7 FACTS ABOUT SUN SCREENS

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By J. Elaine Spear

Misconceptions about sunscreen products are hurting the health and vitality of your clients' skin and thwarting the efficacy of your skincare treatments. To clear up some of the confusion surrounding sunscreens, *DAYSPA* went on a fact-finding mission to learn more about the latest developments in sunscreens. What we found is guaranteed to pique your interest, including the scoop on different types of formulations, technological breakthroughs that are just around the corner, and how to create a more lucrative sun-safe business.

Chemical sunscreens go on as smoothly as a body cream or lotion.

Fact #1: Sunscreens come in two major groups: physical and chemical.

Physical sunscreens provide broad-spectrum protection by scattering and reflecting both UVA and UVB rays. Of all the physical sunscreens tested by the FDA, zinc oxide offers the highest protection against UV radiation exposure. "In years past, barrier or physical sunscreens created a noticeable film on the skin, making wearers look pasty white," says Leslie Baumann, M.D., chief of the division of cosmetic dermatology and associate professor at the University of Miami School of Medicine. "With improved micronizing techniques, many formulations now appear more transparent on the skin. Some of the newer sunscreens that rely heavily on physical barriers also include pigment, making them cosmetically pleasing for even darker skin types."

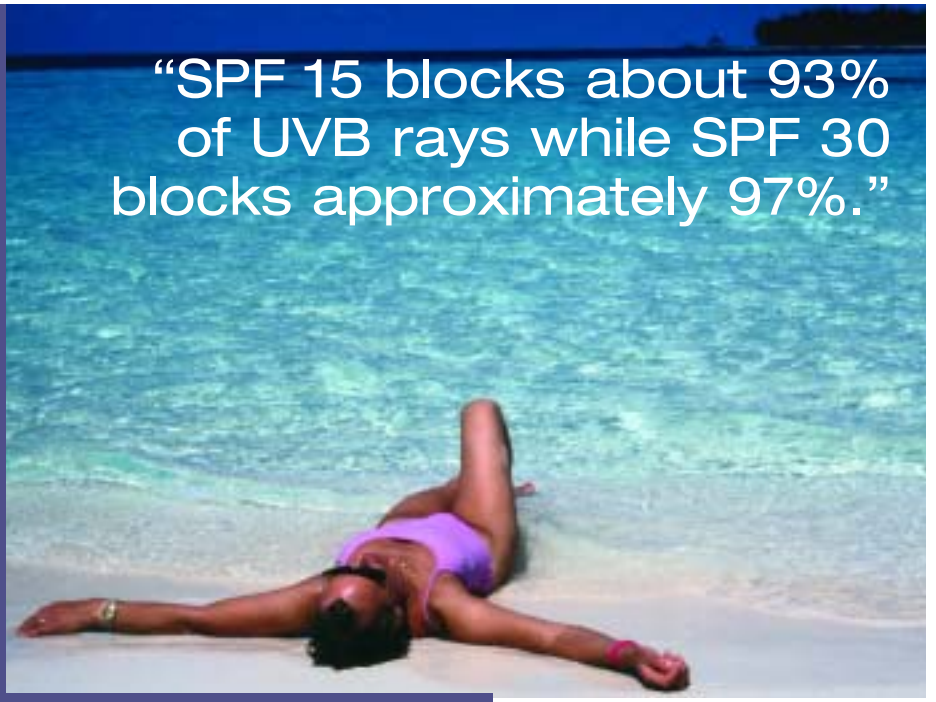
Chemical sunscreens are regarded as more elegant cosmetics because they go on as smoothly as a body cream or lotion and are completely invisible to the naked eye. "They help protect the skin by acting as filters that absorb and reflect UVA or UVB radiation," says Baumann. On the downside, the United States Food and Drug Administration reports that chemical sunscreens can cause allergic or photoallergic reactions, including acne, itching, stinging, rashes and dryness. "The ideal sunscreen will offer ample coverage against all types of ultraviolet rays and be formulated to ensure long-lasting protection," says Dr. Christian G. Jurist, national education director for the Cosmopro Group, manufacturers of Pevonia and Medicalia skincare products. "The goal is to protect against both UVB and UVA short and long waves. For example, oxybenzone and avobenzone work together to absorb most UVA rays; octyl methoxycinnamate handles UVB well. Titanium dioxide works great against UVB and is good against UVA, but zinc oxide seems to have a much wider coverage range across the entire UVA/UVB spectrum."

The most recently developed chemical sunscreen that has both the esthetic and medical communities buzzing is Mexoryl SX by L'Oréal. Mexoryl SX, which was introduced to the European market in 1993, has proved to be a stable UVA absorber that provides long-lasting, effective protection against sun rays. With FDA approval likely in the near future, Mexoryl SX is expected to become a key ingredient in many sunscreen preparations.

