

SUNSCREENS AND MAKEUP

Submitted by Irene Driedger

First, I wish to state I am 'not medically trained', but I have been a lupus patient for 30+ years. As most of you know lupus patients are very sun sensitive, so over the years I have used a variety of sunscreen brands. In the last few years I noticed the expiry dates on my sunscreen purchases are only one or two years and not the three or four years as in the past. Recently my skin care technician alerted me to the 'big controversy' in sunscreen and makeup ingredients. I wish to share some of the information I have gathered on this topic.

I needed a refresher course on some acronyms. SPF is Sun Protection Factor, while FPS indicates how much more you can expose yourself to the sun before being red. For example, if you are red after ten minutes exposed to the sun without protection, when applying a 15 FPS this time is multiplied by 15. However the FPS only indicates the protection against UVB rays. UVA is the sun's ultraviolet A (long wave) and UVB is the sun's ultraviolet B (shortwave) rays. Our top layer of skin is the epidermis and the deeper layer is the dermis.

When sunscreen was first introduced in the 1930's, it was meant to protect from sunburn caused by the UVB rays. Ongoing research has increasingly shown that UVA can damage the dermis. The research also suggests that the SPF stated on typical sunscreen labels gives people a sense of much greater protection than actually provided because the SPF is in fact much lower than previously believed. To guard against this false sense of protection, regulations in some countries prohibit labelling of SPF ratings higher than 50. Other research also indicates some of the chemicals used in sunscreens may be harmful, or may even cause cancer. Since the results of such research are not yet definitive, research reports can only state, may. Another report indicates that because people apply only about a quarter of the recommended amount, they are not getting the SPF they paid for. That means in reality, a product labeled SPF 100 really performs like SPF 3.2, an SPF 30 rating equates to 2.3 and SPF translates to 2. This report also says that in 2007 the Food and Drug Administration of the United States (the "FDA"), published proposed regulations that would prohibit manufacturers from labeling sunscreen with an SPF higher than 'SPF 50.' The FDA wrote that higher values would be "inherently misleading," given that "there is no assurance that the specific values themselves are in fact truthful." These proposals are being widely ignored by the sunscreen makers who continue to advertise their 80, 90 and 100 SPF products.

In June 2012, the FDA updated its regulations. The FDA statement now reads as follows: "because our scientific understanding has grown, we want consumers to understand that all sunscreens are not created equal". "It is important for consumers to read the entire label, both front and back, in order to choose the appropriate sunscreen for their needs." The FDA's new regulations state:

- Sunscreens cannot be labeled as a 'sunblock' because such a claim is false.
- Only products with an SPF of 15 or higher can claim to reduce the risk of skin cancer and early aging.
- Sunscreens must protect equally against two kinds of sun's radiation, UVB and UVA, to be labeled as offering "broad spectrum" protection. UVB rays cause burning, UVA rays cause wrinkling, and both cause cancer.

- Products cannot be labeled waterproof or sweat-proof because such claims are also false. Instead, they will be allowed to claim how long the product is water resistant.

Dermatologists suggest that consumers look for products that say “broad spectrum” and have an SPF between 30 and 50 and that consumers should generally reapply lotion every 40 to 80 minutes. However to avert a shortage of sunscreen in the upcoming months, the FDA has extended the compliance dates.

With these changes happening in the United States, Health Canada has acknowledged the need to update sunscreen labelling regulations in Canada. It has said it will review sunscreen rules in light of the FDA’s changes and will also move towards adopting an internationally accepted test for UVA and UVB protection. However, Health Canada has not yet set any timelines for revising sunscreen regulations in Canada.

The Environmental Working Group’s (the “EWG”) recently released a sunscreen guide revealing that 60% of sunscreens in the United States do not adequately protect against UVA radiation. The guide ranks products 0-2 for low hazard, 3-6 for moderate hazard and 7-10 for high hazard. The UVA rays comprise 95% of the UV radiation that gets through earth’s atmosphere while UVB comprise only 5%. The UVA radiation may also cause DNA damage. The guide indicates some products used as sun protection and anti-aging defences contain chemicals hazardous to our health. Only in the last few years has the United States regularly monitored the claims made by sunscreen and skin-care product manufacturers. Europe has been pro-active in this area for many years and therefore has better regulated, up-to-date products.

