromatography found that there is significant penetration of all sunscreen agents into the skin, and oxybenzone and metabolites across the skin. For that matter, anything you put on your skin will ultimately be absorbed into your body.

The most dangerous of the common ingredients found in sun blocks are suspected to increase the risk of malignant melanoma, the more dangerous form of skin cancer. Melanoma is responsible for three quarters of deaths related to skin cancer, and appears to be more common among people who use sunscreen.

The Garland brother doctors (Dr Cedric Garland, professor of family medicine at the University of California, and Frank Garland, director of the Naval Health Research Center) strongly believe that the increased use of chemical sunscreens is the primary cause of the skin cancer epidemic. They emphasize that people using sunscreen tend to stay longer in the sun because they do not get a sunburn - they develop a false sense of security.

C. Chemicals in Sunscreen

Overall, there are two basic types of skin cream or lotion protection:

1. sunscreens, which absorb and deflect (or reflect) the sun's rays via a chemical reaction, and
2. "blocks"—zinc oxide and titanium dioxide—which create a physical barrier against rays. Most commercial products offer a combination of the two, but when possible avoid the following ingredients:

Chemicals like:

- sodium lauryl sulfate (SLS),
- DEA,
- parabens,
- propylene glycol, and alcohols

may be used to emulsify sun block creams and give lotions the right texture. Artificial fragrances, just by themselves, may contain dozens of carcinogenic chemicals that damage the liver, the heart, and even promote systemic cancer.

These chemicals are known toxins and several appear on the Environmental Protection Agency's warning lists.

The active ingredients are even worse. Many of the sunscreens available today combine several different active chemical sunscreen ingredients in order to provide broad-spectrum protection.

Usually, at least three active ingredients are called for. These generally include:

1. PABA derivatives, salicylates, and/or cinnamates (octylmethoxycinnamate and cinoxate) for UVB absorption;
2. benzophenones (such as oxybenzone and sulisobenzene) for shorter-wavelength UVA protection; and

3. avobenzone (Parsol 1789), ecamsule (Mexoryl™), titanium dioxide, or zinc oxide for the remaining UVA spectrum.

- **PABA**, used for many years as the first ingredient in most sunscreens, is a mutagen and carcinogen, causing damage to human cell DNA. Though rarely used now in sunscreens, beware of products that contain the ingredient. Forty percent of the population is sensitive to it, experiencing red, itchy skin.
- **Benzophenone**, used to absorb UVB rays, is used in industrial processes to create free radicals as a catalyst. When benzophenone absorbs UV light, it breaks down into free radicals that age skin and can cause cancer. Most chemical sunscreens contain from 2 to 5% of benzophenone or its derivatives (oxybenzone, benzophenone-3 and homosalate, and octy-methoxycinnamate (octinoxate)) as their active ingredient. Benzophenone is one of the most powerful free radical generators known to man. One study revealed that 97% of Americans tested were contaminated with oxybenzone, a chemical known to contribute to allergies, cancer, and hormone disruption.
- **Triethanolamine**, another UV blocker, combines with nitrites (often used as preservatives in minute quantities not listed on sunscreen labels) to form carcinogenic nitrosamines.
- **Parabens** (butyl-, ethyl-, methyl-, and propyl-): Parabens may also mimic estrogen.

In addition to being free radical generators, many of the chemicals used in sunscreens are hormone disruptors and have estrogenic activity in the human body.

D. If You Are Going to Wear Sunscreen..... (1) How to Use It? And (2) Which One?

(D-1) How to Use Sunscreen

With the huge array of sunscreens on the market, it can be daunting as to which product to choose.

1) The most significant factor of any sunscreen is its **SPF rating**.

All sunscreens have an SPF (Sun Protection Factor) rating, which indicates the degree of protection offered by the sunscreen. SPF numbers can range from 2 to 100, referring to the sunscreen's ability to block out the harmful rays of the sun and prevent sunburn.

