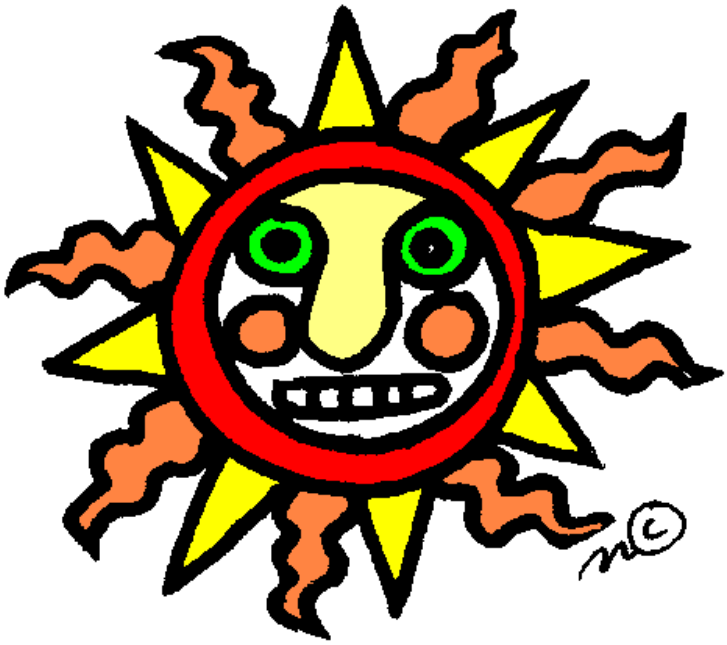
SunSafe in the Middle School Years



Health Education Module
Teacher Guide

Project Background

SunSafe in the Middle School Years was a research project aimed at improving sun protection in middle school students. Funded by the National Cancer Institute and directed by pediatrician, Ardis Olson, M.D., the project worked in 10 communities in VT and NH. Since reducing sun exposure may prevent 90% of skin cancers, the SunSafe Project worked with schools, coaches, town recreation programs, parents, and health care providers to improve middle school students' sun protection behaviors.

Middle school is an important time to work with adolescents since they are beginning to establish their own health habits. However, they still willing to listen to adult's advise and they are still influenced by the role model set by parents, teachers and coaches.

Why middle school students?

- Only 35% of middle school students protect themselves from sun damage
- 75% of teens had sunburns in the previous summer
- 1 or more blistering sunburns before age 20 doubles the risk of melanoma
- Young teens start to use artificial tanning lights
- Children this age start taking responsibility for their health and establish lifetime habits

Why teachers?

→ Research found that teachers can positively influence teens' sun protection behaviors.
→ Teachers can educate youth about many aspects of solar protection.
→ What kids learn in school influences the choices they make.
→ Teachers are important role models for their students

Health Education Module: Sun Safety for Teens

Aims and Objectives

To provide a module that can be used to provide health education to teach students the knowledge, attitudes and behavioral skills they need to prevent skin cancer as recommended in the CDC guidelines.

To teach and learn using multimedia so as to engage the students in critical thinking and decision-making in the active creation of their own knowledge and attitudes.

To make learning useful and authentic by providing a real life image. To encourage self-determination of the students by allowing them to see their own personal image and that of others to compare and discuss.

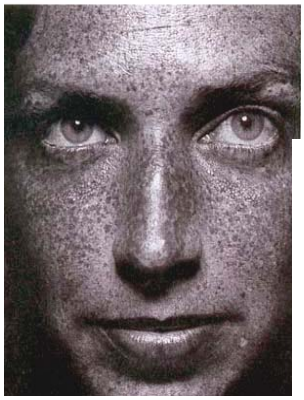
Requirements

Download SunSafe in the Middle School Years PowerPoint Presentation from website http://sunsafe.dartmouth.edu/ to a computer.
A data projector (LCD projector)
A Dermascan. Check with your state chapter of the American Cancer Society to borrow a Dermascan

