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Subject: Does Sunscreen Protect Against Skin Cancer?

Dear Editor:

Marc Reich recently reported (CEN 5/18/15, p. 11) that the FDA is holding up the approval of eight new sun-filtering molecules currently used in European sunscreens. Reich quoted a representative of the sunscreen lobby (Public Access to Sunscreens coalition, or PASS) thusly: "Of course we have to be safe... but PASS is also concerned about increasing cancer rates. The group argues that the eight pending sunscreen [molecules] are important tools for preventing skin cancer... Melanoma rates skyrocketed 200% between 1973 and 2011." What the PASS lobbyist forgot to mention was that during this period sunscreen use also skyrocketed. In fact, just in the last decade (2001-2010), the incidence of melanoma increased by 1.5% <cdc.gov/cancer/skin/statistics> while the use of sunscreen remained stable (National Cancer Institute "Cancer Trends Progress Report – 2011/2012 Update"). Although sunscreen clearly protects against sun*burn*, i.e., the redness, swelling and pain due to inflammation, it is not at all clear that it also protects against skin cancer. In fact, in what has been dubbed the "sunscreen-melanoma controversy,"[i] a number of recent studies have reported either an *increase* in skin cancer incidence with increased sunscreen use, or else no correlation between the two.[ii],[iii],[iv]

Two current hypotheses attempt to explain this surprising disconnect. Chiang[ii] and others[v] implicate the inhibition of nitric oxide synthase by sunscreens. It has also been known for decades that the inorganic titanium and zinc oxides commonly found in sunscreens have a dual effect: Not only do these crystals filter UVA and UVB light, they

also catalyze the photogeneration of reactive oxygen species[vi],[vii] (e.g., superoxide and hydroxyl radicals); these ROS can then oxidize DNA and trigger mutations that lead to cancer. The bottom line is that although it makes sense to apply sunscreen as a protection against sunburn, one should not assume that this also protects against the later development of skin cancer. The latter correlation has not yet been proven, and some literature even suggests the opposite.

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