

 For more information:

American Cancer Society  
<http://www.cancer.org>

American Academy of Dermatology  
<http://www.aad.org/>

Arizona Cancer Center  
[http://www.azcc.arizona.edu/prevent/skin\\_prevent.htm](http://www.azcc.arizona.edu/prevent/skin_prevent.htm)

Center for Disease Control  
<http://www.cdc.gov/cancer/nscpep/skin.htm>

Environmental Protection Agency  
<http://www.epa.gov/spdpublic/uvindex/uvhealth.html>

Iowa State University  
[http://www.iastate.edu/~tc-ext/protect\\_clothing.html](http://www.iastate.edu/~tc-ext/protect_clothing.html)

Mayo Clinic health letter  
<http://www.mayohealth.org/mayo/9808/htm/skin.htm>

National Cancer Institute  
[http://cancernet.nci.nih.gov/wyntk\\_pubs/skin.htm](http://cancernet.nci.nih.gov/wyntk_pubs/skin.htm)

University of Iowa  
<http://tray.dermatology.uiowa.edu/Safesun/Safesun-2.html>

Prepared by Janis Stone, ISU Extension textiles and clothing specialist. Reviewed by Kathryn Hatch, professor, Textile Science, University of Arizona.

The suggestions in this publication are intended to alert family members to sun safety; however, following these precautions cannot guarantee protection from the sun or skin cancer.

File: Textiles and Clothing 1-7

**... and justice for all**

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Many materials can be made available in alternative formats for ADA clients. To file a complaint of discrimination, write USDA, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964. Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Stanley R. Johnson, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.

# Consumer Choices

## Shirts and Stuff for Sun Safety



IOWA STATE UNIVERSITY  
University Extension

PM 1862 Revised May 2002

## Shirts and Stuff for Sun Safety

Sunshine cheers us up. We tend to look forward to times when we can relax in the sun. Also, direct sunlight helps our bodies produce a key nutrient, Vitamin D, from the cholesterol in our skin. Vitamin D, however, also is found in many foods, such as fortified milk. Because most people in the United States obtain enough Vitamin D from their diets, they don't need to spend hours in the sun.

When we spend hours in the sun, we expose ourselves to the sun's invisible ultraviolet rays that can cause sunburn, premature wrinkling, cataracts, and skin cancer. Cases of melanoma skin cancer are rising; the American Cancer Society estimated that more than 47,000 new cases would be diagnosed in the United States in 2000.

Fortunately, we can help prevent these bad effects of the sun by making wise choices about the clothes we wear and how we protect our skin.

This publication outlines important facts to know about sun exposure and provides strategies to follow for sun safety.

The harmful parts of the sun's radiation are the ultraviolet (UV) rays, some of which are called UVA and others UVB. People can't see these invisible rays, but when their skin begins to burn or turn red after being in the sun a while, they can feel or see the effects.

### Your daily exposure to UV depends on

- the total time you are in the sun,
- what time of day you are there,
- where you live—elevation and distance from the equator, and
- the protection you give yourself.

The total time you spend in the sun is important because sun exposure adds up. Think about all the times you are outdoors for work, sports, or going from the house to the car, etc. The risk of skin cancer has been associated with repeated UV exposure over time.

The time of day is important because the sun's rays are most intense between 10 a.m. and 4 p.m. each day. Earlier or later in the day, your risk of skin damage is less.

Location is important because the ozone layer that protects us from the sun varies and the angle at which the sun's radiation hits the earth differs from place to place (people in Australia are more at risk than people in the United States).

If you can't control your total time in the sun, the time of day you're in the sun, or your location, you can do something about protecting yourself.

### Remember your Skin Protection ABCs

- A = Apply sunscreen
- B = Bask in the shade
- C = Choose clothes to cover-up

## **Apply sunscreen**

The use of sunscreen lotion is a basic step in skin protection, but it must be applied correctly or it doesn't do its job. You need to apply sunscreen 30 minutes before you go out in the sun and apply it again after being in the water.

Sunscreens are rated according to their SPF (sun protective factor). In general terms, the higher the number, the better the protection. Experts recommend that SPF 15 or higher be used. The SPF shows how many times longer you can be in the sun with properly applied sunscreen than without sunscreen before your skin turns red or starts to burn.

If your skin burns (turns red) in 15 minutes, then using a sunscreen with SPF 15 allows you to stay in the sun 15 minutes x 15 SPF or  $3\frac{3}{4}$  hours, assuming you didn't perspire too much or the sunscreen didn't wash off during swimming.