The EWG guide refers to an ingredient known as Oxybenzone, also called benzophenone-3 (BZ-3), brand Escalol 567, was synthesized several decades ago. It has estrogenic/female hormone reactions in some study systems where it was fed to rats, thus generating a claim that it disrupts hormones in both male and female. In a 2008 study it was reported that in 2003-04, 95% of 2,517 people had trace positive urine samples analyzed for BZ-3. . In a study by the Center for Disease Control, it was proven to be absorbed into the blood systemically and excreted in the urine of 97% of study participants. Anything that absorbs through the skin can have effects on the whole body called systemic effects. One medical report states ‘this organic compound has been shown to penetrate into the skin where it acts as a photosensitizer. This results in an increased production of free radicals under illumination possibly making this substance a photocarcinogen.’ In 2007 a CDC study showed that mothers with high levels of oxybenzone in their bodies were more likely to give birth to underweight babies. Another study indicated the sunscreen run-off from our bodies into lakes and the ocean can affect the environment. Studies have shown that oxybenzone can trigger allergies in people, be toxic to cells and as stated in the above studies act as an endocrine disruptor (hormonal imbalance).

Oxybenzone is of concern to many scientists. More studies are needed to give us a comprehensive understanding of how these chemicals behave in skin cells. The amount of surface area compared to a body mass is very different between a baby and an adult. More of the amount you apply all over a baby’s skin will be absorbed because infants have more skin than body mass. For example, a topical eczema-treatment can be given to adults without a problem, but the active ingredients are absorbed at such a high rate by children, that it can actually stunt their growth. Since we do not want hormones in our food products, why would we want Oxybensone, potentially disruptive to our hormones, absorbed through our skin. Certain clinical studies relate early onset of female menstrual cycle and menopause to this type of absorption. Oxybenzone and other chemicals such as parabens, have also been found to frequently provoke an allergic reaction. If you

feel the need to ditch sunscreen containing oxybenzone, there are many, many alternatives on the shelves of your pharmacy.

Another ingredient listed as hazardous is Retinyl Palmitate. Retinyl Palmitate is thought to be photocarcinogenic. This is another big word meaning that when it is exposed to the sun, it speeds the growth of skin tumors. It is added to 30% of all sunscreens! Retinyl Palmitate was added to sunscreen and makeup as a vitamin A derivative to slow down aging (wrinkles). Pure vitamin A (retinol) is not harmful, but with no regulatory upgrades in 30 years in the United States, I am NOT convinced that all manufacturers of sunscreen and makeup are using pure vitamin A. Nearly half of the 500 most popular sunscreen products may actually increase the speed at which malignant cells develop and spread skin cancer because they contain vitamin A or its derivatives. In a year-long study, tumors and lesions developed up to 21% faster in lab animals coated in a vitamin A-laced cream than in animals treated with a vitamin-free cream. Many sunscreens advertise a high SPF when in actuality they do not. One brand, a sport sunscreen, is labelling an SPF of 110, that when studied showed an SPF of 12. This one was listed in the EWG "Hall of Shame".

EWG asserts only 1 in 4 sunscreens earn high marks for safety and efficacy. But the EWG researchers discovered the initial findings of an FDA study of vitamin A's photocarcinogenic properties, suggested the possibility that it can result in cancerous tumors when used on skin exposed to sunlight. Based on the strength of the findings by FDA's own scientists, there are those in the public health community who say they cannot believe nor understand why the agency has not notified the public of the possible danger. There was sufficient evidence available 10 years ago for the FDA to caution consumers about the use of vitamin A in sunscreens yet it still says nothing. For more information on EWG's Sunscreen guide and report, go to www.ewg.org/2012sunscreen/all-sunscreens. For a nominal donation of \$5.00 (cheque or credit card) you will have full access to their testings.

