



The Truth About Sun Screens

By Sam Dhatt

Ahhhhh, the smile the sun puts on our face, the spring it puts in our step, and the flowers it brings for our pleasure. It's difficult to believe that the warm and wonderful sun we so enjoy can be damaging and dangerous. Facts are, however, that over exposure to the sun has caused a dramatic increase in skin cancer. One in six Americans will be diagnosed in their lifetime, and over one million this year.

Scientists believe the sun also causes 90% of the aging of the skin and their concerns are being verbalized and printed in the media. Clients who wish to stay younger in appearance will welcome information from their skincare provider that will keep them looking younger.

The most effective tool an esthetician can use in the war against skin

aging and cancer is education on the use of SPF. Esthetic professionals must be able to answer their clients' questions concerning their self-care and that of their family, providing them with correct options in the product choices they make. The following are some of the questions the esthetician will hear at the skin care chair, with the answers they will need to provide.

WHAT IS SPF?

SPF is an acronym for 'Sun Protection Factor,' a number assigned to a product to measure the length of time it can, in theory, protect skin from reddening from UVB, compared to how long the skin takes to minimally redden without the protection of that product. The protected time can be determined by taking the usual time the person reddens while unprotected, times the SPF

number of the product. For example, if it takes this person 20 minutes to redden usually, the product assigned an SPF 15 will in theory protect this person 20 x 15, or 300 minutes, approximately 5 hours.

While the SPF has become the standard measure for UVB protection, none exists for UVA. For that reason, many people call SPF the 'sunburn factor' instead of the sun protection factor. Concerned scientists worldwide are working to develop a standardized measure to allow measured protection from UVA damage.

Assessment of UVA protection is a formidable problem because sunlight is always a mixture of UVA and UVB. Separation of UVA effects from those of full-spectrum UV is difficult. For this reason, a good SPF formulation should provide *broad-spectrum* protection to

ensure sufficient protection until the measure is determined.

WHAT IS BROAD-SPECTRUM PROTECTION?

“Broad spectrum” indicates a capability by a product to protect against UVA as well as UVB, though it does not guarantee protection against all UVA wavelengths. If, however, the product



contains avobenzone, zinc oxide, and/or titanium dioxide, they should be effective against the entire UVA spectrum of 320-400 nanometers.

Broad spectrum sunscreen provides the protection against melanoma the client needs, when used properly, while a sunscreen that does not have this capability will not. It's as simple as that.

HOW IS THE SPF NUMBER DETERMINED?

The SPF of any sunscreen is determined in an FDA-approved, independent lab and must be determined by using a panel of at least 20 human subjects, as outlined in the FDA Sunscreen Monograph. The number is then assigned and must be shown on the label

of the product. It is determined by measuring the time it takes to develop skin redness (erythema) to a known amount of radiation. This time is termed the minimum erythema dose (MED). The MED for a product containing sunscreen is measured against one without, on the same area of skin.

Any product marketed in the U.S. as a sunscreen is considered an OTC drug and must contain approved active ingredients. The FDA Monograph represents the process

of developing regulations for OTC sunscreen products initiated in August of 1978. The “Final” FDA Sunscreen Monograph was published in the Federal Register on Friday, May 21, 1999. This, however, is not the final Monograph as other issues have been and are being investigated and regulated. The next Monograph will address formulation,

labeling, and testing requirements for both UVA and UVB protection. See the following website for full information: <http://www.fda.gov/OHRMS/DOCKETS/98fr/123101a.pdf>. For a summation of the current Monograph, see <http://www.suncarelab.com/monograph.htm>.

WHAT IS UVC? UVB? UVA?

UVC, or Ultraviolet C, are the shortest wave solar (sun) rays measuring 100-290 nanometers – a nanometer is a billionth of a meter and kills all known organic cell activity over time, depending on the amount of exposure. UVC radiation is almost completely absorbed by the ozone layer and does not affect the skin. UVC radiation can be found in artificial sources such as mercury arc lamps and germicidal lamps. The damage to UVC irradiated skin is potentially lethal.

UVB, or Ultraviolet B, are short-wave solar rays measuring 290-320 nanometers. It stimulates the production of essential Vitamin D in our bodies. Considered the cause of sunburn, they are also thought to be the main cause of basal and squamous cell carcinomas, and to highly contribute to the cause of melanoma.

UVA, or Ultraviolet A, are long-wave solar rays of 320-400 nanometers. They are not fully blocked by the ozone layer and the remaining rays aid photosynthesis for plants and trees to process sugars for food when they extract carbon dioxide from the atmosphere. Over 90% of the rays reaching the earth from the sun are UVA.

The bad news about UVA rays is that it penetrates the skin deeper than UVB and can cause damage to the collagen and elastin in the dermis. UVA causes the fine lines and wrinkles of

photoaging, pigmentation marks, and in the long term, contributes to the occurrence of skin cancer, especially melanoma. While UVB does not penetrate through glass and water, UVA can, making it more dangerous. It is also present in fluorescent lighting, so estheticians should recommend a sunscreen for those who work in this environment.