The higher the SPF of the sunscreen, the more sunburn protection the product will provide. Another way to look at it is in terms of percentages: SPF 15 blocks approximately 93 percent of all incoming UVB rays. SPF 30 blocks 97 percent; and SPF 50 blocks 98 percent. They may seem like negligible differences, but if you are light-sensitive, or have a history of skin cancer, those extra percentages will make a difference. And as you can see, no sunscreen can block all UV rays.

But there are problems with the SPF model: First, no sunscreen, regardless of strength, should be expected to stay effective longer than two hours without reapplication. Second, "reddening" of the skin is a reaction to UVB rays alone and tells you little about what UVA damage you may be getting. Plenty of damage can be done without the red flag of sunburn being raised.

2) To ensure that you get the full SPF of a sunscreen, you need to apply 1 oz – about a shot glass full. Studies show that most people apply only half to a quarter of that amount, which means the actual SPF they have on their body is lower than advertised.

3) During a long day at the beach, one person should use around one half to one quarter of an 8 oz. bottle.

4) Sunscreens should be applied 30 minutes before sun exposure to allow the ingredients to fully bind to the skin. Reapplication of sunscreen is just as important as putting it on in the first place, so reapply the same amount every two hours. Sunscreens should be reapplied immediately after swimming, toweling off, or sweating a great deal.

(D-2) Which Sunscreen to Buy?

In an analysis of 1,776 name-brand sunscreens on the market in summer 2009, the Environmental Working Group (EWG) found that 3 out of 5 sunscreen products offer inadequate protection from the sun, or contain ingredients with significant safety concerns.

Leading brands were the worst offenders: None of market leader Coppertone's 45 sunscreen products met EWG's criteria for safety and effectiveness, and only 2 of 160 products from Banana Boat and Neutrogena, the second- and third-largest manufacturers, are recommended by EWG.

Check the ingredients:

While most sunscreens read like a toxic list of chemicals, zinc oxide based sunscreens offer a healthier alternative. Zinc is what actually absorbs the sun's rays before it goes into your skin, keeping the damaging UVA and UVB rays at bay. Micronized Zinc is relatively new and since the Zinc particles are very fine, the lotion will go on smoother and minus the white streaky residue. A downside of zinc sunscreens is that they are more expensive.

Titanium dioxide has not been studied long enough to know whether it is a threat or not.

Top Recommended Sunscreens from EWG

1.	Loving Naturals Sunscreen 30+ SPF
2.	Heiko Kids 40 SPF
3.	thinkbaby and thinksport thinkbaby Sunscreen SPF 30+
4.	Badger Sunscreen, SPF 30 A great choice for cancer survivors, this barrier sunblock forms a film on top of the skin that reflects or scatters UV light. The product is 60% organic, contains low to no irritating ingredients, and shouldn't interact with prescription medications. Stays effective for 40 minutes in the water.
5.	Trukid Sunny Days Facestick Mineral Sunscreen UVA/UVB Broad Spectrum, SPF 30+
6.	Beyond Coastal Lip and Face Screen
7.	Purple Prairie Botanicals Sun Stuff, SPF 30
8.	Soleo/Atlantis Resort Soleo/Atlantis Organics All Natural Sunscreen, SPF 30+
9.	Lavera Sunscreen Neutral, SPF 40 This sunblock was developed especially for people with allergies and extremely sensitive skin. It is waterproof and very affective at protecting from UVA and UVB rays, which makes it a great choice for cancer survivors.
10.	UV Natural Baby Sunscreen, SPF 30+ This natural, zinc based barrier sunblock protects from UVA & UVB rays, plus it strengthens & maintains healthy skin cell growth. One application will last 4 hours on land and 2 hours in the water.

Other Sunscreens:

Aubrey Organics produces one of the very best lines of all-natural sunscreens. Not only do their sunscreen products avoid use of suspect ingredients, they combine UVA-protective titanium dioxide with Padimate O for a full-spectrum blocking effect. In addition, these products contain much higher amounts of powerful skin protecting herbs and nutrients.

Peter Thomas Roth Titanium Dioxide Sunblock SPF 30: This is another barrier sunscreen that is non-comedogenic, PABA and fragrance-free. Ideal for skin sensitive to chemical sunscreens and a good choice for cancer survivors.

