THE FAMILY PHARMACIST

A QUICK READ FOR YOUR OTC NEED!

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OVER-THE-COUNTER SUNSCREEN PRODUCTS

Prior to the COVID-19 pandemic, sun care product sales were on the increase from 2017 to 2020. According to The Nielsen Company, a market research organization, sales in the US dipped in 2020, most likely due to everyone spending more time indoors.

As we return to outdoor activities and exposure to the sun we might want to use a sunscreen. A moderate amount of sun exposure is necessary and healthy. After all, that's how we get our vitamin D without the need for a supplement. But there is overwhelming evidence that our love affair with the sun can expose us to too much of the sun's ultraviolet radiation, UVA and UVB wavelengths of light, and the risk of skin cancer. Cancer aside, too much sun also ages the skin prematurely. Sunscreens can help. Sunscreens sold in the US are considered over-the-counter (OTC) drugs and since 1978 have been regulated by the Food and Drug Administration (FDA). So they must meet the same safety and effectiveness requirements as any other OTC drug and cannot make false or misleading claims. For example, the FDA banned the use of the misleading terms "sunblock," "sweatproof," and "waterproof" on sunscreen labels.

At least sixteen ingredients are approved by the FDA as meeting the minimum *sun protection factor (SPF)* value, but not all of these chemicals are currently used in sunscreens. The SPF value as a measure of the sunscreen's ability to protect the skin from redness and burning due to ultraviolet energy is confusing. Competing products will tout an SPF of 50 or more, giving you the impression that more is better. Is that true? And what does SPF mean?

Sun Protection Factor (SPF). What was originally intended by the FDA to be a tool to assist the consumer in making an intelligent decision when buying these products has turned into a marketing ploy. That's why the SPF numbers have gone up over the years. While it makes sense to recommend an SPF of 30, no higher than that is necessary. According to the Environmental Working Group (EWG, a Washington-based, consumer advocacy organization): "high-SPF products require higher concentrations of sun-filtering chemicals than low-SPF sunscreens do. Some of these ingredients may pose health risks when they penetrate skin and have been linked to tissue damage and potential hormone disruption." Adding to the confusion, advocacy and investigative groups, like Consumer Reports and EWG have often demonstrated that sunscreens can perform in the "field" at far less than the SPF they claim on the label. This may have to do with the difference between an SPF value determined by tests done under controlled conditions in a laboratory and how the sunscreen product is applied by the consumer. Various methods of applying a sunscreen (lotion, cream, aerosol spray, non-aerosol pump, and so on) can make a big difference in how the product performs. If a product is not labeled "broad spectrum," the SPF on the label refers only to how well it will protect from *UVB rays*, the main cause of sunburn. Only a few of the FDA approved chemicals will protect against *UVA rays*, which penetrate into skin more deeply and are associated with skin aging and cancer.

Articles in popular magazines will sometimes attempt to simplify the definition of SPF by explaining that if you normally burn in 20 minutes and you apply a sunscreen of SPF 15, you can extend the burn time to 300 minutes, or five hours (20 minutes X SPF 15 = 300 minutes). But, as the FDA explains, "This is not true because SPF is not directly related to *time* of solar exposure but to *amount* of solar exposure. Although solar energy amount is related to solar exposure time, there are other factors that impact the amount of solar energy." Variables like the time of day, altitude, proximity to the equator, cloud cover, ground reflection (beach sand, etc.), and numerous other conditions. For example, one hour of sun exposure at 9:00 am is the same exposure to solar radiation as only 15 minutes of sun at 1:00 pm. Skin color makes a difference too. Light-skinned persons are likely to absorb more solar energy than dark-skinned people under the same conditions. Consumer watchdog groups claim that SPF is an unreliable measure of the effectiveness of sunscreen. But for now, it's all we have. However, SPF is helpful because an SPF of 30 does tell you that it will protect you from twice the *amount* of solar radiation you will be exposed to compared to an SPF of 15, but it will not necessarily double the *time* that you can be in the sun. Some UV radiation will always get to your skin, no product will block 100 percent of the sun's rays. An SPF of 30 still lets about 3% of the sun's radiation reach your skin. So you should still limit your exposure to direct sunlight during *peak hours* of solar radiation (10:00 am to 2:00 pm).

A popular trend in recent years has been to add SPF chemicals to all sorts of moisturizing lotions and creams, lip balms, and other skincare products. While this may have some benefit in protection from skin aging and cancer, it does expose us to many untested chemicals daily.

