

How much sun protection? Sorting out just what a product's SPF number means

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Last year, Coppertone rolled out two easy-to-use sprays with its highest-ever sun protection factor: SPF 70+. Not to be outdone, Neutrogena offered its Ultra Sheer Dry-Touch lotion in SPF 85 strength, that year's big gun.

This sun season, Banana Boat is retaliating with a pair of SPF 85 sprays, which it trumpets on its Web site as "our highest SPF level in a continuous spray formula."

But now, SPF creep has hit the triple digits with Neutrogena's SPF 100+ sunblock, leading some dermatologists to complain that this is merely a numbers game that confuses consumers.

The parade of stratospheric SPFs is "crazy," says Barbara A. Gilchrest, a dermatology professor at Boston University School of Medicine.

"For a normal person who is fair-skinned and concerned about skin damage and photoaging," Gilchrest continues, "it's really in my opinion tremendous overkill."

A sunscreen's SPF, or sun protection factor, measures how much the product shields the sun's shorter-wave ultraviolet B rays, known as UVB radiation, which can cause sunburn. It used to be that SPF topped out at 30. No more. These days, a race is on among sunscreen makers to create the highest SPF that R&D can buy.

If adequately applied, sunscreens with sky-high SPFs offer slightly better protection against lobster-red burns than an SPF 30. But they don't necessarily offer stellar protection against the more deeply penetrating ultraviolet A radiation, or so-called aging rays.

In 2007, the Food and Drug Administration proposed capping SPF at 50+, but it still isn't set in stone. So in the cap's absence, a marketing battle is raging, fought on the turf best understood by beachgoers.

"It captures the consumers' attention, the high SPF," says Elma D. Baron, an assistant professor of dermatology at Case Western Reserve University who sees patients at hospitals in Cleveland.

"Just walking down the drugstore aisle and seeing a SPF 90 or 95, they assume, 'This is what I need.' 1/2..."

But that's not necessarily the case. No SPF, not even 100+, offers 100 percent protection. What's more, both UVA and UVB radiation can lead to skin cancer, which is why dermatologists now advise using sunscreens with an SPF of at least 15 and UVA-fighting

ingredients like an avobenzene that doesn't degrade in light or Mexoryl SX, a camphor derivative used in some sunscreens.

The difference in UVB protection between an SPF 100 and SPF 50 is marginal. Far from offering double the blockage, SPF 100 blocks 99 percent of UVB rays, while SPF 50 blocks 98 percent. (SPF 30, that old-timer, holds its own, deflecting 96.7 percent.)

A sunscreen's SPF number is calculated by comparing the time needed for a person to burn unprotected with how long it takes for that person to burn wearing sunscreen. So a person who turns red after 20 minutes of unprotected sun exposure is theoretically protected 15 times longer if he or she adequately applies SPF 15.

Because a lot of sunscreens rub off or don't stay put, dermatologists advise reapplication every two hours or after swimming or sweating.

"As you get higher and higher, it's not really a practical difference," says David M. Pariser, president of the American Academy of Dermatology.

That message isn't trickling down to the likes of Erica Bigio, a graduate student in Tucson. When told of Neutrogena's 100+ lotion, Bigio worried that the sunscreen she always wears when rock climbing and bicycling to work isn't enough.

"It makes me feel like SPF 45 is inadequate," she said.

Consumers should worry more about wearing enough sunscreen, several doctors say, rather than how high their SPF is. Skimp and you lose. To get the SPF advertised, you must use a full shot glass on your body. That's an ounce, which means a three-ounce tube should last, at most, a few outings.

Considering that slim tube could cost roughly \$10, careful sunscreen use is a significant investment for parkgoing parents, beachgoers or daily joggers. That may be part of the reason most diligent folks use only about half the recommended ounce; slackers as little as one quarter, according to a multiyear randomized study of about 1,600 residents of Queensland, Australia.

"If people are putting on about half, they are receiving half the protection," says Yohini Appa, the senior director of scientific affairs at Johnson & Johnson, of which Neutrogena is a subsidiary.

Appa, who has a doctorate in organic chemistry, says Neutrogena's SPF 100+ lotion provided for real-world under-application. With it, she says, "you can bring the least diligent ones up to the level of the most diligent ones."

Appa sees the company's latest offering as a matter of corporate responsibility. "SPF 100 is not just an escalating numbers game," she says. "It's a responsible thing to do as a manufacturer."

Banana Boat has a similar rationale for its SPF 85 sprays, which provide "an extra layer of insurance for consumers," says Beth St. Raymond, director of sun care at Energizer Personal Care, of which Banana Boat is a brand.

But that logic may be flawed. It has long been assumed that applying half the recommended ounce meant half the SPF protection. But a small 2007 study published in the British Journal of Dermatology found that under-application made SPF coverage fall much more steeply.

"It turns out that if you apply half the amount, you get the protection of only the square root of the SPF," says Darrell S. Rigel, a clinical professor of dermatology at New York University, who has done efficacy testing for Johnson & Johnson and Procter & Gamble.

So applying a half-ounce of SPF 70 will not give you the protection of SPF 35, but 8.4, Rigel says.

Or, "the higher the SPF, the more rapidly the protection falls off with under-application," says Gilchrest, who consults for Schering-Plough Corporation, which makes Coppertone.

That's a problem if an SPF north of 50 lulls consumers into a false sense of security.

Put SPF 100 on your kids at dawn, and you might think, "Great, they are covered all day," says Sonya Lunder, a senior analyst at the Environmental Working Group, a nonprofit in Washington that reviewed almost 1,100 sunscreens in 2008.

With the less-impressive-sounding SPF 30, "you might think, 'Let's put on a sun hat, or let's get a T-shirt on.'½..."

Phillip Drake, 31, who lives in Honolulu, says he wore the highest SPF possible so he could forgo reapplication.

"I am one of those people who like to put it on one time, and not think about it," he says. "If I am going to apply it, then I figure why not go for the higher number?"

What if high-SPF products allow beachgoers to dawdle without turning a telltale red?

"It could actually be a negative thing," Lunder says, "because it allows you to stay in the sun longer." And, she adds, "You could be getting other sun-related damage."