Tequesta Family Practice

395 Tequesta Dr.
Tequesta, FL 33469
(561) 746-4333 VOX
(561) 746-4449 FAX
R. J. Oenbrink, DO
www.tequestafamilypractice.com

Sun screen use and Cancer Risk.
More than a million cases of skin cancer are diagnosed each year in the US. It's no secret that to much sun exposure causes skin cancer and that we all need a certain amount of sunlight hitting our skin to make enough Vitamin D to keep us healthy.
It's not as well known that some of these sun blocking agents have compounds that can actually CAUSE cancer and other problems!

How Sunscreens Work;
There's a bit of basic science that needs to be reviewed first to help you understand what it is that we're talking about.
First, let's talk about what sunlight really is. Electromagnetic radiation or energy from the sun, it comes in a variety of wavelengths or frequencies (the longer the wavelength, the shorter the frequency). Shorter frequencies generally deliver more energy.
Ultra-Violet (UV) spectrum light causes most of the damage; UV is further divided into three types.
UV-C that is filtered out in the ozone layer—we worry about ozone depletion because this is toxic & high-energy.
UV-B causes most of the skin cancers, it also causes Vitamin D activation to 1,25-DiHydroxy Vitamin D; the most physiologically active form of that vitamin.
UV-A tends to cause the "tan" that we like, but which is actually a sign of damage to our skin, it also penetrates our skin to the greatest depth.
Sunscreens work by blocking the effect of UV-B, UV-A or both to varying degrees. It's also important to know HOW they block the effect of the sun. It may seem counterintuitive, but of the 17 "active ingredients" that FDA has approved for use as sunscreens in the U.S., at least 4 of them break down significantly when they are exposed to sunlight. They lose their ability to absorb the sun's harmful rays, and stop working effectively in as little as 30 minutes, ranging up to several hours. They require stabilizing chemicals to remain effective.
An ideal sunscreen would be stable in the sun. Instead, nearly every active ingredient (all but zinc oxide and titanium dioxide) works by first absorbing the sun's energy so it does not penetrate our skin, and then releasing that captured energy by breaking apart, reacting with other chemicals in the sunscreen, or even kicking off free radicals. Free radicals damage DNA and CAUSE cancer. Some of these sunblocks even get onto our blood cells. Some active ingredients are more stable than others, but nearly all break down to some extent in the sun.

Manufacturers are not required to produce stable products. The test used to establish a product's UVB rating accounts for stability in part, since it tests the product in simulated sunlight on human volunteers over the time needed to produce a sunburn. A product's UVA protection, however, is not subject to testing and rating, and the filters that contribute to UVA protection in a product may or may not be stable. Also many of these agents mimic and interfere with the activity of Estrogen, an essential natural sex steroid present in both men and women to varying degrees.

A list of some of the worst offenders among sunscreen chemicals:

- Avobenzone (Parsol 1789) - an UVA-absorbing agent, sunlight causes this unstable chemical to break down into unknown, potentially toxic chemicals, especially in the presence of Octinoxate.
- Benzophenone-2 - an UV absorber that may cause estrogen hormone disruption.
- Dioxybenzone and Oxybenzone (Benzophenone-3) - UV absorbers that are two of the most powerful free radical generators known. These actually may induce skin damage and predispose to skin and/or systemic cancers and hormone disruption. They absorb through your skin in significant amounts; according to U.S. Centers for Disease Control (CDC) research, known to contaminate the bodies of 97% of Americans who use sunscreens. These are photosensitizers that may cause contact dermatitis (skin rashes); studies have strongly suggested that they may be involved with the trans-sexualization of male fish and coral reef degradation.
- Ensulizole (Phenylbenzimidazole Sulfonic Acid) - an UVB-absorbing agent known to generate free radicals when exposed to sunlight resulting in cellular DNA damage, thus increasing the potential risks of developing cancer.
- Homosalate - an UV absorber shown in research to be a weak hormone disruptor. It's a derivative of aspirin and forms toxic metabolites that can disturb bodily functions.
- Menthyl Anthranilate - an UVA-absorbing agent revealed in a study to produce reactive oxygen species free radicals when exposed to sunlight that damage skin and can cause cancer.
- Octinoxate (Octyl Methoxycinnamate) - The most widely used sunscreen ingredient, known for its low potential to sensitize skin or act as a phototallergen (causing allergic reactions when combined WITH sunlight). Estrogenic hormonal effects have been seen in laboratory animals, as well as disruption of thyroid hormone and brain neurotransmitter signaling. Octinoxate has been demonstrated to kill mouse cells when exposed to sunlight, even at low doses.
- Octocrylene - Another UV absorber that produces damaging oxygen free radicals when exposed to UV light.
- Padimate O (Octyl Dimethyl PABA / PABA Ester) - considered to be the most potent UVB absorber, research shows that it produces toxic free radicals, damages DNA, may induce skin damage and cancer, has estrogenic hormone disrupting activity and can cause photo-allergic skin reactions. In May 1988, a new nitrosamine known as NPABAO was found in certain sunscreens containing padimate-O as the active ingredient. Nitrosamines themselves can be carcinogenic; however, at this time it is uncertain whether this nitrosamine is present in sufficient quantities in sunscreens to be of concern.
- Sulisobenzone (Benzophenone-4) - An UV absorber that can cause skin and eye irritation; it does not penetrate your skin to a large degree, but enhances the ability of other potentially toxic chemicals to penetrate into your body.