The highest exposure hours in the day for these rays is 10:00AM-4 PM, making these the most important hours in sun exposure avoidance practices; sunscreen is a major part of a comprehensive sun protection program.

HOW DO UVRS (ULTRAVIOLET RAYS)

AFFECT SKIN CELLS?

Several theories exist of how UV damages cells, but we still do not fully understand the process. We do know, however, that over exposure to UV light can irreparably damage skin cells. It is known that sun exposure damages DNA by mutating what is known as P53, a gene in the DNA that regulates growth and helps keep cancer cells in check. UVB rays don't penetrate deeply into the skin but still cause significant damage to DNA after a sunburn, promoting skin cancer.

The longer wave length UVA rays penetrate the deeper layers of the skin, where they produce free radicals and cause premature aging of the skin, immunological problems, and damage to the DNA.

HOW DOES SUNSCREEN PROTECT THE SKIN?

Sunscreen stops the UV rays before they can inflict damage to the skin, if formulated correctly. It contains molecules that absorb UV and/or those that scatter and reflect UV from the surface. The sunscreen formulation spreads these protective molecules efficiently over the

skin to act as a protective coating against the damaging UV rays, ultimately gathering them or reflecting them off the skin and preventing them from damaging the skin. An often used reflecting sunscreen agent is zinc oxide, while a popular absorbing agent would be avobenzone (Parsol 1789).

PHYSICAL AND CHEMICAL SUNSCREEN

Two types of sunscreen ingredients, physical and chemical, are

available to prevent UV rays from attacking the viability of healthy skin cells. A physical sunscreen is not absorbed into the skin. It physically reflects the rays away from the skin. The type used the longest, for over 300 years, is zinc. Zinc has not been shown to have any adverse reactions, and actually has been shown to support and promote healing of the skin. The downside to zinc-based products has been the whiteness or ashiness it

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produces on the skin after application. In the last years, however, Zinc has been highly improved through microtechnology. The product produces less whiteness on the skin, while providing appropriate sunscreen of 15; it also blocks UVA rays.

A new zinc technology is now available, called "nanotechnology," which produces no whiteness on the skin, and improves the allowable effectiveness of zinc SPF to an SPF 30, without the addition of chemicals. The ingredient is a patented technology, and is newly available to the industry chemists.

Zinc's support of healing, coupled with its new capability of high SPF, makes it a preferred ingredient for skin that is being treated. Zinc now supports healing and rejuvenation of skin receiving treatment for anti-aging, for acne, and dry and skin, but is not

visually apparent.

Chemical sunscreens have rapidly grown in use in the sunscreen market with the development of the revolutionary chemical avobenzone (Parsol 1789) the only FDA approved chemical SPF ingredient for broad-spectrum protection against UVA and UVB. New ingredients such as octylcrylene and the benzophenones are also available to improve a sunscreen's defenses against shorter UVA rays.

Side effects of sunscreens, if they occur, are usually a contact dermatitis reaction to chemical sunscreens. For that reason, a client with sensitive skin should either wear a physical sunscreen, or) apply a small amount on the side, back side of the neck for three days to monitor the response of the skin. If no response occurs, the use of the product

can be generalized. A physical sunscreen product should replace a sunscreen that causes a side effect.

WHAT SHOULD BE ADDITIONALLY FORMULATED INTO THE PRODUCTS?

Unfortunately, even products with broad spectrum SPF's cannot completely block the sun. Some UV radiation reaches and penetrates the skin, generating free radicals and attacking the skin cells, collagen and elastin. A recent university study shows, however, that the inclusion of antioxidants in SPF formulations increases protection by the action of their neutralizing activities on the free radicals generated by the rogue UV rays. With the addition of these antioxidants, the SPF properties of the sunscreens were enhanced, allowing them to provide the broad-spectrum protection the skin needed.

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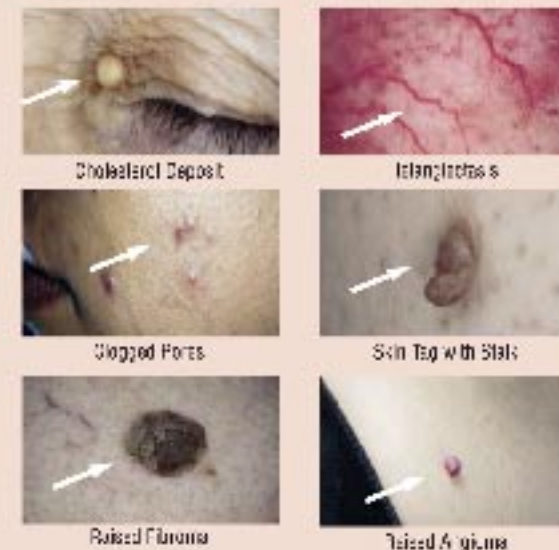


