

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 handout will educate you about sunscreen labeling.

Now, not all sun exposure is bad. The first 15-20 minutes of daily sun exposure has been shown to be beneficial for the production of vitamin D and a general sense of well-being. After those initial 15-20 minutes, the rest is causing some form of damage to the skin. Sunburns are never good. **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. 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).

When discussing sun exposure, we are mostly talking about UVA and UVB. UVB is also found in tanning booths and 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, therefore decreasing the effective SPF in real life. For this reason, for a given formulation, you should go with the one with the higher SPF. Also, sunscreen should be applied at least 10 minutes prior to the actual sun exposure to allow time to "soak" into the skin. **But remember, 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 to 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 and the relatively recent discovery that some of these agents are absorbed through the skin and into our bodies. It is unclear at this point how absorption of these sunscreen chemicals might be affecting us.

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 zinc are superior. **Zinc offers the best protection against UVB and UVA. Zinc and titanium were not shown to be absorbed into the body.**

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.

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. With the controversy over the impact of absorbed sunscreen chemicals into our bodies, I am currently only recommending sunscreens that are mostly or completely zinc and/or titanium based.

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

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

Blue Lizard Sensitive (SPF 30+) – zinc and titanium

Blue Lizard Sport (SPF 30+) – zinc

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

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

Higher-end sunscreens with less white cast (can all be found at Sephora):

Sephora Collection Daily Mineral Sunscreen Cream (SPF 30) – zinc ~\$20

Innisfree Daily UV Defense Mineral Sunscreen (SPF 45) – zinc ~\$25

Supergoop! Mineral Unseen Sunscreen (SPF 40) – zinc and titanium ~\$40

Supergoop! 100% Mineral Sheerscreen Sunscreen (SPF 30) – zinc ~\$40

Ultra Violette Future Screen Mineral Fragrance Free Facial Sunscreen Serum (SPF 50) – zinc ~\$40