AgriLIFE EXTENSION Texas A&M System 4-H 2009 Consumer Decision-Making Contest Study Guide

Sun-Protective Clothing

Most of us understand the need for suntan lotion to help protect the skin against harmful ultraviolet (UV) light rays. What we may not realize is the need to protect the skin under our clothing. Recent studies about skin protection have made it clear that the skin under our clothing can also be damaged by the sun. Wearing sun-protective clothing is one of the best ways to help protect against harmful UV rays. Sun-protective clothing is also called "sun blocking" or "sun block clothing." You may also see the terms, "UV-blocking," "UV protection factors," and "UV protective textiles."

Ultraviolet Light in the Form of UVA and UVB

In order to learn about the importance of sun-protective clothing, it is important to understand how damaging the sun can be to skin. Part of the sun's energy that reaches us on earth is composed of rays of invisible ultraviolet light. When ultraviolet light rays in the form of UVA (long waves, or black light) and UVB (medium waves) enter the skin, they can cause damage to the skin cells, causing visible and invisible injuries. It is best to avoid the midday sun and its intense rays; in Texas, these intense hours are from 10:00 A.M. to 4:00 P.M. According to the American Cancer Society (ACS), tanning lamps and booths are another source of UV radiation. People with too much exposure to light from these sources are at greater risk for skin cancer.

Which Types of Sun Damage Lead to Skin Cancer?

Sun-damaged skin can result in early aging of skin and skin cancer. What's worse, the sun's damaging effects are increased by reflection from water, white sand, and snow. Sadly, more than 1 million people are diagnosed with cases of skin cancer annually in the United States, according to the American Academy of Dermatology. According to the ACS, a study published by the *New England Journal of Medicine* estimated that *80 percent of sun damage is caused in the first 18 years of life*. Severe sunburns may be related to the development many years later of various types of skin cancer. The following three types are among the most well known:

- **Basal cell skin cancer** is the most common form of cancer. Basal cells line the deepest layer of the epidermis. These cancers usually develop in the mid-to-later years of life and are caused by an accumulation of sun exposure over the years, but they can appear as early as the teenage years. These cancers rarely spread to other parts of the body, but their continuous destruction of skin and underlying structures makes removal necessary.
- **Squamous cell skin cancer** is the second most common form of skin cancer. Most cases of squamous cell carcinomas are caused by repeated overexposure to the sun.
- **Melanoma** is the most serious type of skin cancer. Melanoma is a disease in which malignant (cancer) cells form in skin cells called melanocytes. Melanocytes make melanin, which gives color to our skin, hair, and eyes. Melanoma can develop in all age groups, including teenagers and young adults. It is developed from brief intense exposure of blistering sunburns accumulated over time, as well as other risk factors. Melanomas can spread to other parts of the body and are potentially fatal.

Read Labels – Know Your SPFs and UPFs!

Most consumers who use sunscreen creams and lotions know about the **sun protection factor (SPF)** on container labels. But when it comes to clothing, a different measure is used: the u**ltraviolet protection factor (UPF)**. The two

are often confused, but SPF only applies to the sunscreen creams and lotions, while UPF only applies to clothing and apparel.

SPF is a measure of the amount of time it takes for sun-exposed skin to redden when exposed to the sun. For example, when using a sunscreen lotion with an SPF of 15, a fair-skinned person who normally sunburns in 20 minutes of midday sun exposure may tolerate 15 × 20 minutes (300 minutes) without burning.

UPF is a measure of the amount of UV radiation that penetrates fabric or clothing, which indicates how much of the sun's UV radiation is absorbed. For instance, a UPF rating of 5 allows $1/50^{th}$ of the sun's UV rays to pass through the cloth.

Clothing and other apparel items that are sold as "sun-protective" will have a numerical UPF value from 15 to 50. The UPF value is helpful when comparing clothing items because not all clothing provides the same degree of skin protection against UV rays. Loosely woven clothing and light colors provide less protection than darker, more closely woven fabric. A long-sleeved denim shirt will provide more UV protection than a white T-shirt. Garments sold as sun-protective generally have a tighter weave or knit and are usually darker in color.

If a garment is labeled with a UPF value, look for the highest number. *The higher the UPF, the higher the UV protection.* There are three categories of UPF protection:

- UPF between 15 and 24 = "Good UV Protection."
- UPF between 25 and 39 = "Very Good UV Protection."
- UPF between 40 and 50 = "Excellent Protection."