Vanicream Sunscreen Sport SPF 35: A broad spectrum sunblock that protects from UVA and UVB rays. Perfect for the sensitive skin of a cancer survivor, this product is oil-free and

UV Natural Sport SPF 30 & Very Water Resistant: A broad spectrum sunscreen that is sweat resistant, preservative free, natural and designed for the outdoor enthusiast.

Colorescience Shake It Up Sunforgettable SPF 30: A unique, all clear mineral powder sunblock for the face and body which is non-greasy and very water resistant. Contains both zinc and titanium dioxide for maximum protection from UVA and UVB rays. An excellent choice of protection for skin cancer survivors.

Mustela Bebe High Protection Sun Lotion SPF 50: Provides extra broad spectrum protection from UVA and UVB rays and free radicals. Also hypoallergenic, which is great for the sensitive skin of cancer survivors.

E) The Bottom Line

The saga of sunscreens and skin cancer is far from over. Research is continuing and new findings are being published at an accelerated pace. But until we know the whole story, it would seem prudent to take precautions based on what we do know.

So what should you do to protect yourself as much as possible?

- DO NOT rely on the use of sunscreens to protect you against skin cancer.
- DO NOT try to get a tan by visiting a tanning studio. The rays from their UV lamps are extremely harmful and the tan produced does not have the protective effect of a sunlight-induced tan.
- DO try to develop a moderate natural suntan unless you have extremely sensitive skin and burn easily. Regular and moderate unprotected sun exposure in the early morning or late afternoon will help maintain a protective tan and keep your vitamin D stores at an optimum level.
- DO wear protective clothing and a wide-brimmed hat when you are outside. Avoid sun exposure between 10 AM and 3 PM if at all possible. Remember that UV rays, particularly UVA, are present even on cloudy days.
- DO remember that sunlight is strongly reflected from sand, snow, ice, and concrete and can increase your direct sunlight exposure by 10 to 50%.
- DO make sure you get enough vitamin D3 and beta-carotene. Recent research has shown that taking 30 mg of beta-carotene a day protects against the suppression of the immune system by UVA rays.
- DO make sure to supplement your diet with antioxidants. i.e., vitamin C, vitamin E, and selenium are used as a protection against the damages of excessive ultraviolet radiation.

- DO cut down on the fat in your diet. Recent research has shown that patients with non-melanoma skin cancers can reduce their risk of developing additional actinic keratoses (precursors to skin cancer) by switching to a low fat diet.
- DO wear a physical sunscreen with a SPF of 15 if you absolutely must be out in the sun for extended periods of time. Physical sunscreens containing titanium dioxide, zinc oxide, or talc work by reflecting the UV radiation rather than by absorbing it. Even "broad-spectrum" sunscreens are not very good in filtering out UVA rays(26). A natural suntan is probably more effective.

F) Other natural Approaches to Skin Cancer Protection:

Aloe for Skin Repair

Aloe vera is truly a remarkable plant. Used internally it helps heal the gut; externally it heals the skin. No surprise that slathering the body in aloe gel after sunbathing helps heal sunburn more rapidly. Although there are no major studies on whether it prevents skin cancer, it does heal sunburns, especially if it is applied quickly after coming out of the sun.

Antioxidants to Protect the Skin

Anti-oxidants protect body tissue from damage by free radicals. So it is wise to have a diet strong in anti-oxidants when going into the sun, and maybe consider extra supplements such as CoQ-10, Vitamin, Vitamin E, selenium, and Vitamin B.

Building Up a Sun Tolerance

Exposure to the sun is very important to healthy functioning of the body. It is only when too much intensity of the sun is encountered that there is a problem. Like most things, if exposure to the sun is gradual and continual, then the body will develop its own protection.

Tomatoes Protect Against Skin Cancer

Fruits such as tomatoes, watermelon, red peppers, guava, apricots, papaya, and pink grapefruit will be a source of lycopene. A member of the carotenoid family, lycopene is an anti-oxidant that protects and treats against cancers of the skin, cervix, breast, lungs, prostate, and stomach.