Fact #2: The SPF rating only covers UVB protection.

"The current sun protection factor (SPF) rating system was established by the Food and Drug Administration (FDA) decades ago," says Harry Elden, Ph.D., founder of FL Corporation and Elden Skin Care Biophysics in Miami. "It gives people a false sense of security about sun exposure because it only relates to UVB rays and sunburn. UVA isn't part of the rating system because we've really only recently become aware of how damaging UVA rays are to the deeper layers of the skin."

The FDA has been struggling to update its current system to include a UVA sun protection rating for a number of years. Until it reaches a consensus as to what constitutes a good test, companies can claim UVA or broad-spectrum protection as long as the product contains an ingredient that absorbs UVA rays. "Until a clear standard has been



established, you definitely need to be informed about common sunscreen ingredients, including how well each of them protects against UVA and UVB radiation," says Baumann. (See "Formulating Full-Spectrum Protection" on page 34.)

Formulating Full-Spectrum Protection

Because the FDA has not yet approved an SPF rating for UVA exposure, Leslie Baumann, M.D., chief of the division of cosmetic dermatology and associate professor at the University of Miami School of Medicine, stresses that you must be familiar with common sunscreen ingredients and how well each of them protects against UVA and UVB exposure. Most of these ingredients form chemical barriers to ultraviolet rays; titanium dioxide and zinc oxide are physical barriers. See chart on page 38.)

Fact #3: SPF is not the only determinant of effectiveness.

The SPF rating displayed on a sunscreen label refers to the product's ability to screen out UVB rays. "An SPF rating is established by subjecting the un-tanned skin of human volunteers to UV radiation via a sun lamp," says Elden. "A rating for each product is given based on the average time it takes for the test subjects' skin to turn pink (minimal erythema dose)." When you use a product rated SPF 15, for instance, you can theoretically stay out in the sun without burning 15 times longer than you normally could. For example, if your skin begins to turn pink in only 10 minutes, an SPF 15 sunscreen would theoretically allow you to stay out in the sun for 150 minutes without burning your skin. The catch, of course, is that SPF doesn't take into consideration damage caused by UVA rays.

"Your clients should also be aware that dermatologists consider a 15 SPF as being the minimum protection for your skin," says Diana Howard, Ph.D., vice president of research and development for Dermalogica in Torrance, California. "Too, it's important to realize that protection doesn't increase proportionately as SPF numbers go from 15 to 30 or even higher. SPF 15 blocks about 93% of UVB rays, for instance, while SPF 30 blocks approximately 97%.

"Any SPF rating is naturally downgraded—sometimes cut by more than half—when clients don't apply the product according to the manufacturer's directions," continues Howard. "Studies have shown that the amount you need to apply when using an SPF 15 sunscreen on your face and body, for instance, is 1.3 ounces, yet the average consumer uses about a half ounce. This shortcoming has been confirmed by investigators who showed a group of test subjects how much sunscreen they needed to use, then gave them a tube and said, 'Apply the amount you need.' They still didn't get it right."

Some sunscreen products are categorized as *water-resistant* or *very water resistant*, making them an excellent choice for anyone spending time in the sun playing sports, swimming, boating, etc. "A sunscreen is established as being water-resistant by doing a water-wash resistance test in the lab. This involves applying a sunscreen product to a test subject's arm and immersing it in water," says Elden. "According to FDA requirements, if the sunscreen remains intact for 40

Amount of Protection

Ingredients	UVA	UVB
Aminobenzoic acid (PABA)	Limited	Extensive
Avobenzone	Extensive	Considerable
Cinoxate	Limited	Limited
Dioxybenzone	Considerable	Extensive
Homosalate	Limited	Extensive
Menthyl anthranilate	Considerable	Extensive
Octocrylene	Considerable	Extensive
Octyl methoxycinnamate	Limited	Extensive
Octyl salicylate	Limited	Extensive
Oxybenzone	Considerable	Extensive
Padimate O	Considerable	Extensive
Phenylbenzimidazole	Limited	Extensive
Sulisobenzone	Considerable	Extensive
Titanium dioxide	Considerable	Extensive
Trolamine salicylate	Considerable	Extensive
Zinc oxide	Extensive	Extensive

Source: United States Food and Drug Administration Sunscreen Ingredients Monograph.

Legend: =Extensive =Considerable =Limited =Minimal

minutes, it's *water resistant*; if it remains intact for 80 minutes, it's *very water resistant*." In all cases dermatologists recommend that you apply sunscreens rated SPF 15 or higher every 90 minutes regardless of the product type. "This is one case where if a little is good, a lot is much better," says Howard.

Fact #4: Sunscreens could play an indirect role in the rising incidence of cancer.