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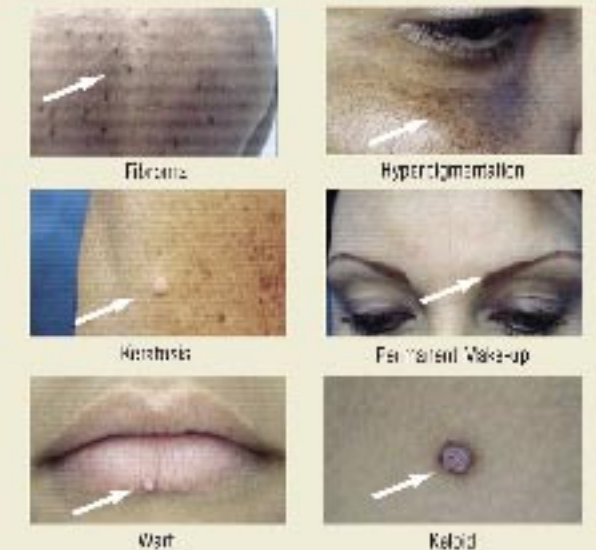


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Additionally, many lines add moisturizers to their SPF's to provide more reasons for the clients to utilize them and to reduce the number of products the client must buy for their skin care regimen.

15? 30? HIGHER? WHAT SHOULD I BUY?

According to the Skin Cancer Foundation, SPF's of at least 15 should be recommended as they prevent 93 percent of UVB from reaching the skin. SPF 30 blocks only 4 percent more UVB (97%), and those over 30 protect the skin from just a miniscule more percentage of rays. The U.S Food and Drug Administration will soon cap the SPF number at 30 because protection benefits at higher levels than 30 are negligible, while adding false confidence to the consumer of significantly higher

protection. An SPF of over 30 will be noted as '30+', with no added claims for efficacy.

An SPF 30 is advisable for sun-sensitive individuals, skin cancer patients, and people at high risk of developing skin cancer. They are also important for clients who are using exfoliants, such as alpha hydroxy acids, retinoids, acne products, or other medications that increase sun sensitivity, such as Accutane, antibiotics, and high blood pressure medications.

Even with the ideal sunscreen, there is a small amount of UV rays can penetrate the skin and cause damage. For that reason, full application compliance is important for the user, after determining the time for reapplication.

WATERPROOF VS. WATER RESISTANT

With the new monograph, the term

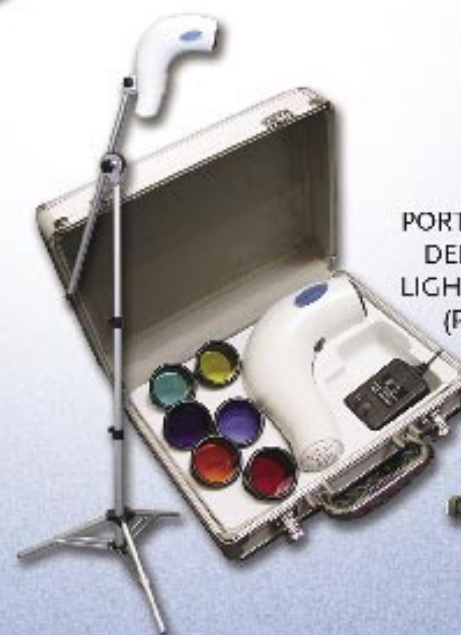
"waterproof" is no longer acceptable in the promotion or labeling of a product, and is replaced by "very water resistant" when it is published and regulated. The resistance is measured by a laboratory under conditions dictated by the FDA Sunscreen Monograph, which includes application of the product to a subject who is immersed in an indoor pool, whirlpool, or a jacuzzi maintained at 23 to 32 degrees Celsius. For a "water resistant" product, the label SPF is the SPF value determined after 40 minutes of water immersion; for a "very water resistant" product, the label SPF is the value determined after 80 minutes of immersion.

Seeking extensive information concerning SPF, then passing it on to clients is a professional responsibility of the practicing esthetician. Increasingly sophisticated clients seek out the informed and caring esthetician that educates them on these facts and other prevention issues. In reality, a knowledgeable esthetician is usually a more successful esthetician.

Sam Dhatt, MS, MBA, is CEO of Dermaquest Skin Therapy and a highly respected and award winning cosmeceutical chemist. Dhatt has formulated and manufactured successful skin care products for over 700 companies during his 20 year career as a sought after formulator. His proprietary product line, Dermaquest Skin Therapy, Hayward, CA, a results-oriented product line with spa and physician levels of care, is sold only to clinical estheticians, spas and physicians. Dermaquest Skin Therapy can be reached at 800-213-8100. www.skintherapydq.com



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