



UV Radiation and Cancer



Basic description

Ultraviolet (UV) radiation from sunlight can damage DNA, the critical genetic material in every cell of every person. When damaged by UV radiation from sunlight or artificial light sources such as sun lamps and tanning booths, DNA loses its power to control how and when cells grow and divide. Sometimes, this DNA damage leads to the formation of skin cancer.

Strength of evidence

There are two main types of skin cancer: melanoma and non-melanoma skin cancers. Non-melanoma skin cancers are by far more common. They occur in either basal or squamous skin cells; these cells are located at the base of the outer layer of skin. Melanoma skin cancers are much less common and develop from melanocytes, the cells that produce skin color.

UV radiation is thought to be the major risk factor for most skin cancers. People who live in areas with year-round bright sunlight are at higher risk for developing skin cancer.

Cancers affected

The primary source of UV radiation is sunlight, but tanning lamps and booths are also sources of UV radiation. Exposure to light from these sources is linked to greater risk for both melanoma and non-melanoma skin cancers. The degree of risk depends on the amount of UV exposure, the intensity of the light, the length of time the skin was exposed, and whether the skin was protected with clothing and sunscreen.

Additionally, cancers of the lip are linked to the sun's UV rays. People who have outdoor jobs associated with long-term exposure to sunlight are more likely to develop lip cancer.

Opportunities for risk reduction

Because people can control their exposure to the sun, the opportunities for risk reduction for skin cancer are effective and easy to understand. Simple guidelines are as follows:

- Do not use tanning booths or sunlamps. These devices do not provide a “safer way” to tan.
- When outdoors, stay in the shade whenever possible – particularly between 10 a.m. and 4 p.m., when the sun’s rays are most intense.
- Clothing provides protection, so wear a long-sleeved shirt and a hat with a wide brim. A tightly woven fabric protects better than loosely woven clothing.
- Wrap-around sunglasses with 99% to 100% UV absorption factor provide the best protection for the eyes and surrounding skin.
- Always use sunscreen with an SPF of 15 or higher, even on overcast or hazy days, because UV light can penetrate cloud cover. Many sunscreens wear off, especially after swimming, toweling, and perspiring, so they should be reapplied to the skin frequently.

The damage caused by sun exposure builds up over the years. Children and teens often receive intensive UV exposure that may not develop into skin cancer until many years later. The skin of babies and young children is particularly sensitive to the sun, so parents and caregivers should be very careful to protect them from excessive sun exposure by using the measures described above.

Emerging trends

Emerging trends in the area of UV radiation and cancer include:

Education Public health education campaigns to promote messages about protection from the sun and the importance of regular self-examinations for warning signs of skin cancer are becoming more frequent.

Skin damage Researchers continue to study the skin damage that can be caused by UV radiation, including prematurely aged skin, wrinkles, loss of elasticity, dark patches (age or liver spots), and scaly growths called actinic keratoses (which can develop into skin cancers).

Additional resources

To learn more about UV radiation and cancer and the American Cancer Society’s programs, please call our toll-free number at 1-800-227-2345 or visit our Web site at www.cancer.org.

Additional information on UV radiation and cancer may be found at:

- **National Cancer Institute
Cancer Information Service**
Toll-free number: 1-800-422-6237
Web site: www.cancer.gov
- **American Academy of Dermatology**
Toll-free number: 1-888-462-3376
Web site: www.aad.org
- **Skin Cancer Foundation**
Toll-free number: 1-800-754-6490
Web site: www.skincancer.org
- **Environmental Protection Agency**
Telephone: 202-272-0167
Web site: www.epa.gov

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Bottom line

Reducing unprotected exposure to the sun's UV rays is the single most important action that can be taken to reduce the risk of skin cancers, including melanoma. Everyone, especially fair-skinned people and children, should follow the American Cancer Society's recommendations to avoid the midday sun and seek shade. And when in the sun, **slip** on a shirt, **slop** on SPF 15 (or higher) sunscreen, **slap** on a hat, and **wrap** on sunglasses.



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by finding cures, and by fighting back.

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