

Sun Protection

Traveler Summary

Introduction

Sunlight is essential for good health, notably in the production of vitamin D and the prevention of rickets. However, sunlight contains ultraviolet (UV) rays that can damage skin and eyes with excessive exposure, especially in fair-skinned persons.

Sunlight and Solar Radiation

UV radiation is greatest near the equator, at high altitude, near reflecting surfaces such as snow, sand, or water, and when the sun is directly overhead. Cloud cover slightly reduces the level of UV radiation; shade reduces it by up to 50%. UV radiation penetrates clear water to a depth of 1 meter (3.3 ft).

Sunlight also heats the body and may contribute to heat-related problems, especially in situations where the person cannot sweat freely (see *Heat-Related Illness*).

Damage from Excessive Exposure to Sunlight

Exposure to UV radiation causes sunburn and eye irritation. In the skin, redness and swelling may be followed by blistering and peeling. In the eye, inflammation of the conjunctiva and cornea may proceed to blindness (arc eye, snow blindness).

Other risk factors for side effects include:

- Susceptibility to various rashes and allergic reactions in persons taking drugs such as oral contraceptives, antihistamines, antimalarials, and tetracycline
- Local reactions with chemicals such as bergamot and lemon oil, found in some sun lotions

Chronic exposure to UV radiation is associated with skin cancer, premature aging of the skin, chronic itching, and cataracts. Risk factors include fair skin, freckles, blonde or red hair, blue eyes, and a history of blistering sunburn in childhood. Skin cancer is thought to be linked to sunbathing, tanning beds, and degradation of the ozone layer. It is wise to check for any skin changes each year, preferably while in one's "birthday suit" on one's birthday. Individuals should see a dermatologist if there are any changes, growths, or bleeding on the skin. Skin cancer is treatable when caught early.

Prevention

Persons should consult weather forecasts for information on forecast UV levels in their areas. Though fair-skinned individuals need greater skin protection at lower UVI levels than do individuals with darker complexions, everyone is at risk to solar eye damage.

- Indices < 2 are low risk: No protection is required.
- Indices 3-7 represent moderate to high risk: Wear shirt, sunscreen, and hat; stay in the shade in the middle of the day.
- Indices 8-11 are very high risk: Shirt, sunscreen, and hat are essential; stay out of the sun if possible.

World Health Organization recommends limiting exposure during midday hours, as well as the following precautions:

- Seek shade.
- Wear protective clothing.

- Wear a broad-brimmed hat to protect the eyes, face, and neck.
- Protect the eyes with wrap-around design sunglasses or sunglasses with side panels.
- Liberally use and frequently reapply a broad-spectrum sunscreen with a sun protection factor (SPF) of 15+. (The American Academy of Dermatology recommends SPF30+.) Fair-skinned persons may need an SPF higher than 15.
- Avoid tanning beds.
- It is especially important to protect babies and young children from the sun.

In addition:

- Keep infants aged < 6 months out of direct sunlight.
- Teach children to slip on a shirt, slap on a hat, and slop on sunscreen.
- Apply sunscreen liberally to all exposed areas (including ears and neck) at least 15 minutes before exposure to the sun and reapply after swimming or heavy perspiration.
- Use lip protection.
- Wear a shirt while swimming.
- Consult a pharmacist or health care provider regarding possible side effects of combining sun exposure with medication(s)
 - Many common over-the-counter and prescription drugs such as antihistamines, antimalarials, antibiotics, and oral contraceptives increase the risk of sunburn.
 - Travelers should check the labels of all medications for information on side effects.

If sunburn occurs, take the following actions:

- Relieve the discomfort of mild sunburn by bathing in cool water or applying cool compresses to affected areas or by applying calamine lotion, a moisturizing lotion containing aloe, an after-sun cream, or 1% hydrocortisone cream.
- Oral anti-inflammatory drugs such as aspirin, acetaminophen, or ibuprofen may be taken as soon as symptoms manifest and for 24-48 hours; however, NSAIDs have not been evaluated in controlled trials for sunburn.
- Keep small blisters dry.
- If blistering is extensive, seek medical advice and stay out of the sun.
- Check for any skin changes each year, preferably while in one's "birthday suit" on one's birthday. See a dermatologist if there are any changes, growths, or bleeding on the skin. Skin cancer is very treatable when caught early.

Sunscreens

Sunscreens work by absorbing or reflecting UV radiation. Sprays may not be as effective as creams or ointments and should not be used around the head because of the risk of inhalation.

If a child has sensitive skin, use a sunscreen that is PABA-free, fragrance-free, and hypoallergenic. A physical sunscreen, with either zinc oxide and/or titanium dioxide might also be a good choice, instead of a sunscreen with chemical ingredients.

SPF is a laboratory-derived value signifying the potency of a product. Comparisons between products may not be reliable because of their differing compositions. SPF applies to the ability of the sunscreen to reduce predominantly the UVB range and risk of sunburn. There is relatively little increase in protection for large increases in SPF value above SPF15.

United States Food and Drug Administration (USFDA) specifies standards for labeling of sunscreens in the U.S.

- Sunscreens must have passed the FDA broad spectrum test to be labeled "broad spectrum," indicating that the sunscreen blocks both UVA and UVB rays.

- Only sunscreens with an SPF value of 15 or higher can claim to reduce the risk of premature skin aging and skin cancer.
- "Water resistant" claims must specify efficacy of 40 minutes or 80 minutes while swimming or sweating.
- Claims of a sunscreen being "waterproof," "sweat-proof," or "sunblock" are not permitted, nor are claims of protection for longer than 2 hours per application.

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