Clothing items with a UPF above 50 can be labeled UPF 50+, but these items may not offer substantially greater protection than an item with a UPF of 50, according to the Federal Trade Commission (FTC). The FTC carefully monitors advertising claims concerning UPF.

No garment with a UPF of less than 15 should be labeled as "sun-protective" or "UV-protective."

What the UPF values mean. Suppose the garment you are about to buy has a UPF value of 20. What does this value mean? A UPF rating of 20 will allow $1/20^{th}$ of the sun's UV radiation to pass through the fabric. It means that the fabric reduces your skin's UV radiation exposure by 20 times *where it's protected by the fabric.* (FTC)

Voluntary Compliance with Industry Standards

There are no U.S. Food and Drug Administration (FDA) regulations for sun-protective clothing, so the industry is dependent upon manufacturers to set guidelines. And, as previously mentioned, the FTC only oversees advertising claims. Even though compliance with labeling standards is voluntary, some labels on sun-protective garments state that the garment meets standards developed by the American Society for Testing and Materials (ASTM), an organization that has developed a standard guide for the testing and labeling of UV protective fabrics. Using the ASTM standards for determining UPF values, garments are UV tested and rated following 40 home launderings (wash and dry), 100 hours of continuous UV exposure and testing throughout the entire UVB and UVA range using precision electronic equipment. Manufacturers don't have to comply with ASTM standards, but those that say they do must label their garments with UPF values.

Effectiveness of Sun-protective Clothing

Sun-protective clothing may **lose its effectiveness** when the clothing is:

- worn too tightly or becomes stretched out,
- worn damp or wet, and/or
- washed repeatedly.

The UPF will go down when fabric is stretched because stretching makes it thinner. When fabric gets wet, it makes it more transparent and therefore reduces the UPF. For example, the

average white cotton t-shirt with a UPF of 7 can go down to a UPF of 3 when wet.

The Skin Cancer Foundation endorses *SunGuard*™, a **laundry additive** made by the company that makes *Rit* dyes. The product claims to block 96 percent of harmful rays, with the active ingredient being a blocking agent called Tinosorb™. This product provides a way to wash sun-protection into your clothes and have it last for up to 20 washings at a UPF of 30, according to an independent testing laboratory.

Summary: Shopping for Sun-Protective Clothing

More clothing with sun-protective labels and UPF values will appear on the market in the future if consumers buy more of these new products. Sun-protective clothing costs more than regular clothing. Consider the following factors when shopping:

- UPF (15 to 50 – the higher, the better, up to 50; value over 50 is doubtful)
- Cost (How much more does the item cost than a comparable item, and is it worth it?)
- Sun exposure and how often the clothing is worn (When is the higher cost for a garment warranted? 1] for one you will rarely wear? or 2] for one you will wear a lot because you live near the water, spend a lot of time at the beach, on a fishing boat, or skiing?)
- Comfort (Will you be comfortable wearing it?)
- Color (the darker, the better)
- Tightness of the weave (the tighter the weave, the better)
- Coverage (How much of your skin will be covered? Will you still have exposed areas?)
- Fashion (How long can you wear this item and still feel "in fashion"? Can you find a practical garment that won't "go out of fashion" quickly so that you get more value out of your purchase?)
- Age of person (Who will the garment be for…young children, teens, or adults? Does knowing that serious sun damage happens before age 18 make a difference in seeking out sun-protective clothing?)
- Availability (Can you buy locally or online, or must you travel elsewhere to shop?)
- Non-purchase options (How much would it cost to *SunGuard*™ a garment you already own if it is darker in color and tightly woven (like a long-sleeved denim 4-H shirt)?
- Should you be more conscious about the hours you spend in the sun or in a tanning bed? Are you using sunscreen, a hat, and sunglasses to help protect against the sun as routine practice? In other words, what other options are there for reducing your risk of UV exposure?

Your Decision Dilemma….Which to Choose?			
		UV Protection	**Cost**
1	White 4-H T-shirt (long-sleeved)	UPF=15 according to label	$45
2	White 4-H T-shirt (long-sleeved)	No UPF rating, but washed with *SunGuard*™	$35 + cost of *SunGuard*™
3	Green 4-H T-shirt (long-sleeved)	No UPF rating	$35
4	Green 4-H T-shirt (long-sleeved)	No UPF rating, but washed with *SunGuard*™	$35 + cost of *SunGuard*™

Note: These items at these prices may or may not exist in the marketplace. These items are only an examples.

References

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