Finding a sunscreen protecting against both UVA and UVB rays is complicated enough, without the added challenge of choosing one that is also photostable. To ensure you are purchasing effective UVA as well as UVB sunscreen, look for a product with an SPF plus some combination of the following UVA-screening ingredients: stabilized avobenzone, ecamsule (a.k.a. Mexoryl). Most sunscreens contain a mixture of chemical and physical active ingredients. It was discovered that avobenzone, one of the most widely used sun filters in sunscreen formulations, degrades rapidly upon exposure to light when it is used by itself. This characteristic decreases avobenzone's ability to protect against UVA rays. However, when avobenzone is combined with certain ingredients such as octocrylene, the result is a stable sun filter, which is able to block UVA rays effectively. Studies have shown that a range of sun filters including MEXORYL XL, MEXORYL SX, Tinosorb M, Tinosorb S, zinc oxide and titanium dioxide are photostable. Mexoryl, which enjoyed a highly anticipated debut on the US market after tremendous success in Europe, is gaining recognition as a favoured chemical sunscreen. Experts attribute the ingredient's popularity to its light, easily absorbed texture, nearly non-existent scent and superior block of both UVA and UVB rays. Two more new chemicals used in the improved sunscreens are Tinosorb S and Tinosorb M, which offer a trio of powerful actions, including absorbing, reflecting and scattering ultraviolet rays. Each are naturally stable, providing a more dependable and long-lasting application and greater protection against the signs of aging. The products with these chemical ingredients also protect against the long-term problems associated with sun exposure, including wrinkling, brown spots, yellowing and thickening of the skin and skin cancers. As long as they are found in adequate concentrations, sunscreens containing these ingredients will deliver results over time.

Dr. Sachs, pediatrician at the FDA states the following with respect to infants and children using sunscreen: "The best approach is to keep infants under 6 months out of the sun and do not use sunscreen on infants." If there is no natural shade, create your own with an umbrella or the canopy of the stroller. For children 6 months and older choose a children/kids gentle formula with Mexoryl XL.

The eyes of infants, children and adults are very sensitive to the chemicals in sunscreen, so be sure to stay away from the eye area when applying and use sunglasses. Since UVA penetrates glass, they are now recommending protection both indoors and out. It is recommended that everyone avoid UV rays between 10:00 a.m. and 4:00 p.m. Also as a reminder to apply sunscreen at least 30 minutes before heading into the sun and reapply every 40-80 minutes. Remember, no sunscreen is waterproof, so be sure to reapply when coming out of the water.

If you use sunscreen and cosmetics and possibly a topical medication, Dr. Katchen from Mount Sinai Medical Center, suggests the following order to apply: Medication should always be the first product applied to a clean, washed face. If you are using a moisturizer, it goes on after the medication and before the sunscreen. Next apply foundation, powder and blush.

Also keep in mind, that many Canadians are vitamin D deficient so use a supplement amount recommended by your healthcare provider.

In my search to find a year-round sunscreen, I discovered the European sunscreens were better than those made in the US. European sunscreens are made by brands such as La Roche Posay (France), Vichy, who also manufactures Ombrelle. Another quality product available in Canada is Bioderma. Our larger pharmacies have these products available, but do check the expiry date before going to the cashier, as you may have to reach to the very back to get one with a longer shelf life.

In closing I want to again state that I am not an accredited researcher nor do I have any medical training. The information in this article is my own personal research that I will use as a guideline for my sunscreen and makeup purchases. I am neither encouraging nor discouraging you to follow these guidelines; it is your personal decision. As Dr. Robert Friedman states "a consumer should be privy to the whole story and a smart consumer will seek the whole story and choose their products accordingly."

HOW TO BE SUN SMART

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- There is no such thing as a safe tan, whether it is from the sun or a tanning booth/bed.
- UVA rays from the sun are silent killers because you don't feel them but they are the primary cause of skin cancer, wrinkles, and a weakened immune system. (UVA rays even penetrate through clear glass windows that do not have a UV coating).
- Even on a cloudy or hazy day, all the sun's rays are present and damaging your skin.
- Sitting in the shade or wearing a hat only protects against a portion of the sun's rays.
- Surrounding surfaces such as water, sand, cement, and grass reflect the rays from the ground to your skin giving you a double whammy of exposure.
- Altitude is a sun enhancer: For every 1,000- foot increase in altitude, the sun's potency increases by 4%. Don't forget the sunscreen when you are skiing!
- Be sure any sunscreen you are considering contains one or more of these UVA-protecting ingredients listed as one of the "actives" to assure you are getting sufficient UVA protection: avobenzone, titanium dioxide, zinc oxide, Mexoryl SX (ecamsule), or Tinosorb.
- Sitting directly in the sun, even with sunscreen on, is a bad idea because no sunscreen provides 100% protection.
- You must apply sunscreen liberally (and most people don't).
- You must use sunscreen on any part of your body that will see the sun, such as your hands, neck, ears, and chest. Just like your face, aging skin on the rest of the body is about sun damage and can, to a large extent, be blocked with the daily use of sunscreen.