For more detailed information about the active ingredients in commercial sunscreens, go to:
http://www.cosmeticsdatabase.com/special/sunscreens2008/report_active.php#all_ais

FDA Standards;

The FDA has spent the past 30 years drafting sunscreen standards (FDA 2007a), which it urges manufacturers to follow voluntarily. The FDA issued its latest draft standards in August 2007, which included a proposal for first-ever UVA standards, but still has failed to finalize the standards to make them mandatory. In lieu of enforceable standards, each sunscreen manufacturer decides on test methods, marketing claims, and the level of protection they are willing and able to provide consumers. There are a lot of false claims coming from the sunscreen industry on the effectiveness and safety of these products. The FDA needs to be pressured to finalize their standards.

Sunscreens have been assigned Sun Protection Factor (SPF) values by the U.S. Food and Drug Administration (FDA) since 1978. SPF is a number that refers to the sunscreen product's ability to block UVB radiation. Sunscreen products with SPFs of two to 50 are currently available. A sunscreen product

with a SPF of 15 will protect your skin 15 times longer from UVB than if you did not have sunscreen applied. The exact amount of time will vary from person to person, the altitude, and proximity to the equator. SPF 15 will block 95 percent of the UVB wavelengths. SPF 30 does not work twice as well. SPF 30 will provide another 3 percent of protection.
The efficacy of a product is related not only to its SPF but also to the ability of a sunscreen to remain effective under the stress of prolonged exercise, sweating, and swimming. The following three labeling recommendations have been suggested to help the ability of a sunscreen to remain effective:

- Sweat-resistant: protects up to 30 minutes of continuous heavy perspiration;
- Water-resistant: protects up to 40 minutes of continuous water exposure; and
- Waterproof: protects for up to 80 minutes of continuous water exposure. PABA and its esters demonstrate more resistance to sweating and/or water immersion than do other chemical sunscreens.

Safer choices for UV Sun Protection
Two of the safest, most effective, non-toxic ingredients that scatter both UVA and UVB light are titanium dioxide and zinc oxide, also available in powdered form. They are not absorbed into the skin and body to any significant degree, do not become free radicals when exposed to sunlight, do not damage skin or cause cancer, do not cause skin rashes, are non-allergenic and do not cause hormone disruption. They have been used for over 75 years all over the world as safe sunscreens.
The American Academy of Dermatology, the American Academy of Pediatrics, and the Skin Cancer Foundation recommend that protection from excessive sun exposure be initiated early. Regular use of an SPF-15 product starting after 6 months of age and continuing through 18 years can decrease the incidence of skin cancer over a lifetime by as much as 78 percent.
Recommendations for sunscreen use are as follows:
Radiation from the sun is most damaging between the hours of 10 a.m. and 2 p.m. Sun exposure should be avoided during this time whenever possible, apply 20-30 minutes before sun to allow block to bond to skin.

- Avoid artificial sources of UV radiation, including tanning beds and sun lamps.
- Wear a broad-brimmed hat, long-sleeved shirt, long pants, and sunglasses to decrease sun exposure, especially during the hours of 10 a.m. and 2 p.m. Tightly woven darker clothing provides the best protection.
- Surfaces such as sand, snow, concrete, and water can reflect up to 85 percent of the UV radiation. Extra precautions should be taken when around these surfaces.
- Sun exposure during childhood (up to 18 years old) is about 80 percent of an average person's lifetime exposure to the sun. Sun protection should begin at a young age and may start as early as 6 months of age.
- Use a sunscreen product with a SPF of at least 15.
- Sunscreen products should be applied 20 to 30 minutes before sun exposure.
- On an overcast or cloudy day, sunscreen use is still necessary. The clouds filter a small amount of ultraviolet radiation. Most of the UV radiation (60-80 percent) will not be filtered by the clouds and be allowed to pass through

Selection of the Appropriate Sunscreen Product
The individual's skin type is an important factor that must be considered when attempting to choose a sunscreen with the appropriate SPF. In general, very fair-skinned individuals or those with previously sun-damaged skin may benefit from high SPF products. Products containing PABA and PABA-like chemicals, however, may need to be applied up to two hours in advance of sun exposure in order to achieve their maximal effect.
Using an adequate amount of sunscreen provides greater sun protection than using an inadequate amount of a sunscreen with a higher SPF rating. Most individuals do not apply enough sunscreen to achieve adequate protection.
Stay Health & Burn Free!
RJ Oenbrink DO
www.tequestafamilypractice.com