Despite the numbers and science involved with sunscreens, *everyone's skin is different*. It may take you longer or not as long as your friends to burn. Those who are naturally blond and blue-eyed or red-haired generally have more sun-sensitive skin than those with darker natural coloring. Nevertheless, *anyone* can be sunburned, have skin damage, and get skin cancer.

## **Bask in the shade**

One effective way to avoid the sun and its long-term effects is to stay in the shade when outdoors. Beach umbrellas, gazebos, shade trees, vehicle cabs, and shadows of tall buildings all offer some degree of shade that can help reduce sun exposure.

However, it is important to remember that the sun can burn you by

- penetrating the clouds hiding the sun,
- shining through glass, or
- reflecting off water, sand, or snow.

Shade does not protect you from the UV rays that are reflected off water, sand, or snow. You still need sunscreen or clothes to cover and protect your skin—even in the shade on a cloudy day.

## **Choose clothes to cover-up**

Our basic instinct is to take off clothes when it gets hot. WRONG.

By keeping your body, arms, legs, feet, hands, and head covered with clothes, you have more sun protection. Even a white jersey T-shirt has about as much protection as an SPF 5 sunscreen, and dark shirts may offer five times as much protection.

Clothing is one of the best defenses you can have to avoid over-exposure to the sun. Most clothing does not have labeling about the amount of sun protection it offers.

Some manufacturers label clothes with the percent sun block of UVA or UVB rays. This helps you compare different fabrics. The higher the percentage, the better the protection. For example, 97 percent sun block is better than 76 percent sun block. However, this does not tell you how long you can safely be in the sun wearing the fabric.

The American Society for Testing and Materials issued standards for labeling sun protection capacity of fabrics by ultraviolet protective factor (UPF). This is similar to the SPF used to label sunscreens—the higher the number the better the protection.

According to ASTM,  
UPF 15 - 24 = good protection,  
UPF 25 - 39 = very good protection, and  
UPF 40+ = excellent protection

Currently few clothes are labeled with their UPF. However, this labeling is expected to increase in the future.

**Other ways** exist to find everyday clothes and fabrics that offer good sun protection. The answers to the questions below are good clues to help you find sun protective clothes and fabrics.

### **How much of the body do the clothes cover?**

A bikini swimsuit can be made of a very sun protective fabric, but it gives little sun protection. Clothes must cover your skin to be protective. Long sleeves and pant-legs are more protective than short ones. High neck shirts are better than low ones. Hats should have a full brim that retains its shape to shade the face, neck, and ears. Sandals are less protective than canvas or leather shoes.

**Is the fabric knit or woven?** Woven fabrics tend to block more UV because their yarns are usually closely spaced. Twill fabrics, such as denim in jeans, offer good protection.

### **How much open space does the fabric have?**

When yarns and fibers in fabrics are loose and widely spaced, the sun can go right through. More closely knitted or woven fabrics offer greater protection. Satin weaves have very closely spaced yarns.

**How thick is the fabric?** If a fabric is thicker, more of the sun's UV rays are absorbed as they move toward your skin.

**Does the fabric stretch?** When fabrics get stretched out, the spaces between the yarns open up so the UV rays of the sun can go straight to your skin.

**What is the fiber content?** Cotton feels cool in hot weather because it absorbs perspiration, but the fiber ranks last in UV protection.

Cotton fiber with the UV protectant finish is very UV protective, however. Polyester ranks highest in sun-protection because its chemical structure has a benzene ring that absorbs UV rays. Nylon and other synthetic fibers often have UV absorbers added when the fiber is formed. This boosts the fibers' UV absorbing ability, adding to its sun protection.

**What color is the fabric?** Dyes used to create color in fabrics usually absorb UV rays. Darker fabrics have more dye, so the fabric absorbs more UV rays, keeping them off your skin.

**How is clothing washed?** Many detergents contain optical fluorescent brighteners to make clothes appear whiter or brighter. These act like dyes. By washing your clothes in detergent with brighteners you can improve the UV absorption so that the fabrics are more sun protective.

## **Consider other points**

- **Protect your eyes.** Wear sunglasses that are protective and labeled as blocking 99 percent of UVA and UVB when in the sun to prevent cataracts and rare eye cancers.
- **Avoid tanning booths.** The price of darker skin may be permanent skin damage and skin cancer later in life. A sun-tanned appearance is not necessarily a healthy appearance.
- **Protect children.** It is very important to protect young children from the sun, but babies under six months should be kept in the shade and no sunscreen applied to their skin. According to the American Cancer Society, one bad sunburn before age 18 doubles the risk of skin cancer in adult life.

By making good consumer choices about cover-up clothing, sunscreen, and other strategies to protect your skin from the sun's UV, you can continue to enjoy the fresh air and outdoor exercise that are necessary for good health.