So what do you look for in a sunscreen when you go to the drugstore or supermarket? The two general categories of sunscreen available are *mineral sunscreen* and *chemical sunscreen.*

Mineral Sunscreen. The minerals are titanium and zinc, found in *titanium dioxide* and *zinc oxide*. They are the same minerals used in household paint and for much the same purpose. Sunscreen manufacturers use ultrafine white powders of these chemicals incorporated into thick creams that form an opaque layer on the skin. Being white, they reflect ultraviolet rays which bounce off the surface and are prevented from reaching the skin. Titanium dioxide and zinc oxide are the only two FDA-approved ingredients generally recognized as safe. Mineral sunscreens have benefits over chemical sunscreens. They don't wash off easily and they don't introduce unwanted chemicals into the blood through the skin. Titanium dioxide and zinc oxide are not absorbed into the bloodstream. This is *not* true for chemical sunscreens. But to be effective,

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mineral sunscreens must be applied heavily to take advantage of their opaqueness. It can be useful on areas of the face like the nose, immediately under the eyes, and on the top of the ears, areas that tend to burn severely if unprotected. Many products have a low percentage of zinc oxide or titanium dioxide (4% - 10%) but may not protect adequately. The FDA allows up to 25% zinc or titanium dioxide to be used as a sunscreen. The downside is that for larger body areas, high-concentration mineral sunscreens are more difficult to spread on the skin. For larger areas, a chemical sunscreen may be more practical.

Chemical Sunscreen. Many chemical sunscreens that limit UVA or UVB radiation are approved by the FDA, but some of these have been under scrutiny for a long time. Manufacturers will use a combination of chemicals to provide "broad spectrum" coverage because some of these chemicals only protect from a small portion of the UV spectrum. Studies have recently shown that at least six of the common chemicals used in sunscreens, *avobenzone, homosalate, octinoxate, octisalate, octocrylene, and oxybenzone* are absorbed into the bloodstream at amounts higher than the FDA's safety threshold. However, studies have not been done to know if they do any harm in the body. In January of this year, Hawaii banned two sunscreen ingredients, *octinoxate and oxybenzone*. These ingredients are linked to damaging or bleaching sea coral and altering the sex hormones of wildlife. Florida and California are considering similar legislation.

There are new sunscreen chemicals on the horizon and many of them are already being used in Europe and other parts of the world. The FDA has been slow to approve these chemicals for use in the US due to lack of safety testing.

So for right now, the chemicals that are on the FDA "approved" list have not been fully tested for safety. They were approved decades ago and only recently has the FDA proposed that extensive safety testing be done. Whether that is done by the sunscreen manufacturers or the scientific community remains to be seen.

The FDA cautions that the results of recent studies do *not* indicate that individuals should abandon using a sunscreen. Sunscreens have been demonstrated to protect against skin cancer and other harmful effects of ultraviolet radiation. Until more is known about the safety of these products, follow a few simple guidelines.

Recommendations for staying safe in the sun
Be aware that 10 am to 2 pm are peak hours of UV radiation, limit exposure during those hours.
Use clothing to protect your skin whenever possible, hats, sunglasses, shirts, long pants, etc.
Use sunscreens that say "Broad Spectrum" on the label to protect from both UVA and UVB radiation. Look for "Active Ingredients" such as *avobenzone*, *Mexoryl SX (ecamsule)*, and *zinc oxide* (15 to 25%).
Use mineral sunscreens (*zinc oxide* or *titanium dioxide* 15 to 25%) on the delicate parts of your head, face, and ears.
Reapply sunscreen according to label directions (usually every 2 hours) and immediately after activity in water or sweating.
Avoid the ingredients *octinoxate, oxybenzone*, and *retinyl palmitate* (a form of vitamin A) due to concerns about health issues.
Stay away from sunscreens in aerosol sprays or powders, these may pose respiratory risks.
A Broad Spectrum SPF 30 will protect your skin from about 97% of solar radiation. A higher SPF is not necessary.

Suggested products for sun protection and ingredient safety	
Product (all broad spectrum)	**Active Ingredient(s)**
Neutrogena® Ultra Sheer Dry-Touch Sunscreen SPF 30	Avobenzone, Homosalate, Octisalate, Octocrylene
Raw Elements® Face + Body Sunscreen, SPF 30†	Zinc oxide 23%
Suntegrity® 5-in-1 Natural Moisturizing Face Sunscreen, SPF 30†	Zinc oxide 20%
Supergoop!® Mineral Sheerscreen, SPF 30†	Zinc oxide 17.5%
Waxhead® Sun Defense Tinted Sunscreen, SPF 30†	Zinc oxide 25%

†Recommended by Environmental Working Group, 1436 U St. NW, Suite 100, Washington, DC 20009; www.ewg.org

References on file

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