

# skin | can sunscreen damage skin?

by Rob Trow

**A** recent study (University of California, Riverside) found ultraviolet filters in sunscreens, which help keep out ultraviolet radiation, can generate compounds that attack skin cells. In the study, researchers found many ingredients in sunscreens penetrate the skin, which is not perceived as healthy. In addition, sunscreens generate reactive oxygen species (ROS), which are harmful compounds.

## How this happens

Ultraviolet filters reduce the amount of ultraviolet radiation that can penetrate the skin. These filters penetrate into the skin, below the epidermis, and leave the body vulnerable to ultraviolet radiation. Many sunscreens contain nano-particles that can facilitate the penetration of harmful ingredients. The higher the SPF, the more the chemicals.

The study found three ultraviolet filters (octylmethoxycinnamate, benzophenone-3 and octocrylene) generate naturally produced ROS. Additional ROS are generated when the filters have penetrated into the skin. Frequent re-application of sunscreen helps prevent this. The study proposes sunscreens that combine filters with antioxidants may be a good solution, as antioxidants have been shown to reduce ultraviolet-induced ROS levels in the skin.

## Cancer link

ROS react with cell walls, lipid membranes, mitochondria and DNA; lead to skin damage; and increase the signs of extrinsic aging. This is consistent with

a 1999 finding from a biochemist who suggested the chemicals in sunscreens could cause cell damage and lead to increased risk of cancer because of the creation of free radicals. But many sunscreen manufacturers feel these studies are confusing and not conclusive.

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Dr. Martin Weinstocks analyzed 13 studies concerning sunscreens and cancer. He found mixed results: four showed increased risk; three, decreased risk; and six were inconclusive. An Australian study concluded many sunscreens do little to stop UVA rays that may play a significant role in the formation of melanomas.

## From 15 to 60

There is little difference between an SPF 15 versus 60. SPF ratings measure the ability to filter UVB rays, not the more dangerous UVA ones. It may be safer to use an SPF 15 (90 percent protection) versus 60 (only slightly more) as the higher SPF may lead to longer sun exposure, provide a false sense of security, depress the immune system, increase the amount of chemicals that can penetrate into the skin and exacerbate the signs of aging and melanoma development. The government is revising the entire sunscreen rating system to better help inform us all.



## What we do know

Sunscreens that contain physical and chemical blockers plus antioxidants are the best choices. It may also be wise to apply an antioxidant cream that contains vitamin C and/or E with sunscreen to help limit free-radical formation and the resulting chemical damage. Product should be reapplied no less than every two hours, protective clothing (shirts, hats, sunglasses) should be worn and clients should avoid sun exposure between 10 a.m. and 2 p.m. Tell clients to never allow themselves to get a burn. ■

**Rob Trow** owns *DermaConcepts USA*, the eastern United States (excluding metro NYC) distributors for *Environ Skin Care*. He has been in the skin care field for more than 10 years. Trow is a frequent speaker. He holds two master's degrees and did his doctoral studies at Harvard University.