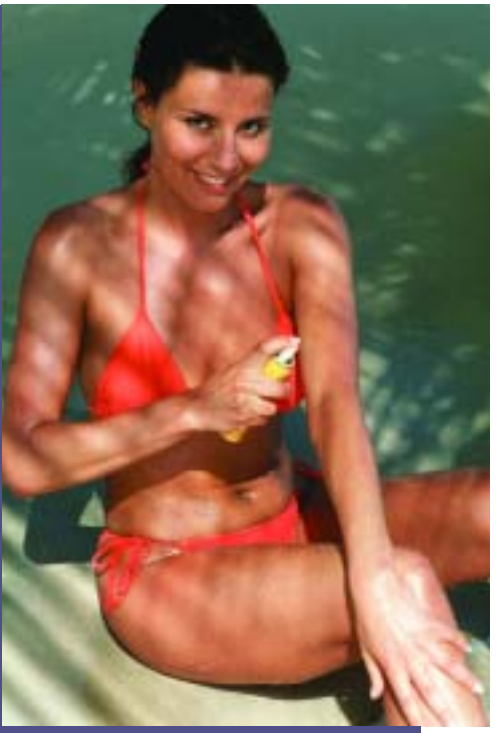
Do sunscreens really contribute to skin cancer? In an effort to explain why this disease is still increasing at epidemic rates—1.3 million Americans will be diagnosed with nonmelanoma skin cancer this year—a handful of European scientists have concluded that sunscreens are contributing to this alarming situation. While it's absurd for people to avoid using sunscreen products because they aren't preventing skin cancer, the scientists' conclusion isn't totally without merit. The increase in sun-related skin disease can be partly explained by the delayed onset of most skin cancers. Baby boomers who so diligently baked themselves to a crisp in the 1960s are now prime candidates for squamous and basal cell carcinomas. Too, sunscreen usage isn't as prevalent as one might think. According to a recent Mintel Consumer Intelligence Study, just 40% of adults say they apply sunscreen on a regular basis and 25% never do!

Contributing to higher rates of solar-induced photoaging and skin cancers is the mistaken belief that wearing sunscreen protects against all UV radiation. To make matters worse, consumers mistakenly believe that the higher the SPF rating, the longer they can stay out in the sun without damaging their skin. In August 1999, this misconception was underscored when the National Cancer Institute published a study showing that using a higher SPF sunscreen leads to increased sun exposure. Two groups of volunteers were instructed to use either SPF 10 or SPF 30 during their vacations. The study concluded that the group using the higher SPF sunscreen spent 20% more time in the sun.

To clear up the confusion surrounding SPF ratings, the latest proposed Final Monograph by the FDA establishes that SPF values on over-the-counter sunscreen products can be rated no higher than 30+. These guidelines could also make choosing the right sunscreen a little easier by grouping SPF ratings as follows: Minimum, SPF 2 to 11; Moderate, SPF 12 to 29; High, SPF 30+. To help clarify the risks and benefits of sunscreen use, the FDA has also established further label changes aimed at preventing manufacturers from making misleading claims such as, *all-day protection*. "The FDA doesn't like absolutes like claiming that you can be out in the sun all day, or even for a specific number of hours," says Kenneth Klein, M.S., president of Cosmetech Laboratories in Fairfield, New Jersey. "A person's MED (minimal erythema dose) is affected by skin type as well as latitude, altitude and season. My MED in New Jersey, for instance, is 20 minutes, but when I visit Miami in the summer, it's 10 minutes."

Fact #5: The consistency of the product is important.

The vehicle used to deliver the active ingredients naturally affects the quality and effectiveness of any sunscreen. Chemists use different base products, tricks based on particle size, and film-forming systems to make sunscreens spread easily and at the right thickness. Some of the newest formulations take this process a step further by appearing white and opaque when the product is initially applied to the skin to help guide the application, and then turning transparent within seconds to form an invisible film on the skin.



Typical delivery vehicles are emulsions, gels, oils and sticks.

Typical delivery vehicles are emulsions, gels, oils and sticks. "Emulsions include lotions and creams," says Baumann. "Many clients prefer lotions because they aren't as thick, spread easily and don't feel greasy. Naturally, clients with dry skin are more likely to gravitate toward creamy formulations. Either way, emulsions offer excellent sun protection. Oils spread easily, but they also spread thinly and provide less sun protection. Gels are ideal for oily skin types and protect the skin rather well. Sticks provide long-lasting protection for narrow and prominent areas such as the lips, ears, nose and around the eyes."

"On the horizon, I see new, more effective formulas in terms of coverage, ingredients with full-spectrum coverage that are more suitable for all skin types, especially oily and darker skin," notes Jurist. "Formulations will last longer without reapplication, one of the problems with today's sunscreens. I also see more skincare products containing sunscreens for added protection."

