

SAFETY ALERT

SAFETY NOTICE on Sunburn and Skin Cancer (Melanoma)

Sunburns and tans are caused by exposure of the skin to the sun's ultraviolet (UV) rays. Three ranges of wavelength are distinguished by most scientists, and they are in decreasing order of wavelength and increasing order of energy UVA (320-400 nm); UVB (280-320) and UVC (less than 280 nm). UVC is totally blocked by the atmosphere by ozone but UVB and UVA are not. UVB causes sunburn and all sunscreens protect against this range of wavelengths. Recent evidence suggests that UVA also causes skin cancer and many sunscreens do not protect against this range of wavelengths unless specifically indicated on the bottle. As a result there is a higher incidence of melanoma even with people who use sunscreens. It is essential that all personnel who do extended field work (or outdoor recreation) use proper clothing and sunscreen to prevent sunburns and excessive tanning. Sunburns are a long-term cumulative problem rather than a short-term problem since the skin's DNA becomes damaged and gene damage can result. A little known fact is that the UV-VIS spectrum of ozone (O₃) is identical to DNA! Since there are significant areas of the world's atmosphere which are ozone depleted, it becomes a necessity to have proper clothing and sunscreen protection at these areas.

Skin cancer (if left undiagnosed spreads into the bloodstream and lymph nodes) is one of the deadliest and fastest spreading forms of cancer. In other words, don't take this alert lightly. The author was diagnosed of skin cancer at the earliest stage (#1; there are 4 clinical stages) and was treated successfully by simple surgery. Survival beyond 5 years at stage 2 skin cancer is excellent. Survival to or beyond 5 years at stages 3 and 4 becomes less likely. In the last 20 years, the incidence of skin cancer has increased almost tenfold.

INFORMATION ON SUNBURN PROTECTION

Sunscreens

Sunscreens do not fully prevent the possibility of skin cancer or melanoma. Sunscreens are rated according to the sun protection factor (SPF), and the best sunscreens protect at a rating of 15 or higher. Sunscreens rated higher than 15 are usually less soluble and last longer. Many medical people recommend a sunscreen of SPF 30 as this will block about 97% of the UVA and UVB. Sunscreens with a higher SPF value may only block another 1-2 % more UVA and UVB than a SPF 30 sunscreen.

Even though a sunscreen may indicate SPF 30, to insure that a sunscreen or sunblock does indeed absorb UVB and UVA radiation, look for a circle on the bottle of the sunscreen, which contains both UVB and UVA or some other label indicating both. If you're uncertain that the sunscreen protects against both, the following active ingredients protect

(1) against UVB (PABA derivatives such as Padimate O; cinnamates such as Parsol®MCX, Neo-Heliopan AV and Giv TanF: 2-hydroxy-4-methoxy- benzophenone; salicylates such as homosalate, Heliophan and octyl salicylate; Eusolex®8020),

(2) against UVA (dibenzoylmethanes such as avobenzone or Parsol®1789; oxybenzone). Oxybenzone gives some protection to both UVA and UVB, but is a hormone disruptor so should be avoided.

The Environmental Working Group (EWG; <http://ewg.org/>) is a non-profit organization that has a list of sunscreens that are considered effective. In 2008, they found 29% of sunscreens did not protect against UVA, and 4 of every 5 sunscreens offer inadequate protection. In 2009, 70% of sunscreens contain ingredients to block UVA. All day moisturizers advertise SPF protection, but 1 in 5 offers little protection from harmful UVA rays.

Sunscreens should be applied a half-hour before sun exposure and about every 2 hours afterward, but especially after swimming or sweating.

Go to <http://ewg.org/whichsunscreensarebest/2009report> for more details on sunscreens.

Protective Clothing

To fully protect against UVA and UVB, proper clothing (e.g. Solumbra by Sun Precautions; <http://www.sunprecautions.com/>) must be worn since UV radiation can still penetrate some SPF 30 sunscreens. The normal cotton "tee" shirt worn in the summer protects to a SPF rating of about 5-9 so this is not sufficient.

During the summer, 10 AM to 4 PM is the time period for maximum exposure to direct sunlight. When working outside, wear protective clothing that includes long sleeves, long pants and a large hat with a 4 inch brim. Also wear sunglasses with side shields or panels that provide 99% or greater UV protection.

HOW TO CHECK FOR SKIN CANCER AND MELANOMA

The following groups have information on skin cancer:

The Center for Disease Control's web site <http://www.cdc.gov/cancer/skin/>

Also check <http://www.medicinenet.com>.. You may want to bookmark it for future reference. You will find a menu where you can click "Diseases & Conditions". Then another page will come up listing the alphabet by letter, click on "M". There you will find a list which has "Melanoma".

Cancer Information Service (1-800-4-CANCER or 1-800-422-6237) American Cancer Society (1-800-227-2345) Skin Cancer Foundation (1-212-725-5176)

The list below is not all inclusive but indicates some major items to help detect melanoma.

I. On a monthly basis check all moles using the ABCD approach. A photo of what to look for can be found at <http://www.cdc.gov/niosh/topics/uvradiation/>

- A) Asymmetry - melanoma lesions are typically irregular in shape.
- B) Border - melanoma lesions often have uneven or irregular borders.
- C) Color - melanoma lesions often contain many shades of brown or black; benign moles are usually a single shade of brown.
- D) Diameter - melanoma lesions are often more than 6mm in diameter; benign moles are less than 6mm.

II. Any mole greater than 6-10 mm should be checked by a M.D. during a physical exam or at a clinic.

III. Who is at risk?

- A) People with fair skin that burns or freckles easily or,
- B) People with relatives who have had skin cancer or,
- C) People who have a history of one or more bad, blistering sunburns as a child or teenager or,
- D) People who have already had the disease.

Bibliography

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"Sun Protective Clothing and Accessories", Sun Precautions, 2815 Wetmore Ave., Everett, WA 98201. Phone 1-800-882-7860. <http://www.sunprecautions.com/>

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