

Sun Safety

Sunburn, skin cancers, and other sun-related adverse health effects are largely preventable when sun protection is practiced early and consistently. Despite the fact that suntanning and burning increase skin cancer risks, most Americans do not protect themselves from the sun's damaging rays (CDC, 1998).

What are the Health Effects of Overexposure to the Sun?

UV Radiation has both positive and negative effects. Positive effects of UV radiation include warmth, light, photosynthesis in plants, and vitamin D synthesis in the body. UV radiation also increases moods in people and kills pathogens (see diagram). But overexposure to UV radiation has adverse health effects. Overexposure to UV radiation is the primary environmental risk factor in the development of UV-related adverse health effects, which include diseases of the eye, immune suppression, and skin cancers.

Children are most at risk for overexposure to UV radiation. With one in five Americans developing skin cancer, childhood education about sun protection is a vital step toward reducing risk and improving public health. Many studies have concluded that sun exposure, especially sunburn, during childhood appears to increase the risk of melanoma, the most serious form of skin cancer. Just one or two blistering sunburns in childhood can double a person's risk of developing melanoma later in life.

Children are of particular concern because they spend a lot of time outdoors. Perhaps most importantly, skin cancer and other UV-related adverse health effects are largely preventable if sun protection practices are followed early and consistently. Educating school staff and students about sun safety can prevent many health problems related to overexposure to the sun.

- **Skin Cancer**—According to the American Cancer Society (1999), skin cancer is the most common of all cancers. The incidence of skin cancer is greater than the incidence of breast, lung, prostate, colorectal, and kidney cancers combined. In the United States, about one million cases of skin cancer are diagnosed each year. One American dies every hour from skin cancer.
- **Basal Cell and Squamous Cell Cancers**—Basal cell carcinoma is the most commonly diagnosed skin cancer. Approximately 75 percent of skin cancers are basal cell carcinoma (American Cancer Society, 1997). Basal cell carcinoma usually appears on overexposed skin on the face, ears, lips, and particularly the nose. Rarely does basal cell carcinoma result in death, but it can spread and cause more serious health problems. Basal cell carcinomas can start as a red patch or shiny bump that is pink, red, or white. It may be crusty or have an open sore that won't heal (AAD, 1994). Squamous cell carcinoma is the second most common of skin cancers, accounting for about 20 percent of skin cancers. Unlike basal cell

carcinoma, it is more aggressive and can spread to other parts of the body and may result in death. Because of effective early detection and treatment, basal and squamous cell carcinomas have a cure rate of more than 95 percent (CDC, 1998). Squamous cell carcinomas appear as a scaly patch or raised warty growth (AAD, 1994).

- **Melanoma** - Malignant melanoma is the most deadly of the three major skin cancers, causing approximately 75 percent of skin cancer deaths. The incidence of melanoma is increasing at a rate faster than that of any other cancer. Melanoma cases in the United States have almost doubled in the past two decades. Receiving one or two blistering sunburns before the age of 18 at least doubles an individual's risk for developing melanoma. Melanomas are usually dark brown or black mole-like patches with irregular edges (AAD, 1994). Melanoma is the most aggressive of the skin cancers. If not caught early, melanoma can spread to other parts of the body and can be fatal. However, when detected early, it is curable.
- **Eye Damage**—Sunlight is the primary source of UV radiation that can damage tissues of the eye. Results from dozens of studies suggest that spending long hours in the sun without eye protection increases the chances of developing eye diseases, including cataracts. The 1998 Journal of the American Medical Association reported that even low amounts of sunlight can increase the risk of developing eye disorders. The American Academy of Ophthalmology has cautioned that excess exposure to UV radiation may increase the incidence of cataracts. Cataracts are a form of eye damage that causes the loss of transparency in the lens, clouding vision. Everyone is at risk for developing cataracts. Another potential effect of UV radiation is a "burning" of the eye surface, called "snow blindness" or photokeratitis from sunlight. The effects usually disappear within a couple of days, but may lead to further complications later in life. UVB damage to the eyes is also cumulative, so it is never too late for people to start protecting their eyes.
- **Photoaging/Wrinkling**—A very high percentage of age-associated cosmetic skin problems can be attributed to sun (Levine, 1997). Chronic overexposure to the sun changes the texture and weakens the elastic properties of the skin. The epidermis, which is the outer layer of the skin, thickens, becomes leathery, and wrinkles as a result of sun exposure. The difference between skin tone, wrinkles, or pigmentation on the underside of a person's arm and the top side of the same arm illustrate the effects of sun exposure on skin. In most cases, the top side of the arm has had more exposure to the sun and shows greater sun damage. Sun-induced skin damage causes wrinkles and furrows, easy bruising, brown or "liver spots", precancerous lesions (actinic keratoses), and potentially skin cancer (Skin Cancer Foundation, 1992). Because photoaging of the skin is cumulative, it is never too late for a person to start a sun protection program.
- **Immune System Suppression**—Scientists believe sunburns can alter the distribution and function of disease-fighting white blood cells in humans for up to 24 hours after exposure to the sun. Repeated overexposure to UV radiation can cause more damage to the body's immune system. Mild sunburns can directly suppress the immune functions of human skin where the sunburn occurred, even in people with dark skin.

How Can I Protect Myself from the Effects of the Sun?

The best sun protection is provided when all the sun-safe behaviors are practiced together. Sun protection habits include:

- Limit sun exposure during the hours when the sun's rays are the strongest, 10am to 4pm. To the extent possible, people should limit their exposure to the sun during these hours and practice all of the sun protective behaviors. Your shadow is an indicator of the sun's intensity. If your shadow is shorter than you are, the sun is at its highest intensity. The American Academy of Dermatology has established the Shadow Rule: No Shadow—SEEK SHADE.
- Refer to the daily UV index when planning outdoor events. The UV Index is a daily forecast of the intensity of the sun's UV rays. The Index indicates the risk of overexposure to skin-damaging UV radiation and can be used to help plan outdoor activities to minimize overexposure.
- Seek shade whenever possible. Shade structures such as trees and umbrellas provide year round protection. Although trees do not offer complete sun protection, they provide about 60 percent blockage from the sun's rays.
- Wear a wide-brimmed hat, sunglasses, and long-sleeved, tightly woven clothing. Clothing can physically block out the sun's harmful rays and should be one of the first lines of defense against sun exposure. Sunglasses should block out 100 percent of UVA and UVB radiation to protect the eyes from damage. Hats are the best way to minimize UV radiation exposure to the face, head, ears, and neck.
- Use broad-spectrum sunscreens whose active ingredients block UVA and UVB rays. The Sun Protective Factor (SPF) should be a minimum of 15. Sunscreens should be used every day, including cloudy days. They should be applied liberally and evenly before going out into the sun and should be applied frequently, especially after swimming.
- Avoid tanning salons. Artificial UV radiation is just as bad for your skin as sunlight. Most tanning devices use UVA rays which have been shown to go deeper into the skin and contribute to premature wrinkling and skin cancer (AAD, 1994).
- Limit exposure to the reflective surfaces like snow and water. UV rays can be reflected off of sand, tile, water, snow, and buildings. It is important to practice all the sun protective behaviors even when you are in the shade.