

## What's In a Sunscreen?

When I ask patients about sunscreen use, the most common responses are "I don't go out in the sun" or "mine is really good, it's an SPF 45." I hope this will convince **you that you should be wearing sunscreen daily** and educate you about sunscreen labeling.

If you don't wear sunscreen, you should. Even if you don't sunbathe, you are getting sun exposure. **Assuming you commute only 20 minutes per day, your skin will receive over 120 hours of sun in one year!** This doesn't even count the trips to the grocery store, sitting by the window, etc. It all adds up over time.

Why should you care? After all, sunburns aren't that bad. Or are they? **Sunburns in childhood have been linked to an increased rate of the potentially lethal melanoma skin cancer.** **Cumulative sun exposure is responsible for the majority of non-melanoma skin cancers**, such as basal cell and squamous cell carcinomas. One study showed a 78% decrease in non-melanoma skin cancers in persons who used even a basic SPF 7.5 sunscreen for the first 18 years of life. Sadly, only 20% of schoolchildren use sunscreen on a regular basis. Sun exposure will also cause wrinkles, dark spots, and skin thickening. Sunlight can also aggravate several skin conditions such as lupus or rosacea (adult acne). Despite recent press coverage regarding sunlight and vitamin D, sunscreen use has little to no effect on vitamin D levels in healthy individuals.

When discussing sun exposure, we are really talking about UVA and UVB. UVB is also found in tanning booths. UVB is relatively easy to block. It generally does not penetrate glass, clouds, and clothing. Most sunscreens on the market do an excellent job with UVB protection. The SPF number reflects the UVB protection. An SPF 15 blocks 94% of UVB, while an SPF 30 blocks 97%, and SPF 45 blocks 98% in laboratory conditions. The average sunscreen user applies only one-fourth of the amount of sunscreen used to determine the SPF. Also, sunscreen should be applied 15-20 minutes prior to the actual sun exposure to allow time to "soak" into the skin. **The SPF says nothing about UVA protection and duration of UVB protection.**

**There are only four sunscreen ingredients with adequate UVA protection: zinc, titanium, ecamsule (Mexoryl SX), and avobenzone (Parsol 1789).** The problem with chemical (or organic) ingredients such as avobenzone is degradation. Avobenzone loses 60% of its potency after only one hour. Other chemicals degrade in 30-120 minutes. Therefore, even more chemicals are added to stabilize these compounds. There are now formulations that stabilize avobenzone for up six hours. Ecamsule (Mexoryl SX) is stable for five hours. Even with these newer formulations, the major drawback of chemical sunscreens is a higher rate of rashes and skin reactions.

Physical (or inorganic) ingredients such as zinc and titanium degrade minimally, giving a more durable protection. Furthermore, there are almost no problems with skin rashes or sensitivity with physical sunscreens. Of all sunscreens, those with micronized zinc are superior. **Micronized zinc offers the best protection against UVB and UVA, does not degrade, is cosmetically elegant, and goes on clear (as opposed to traditional non-micronized zinc).**

**What about waterproof (AKA very water resistant) or water resistant sunscreens?** As far as I'm concerned, there is no such thing. In laboratory conditions, waterproof means the sunscreen maintains its SPF after 80 minutes in an indoor freshwater pool. Water-resistant maintains its SPF after 40 minutes.

In real settings, seldom would an individual stay motionless in freshwater. Salt water, waves, and the simple act of swimming will almost certainly lead to a rapid decrease in protection. Let's also not forget that SPF does not relate to UVA protection. For those who spend a lot of time in the water, they should choose a waterproof or very water resistant sunscreen. All sunscreens should be reapplied after the skin has been exposed to water or after excessive sweating.

Antioxidants have also been used for sun protection. In all cases, they are far inferior to sunscreens, but can be used as useful additives to sunscreen by providing anti-aging effects and slightly additional UVA/UVB protection. Some of these useful antioxidants include vitamin C (ascorbic acid), vitamin E (tocopherol), and green tea extract.

Of course, nothing is 100% preventative. You must do the best you can by avoiding the sun during peak hours and wearing protective clothing, wide-brimmed hats, sunglasses, and sunscreens. Try to do your activities when the sun is low on the horizon, as the atmosphere helps to screen the sun's rays. You may even want to consider tinting your car windows (there is clear tint for those side windows). Do not be lulled into a false sense of security by staying exposed for much longer durations because you are "protected."

Here are a few recommendations for sunscreens (this list is by no means comprehensive). **Remember that the SPF is far less important than the actual ingredients.** However, for a given brand and product line with multiple SPF ratings (such as Neutrogena) you might as well pick one with a higher SPF value.

**Over the counter (listed in order of my personal preference):**

Neutrogena Sensitive Skin Sunblock Lotion (SPF 60+) - micronized zinc and titanium

Blue Lizard Sensitive (SPF 30+) - micronized zinc and titanium

Blue Lizard Sport (SPF 30+) - micronized zinc

Olay Complete Defense Daily UV Moisturizer Sensitive Skin (SPF 30) - micronized zinc

Olay Complete All Day Moisture Lotion Sensitive Skin (SPF 15) - micronized zinc

Neutrogena Ultra Sheer Dry-Touch Sunblock (SPF 45, 55, 70, 85, and 100+) - stabilized avobenzone

Aveeno Continuous Protection Sunblock (SPF 55 and 70) - stabilized avobenzone

La Roche-Posay Antihelios 40 Sunscreen Cream (SPF 40) - ecamsule and avobenzone

La Roche-Posay Antihelios SX Daily Moisturizing Cream (SPF 15) - ecamsule and avobenzone

**Sold here at the Dermatology Medical Group:**

Vitamin C antioxidant sunscreen - micronized zinc with added antioxidants vitamin C, vitamin E, and green tea extract (\$24)