Fact #6: Some ingredients have been shown to repair sun damage.

Sunscreens have always been treated as protective products that help shield the skin from UVA and UVB rays. In addition to having broad-spectrum sunscreens, the labels on most professional-quality sunscreens read like the "who's who" of skincare ingredients, including antioxidants to help offset free-radical activity that naturally accompanies exposure to UV radiation, wind and pollution. Recently, a new era in sunscreens is promising to emerge as scientists come ever closer to formulating products that go well

beyond simply protecting the skin, to also fighting the formation of skin cancer cells.

According to a research study done by the University of Wisconsin, polyphenols and anthocyanidins (pigments that give certain fruits their dark red colors) extracted from pomegranates represent key phytochemicals that target precancerous cells. Already showing promising results with topical applications of pomegranate extract on tumor-prone mice, this extract is now being tested for efficacy in human studies. "Polyphenols, such as ellagic acid, inhibit the formation of harmful enzymes that cause cells to grow out of control," explains Howard Murad, M.D., author of *The Murad Method* (St. Martin's Press) and CEO of Murad Inc. in El Segundo, California. "By inhibiting specific enzymes, ellagic acid and other polyphenols regulate cell turnover and give the cell time to divide normally and form completely." Polyphenols extracted from red grapes are also showing promise in this area, as is idebenone, a powerful antioxidant that's similar in structure to coenzyme Q10, which has been found to have a flair for repairing solar-damaged cells.

Scientists are coming closer to formulations that fight skin cancer cells.

Fact #7: Serving clients means making sun protection your business.

A broad-spectrum sunscreen is invaluable in protecting the skin from overexposure to UV rays, but it only represents part of the picture in terms of preventing sun damage. Taking a more comprehensive approach to sun protection, the American Cancer Society endorses the "slip, slop, slap" method that encourages consumers to *slip* into clothing made from tightly woven fabrics; *slop* on a sunscreen with a SPF 15 or higher; and *slap* on a hat with a broad brim that completely shades the face, neck and ears. One preventive the American Cancer Society doesn't mention is SPF-rated makeup. Since most women wouldn't dream of stepping one foot outside their front door without applying at least a foundation and lipstick, most skincare experts believe making this recommendation and selling this product will benefit at least female clients' faces.

To emphasize the importance of using sunscreen, whether it comes in a bottle or as part of an overall strategy, also consider carrying or recommending clothing and hats that offer a sun-care rating. Moving away from the dowdy creations of a few years ago, many sun-safe clothing brands now

have stylish appeal while screening the sun's rays. Although many of these brands strictly follow industry standards, Solumbra by Sun Precautions (www.sunprecautions.com) is the first company to officially receive an SPF 30 rating by the FDA. Another maker of fashionable, protective hats, Physician Endorsed (www.physicianendorsed.com) is the first company to be confirmed by a national laboratory to have the highest available Ultraviolet Protection Factor, UPF 50+.

Also consider sharing the news about Rit Sun Guard, a new laundry additive that washes sun protection into clothing and helps block more than 96% of the sun's UV rays. The active ingredient is Tinosorb FD, a new UV protectant produced by Ciba Specialty Chemicals. When added to a regular wash load, Sun Guard is said to penetrate the fibers and absorb UV light, rather than allowing it to pass through the fabric. The Rit company claims there's no change in the way the fabric feels or behaves. Check it out: www.ritdye.com.

Howard also suggests making your clients more aware of the need to use sunscreen by posting the UV index rating (see "The UV Index" on this page) in your day spa on a daily basis: *The UV index is X today; are you wearing sunscreen?* "You should also let all your clients know that they can get the daily UV forecast in their area by accessing www.epa.gov/sunwise/uvindex.html," says Howard.

"It's also smart to apply a UV-protective film on your windows so staff and clients aren't exposed to large amounts of UV rays while at your spa," says David McDaniel, M.D., scientific researcher and head of the Laser Skin & Vein Center in Virginia Beach, Virginia. "This is important because unlike UVB rays that scatter when they hit glass, UVA rays can easily pass through windows, even when they're tinted to reduce glare. You should also educate your clients about the importance of having this kind of protective film put on their car windows." Llumar UV shield (www. llumar.com), for instance, has specialty window films for work, autos and homes, and claims to block 99% of UV rays. ◆

The UV Index

The UV Index, issued by the National Weather Service, serves as a daily forecast for UV intensity. Here's how to interpret the numbers:

Index No.	Exposure Level
0 to 2	Minimal
3 to 4	Low
5 to 6	Moderate
7 to 9	High
10+	Very High

Unlike UVB rays that scatter when they hit glass, UVA rays can easily pass through windows.

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