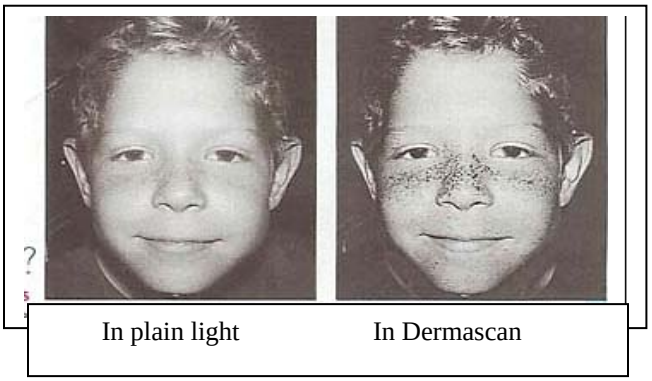
Teacher Guidelines

These guidelines are provided to help the teacher and can be altered to suit your class.
This presentation was developed as a two-component session, a didactic powerpoint presentation, followed by a hands on activity using a Dermascan.
First the powerpoint presentation is shown to provide an educational session that will reinforce the eventual Dermascan viewing. State chapters of the American Cancer Society have a Dermascan that can be borrowed. It is suggested that you arrange the day/days to borrow the Dermascan prior to class scheduling as it is often out on loan, especially in the spring/summer months. Of course the powerpoint can be used on its own but the Dermascan is a very effective and personalizing experience. The following pictures illustrate what might be seen using the filtered light of a Dermascan.

Freckles and sunburns may fade on the surface, but the damage does not go away. This young boy shows damage, probably where he got sunburn



A Dermascan's light shows this young woman's skin damage from tanning.



In plain light In Dermascan

PowerPoint slides

The slides are meant to provide a broad range of facts about UV rays. Some text is on slides as they are projected to engage the audience. Additional dialogue should accompany each slide as it is presented.

Slide 1 Introduce the topic of sun safety

Slide 2-4, 5 UV rays. Audience can be asked if they learned about UV rays in Science. Use slides 2-4 to describe UVA and B. Before slide 5, ask students if they can think of any other way to get a dose of UV rays. The answer would be tanning lights or booths.

What Causes Sunburn and Skin Damage?
There are two kinds of ultraviolet rays that reach the earth's surface: ultraviolet A (UVA) and ultraviolet B (UVB). UVB rays cause your skin to show the signs of sunburn, but most sunscreens protect against them. These rays also are partially screened out by the ozone layer, an invisible shield that protects us from the sun. But over the years the ozone layer has become thinner, so we're getting more exposure.

UVA rays don't burn your skin, but they do contribute the most damage. They penetrate your skin more deeply and affect the cells on a molecular level. That's why it's important to look for a sunscreen that will protect you from both UVA and UVB rays. UVA damage results not only in wrinkles and sagging skin, but also can cause skin cancer. And UVA intensifies with altitude, so it's particularly important to protect yourself when skiing or mountain climbing.

Slide 6 Slide text hits main teaching point of danger of artificial tanning lights.
Ref 1 Swedish study
Ref 2 Karagas

Slide 7 Use slide text. Point out that a person using tanning lights is required to use goggles because the light will penetrate the eyelids and damage the eyes. If the rays can go through the eyelids to the eyes, that means the rays are going through the layers of skin all over, damaging the

skin and the underlying layers that keep skin smooth and nice. This damage leads to wrinkles, leathery saggy skin, and increased skin cancer.

Slide 8 Use text on slide to show difference in sun (UV) aged skin

Slide 9 Slide text reiterates tan warning

Slide 10 Example of how too much tanning ruins a persons looks

Slide 11 A serious danger of sun tanning is the risk of skin cancer, which is higher in pale skinned people. Skin cancer has increased significantly in the last few years and this is very much due to obsessions with having a tan and getting lots of UV exposure. Two decades ago skin cancer was rarely discussed, and was usually a problem mainly for older people. Today, the threat and reality of skin cancer is very real. Approximately one out of every five Americans will develop skin cancer in the course of his or her lifetime. In fact, skin cancer is the most common cancer that doctors see.

Slide 12 Use the slide to point out this man is quite young. Also mention that former Boston Red Sox pitcher Derek Lowe had major surgery on his nose to remove skin cancer. He of course still spends a lot of time out in the sun but calls himself the sunscreen king.

Slide 13 Melanoma

Scientific data confirms that excessive exposure to the sun without the proper precautions can cause harm i.e. that exposure to the sun includes risk. Any choice we make that includes risk also includes specific ways to minimize such risk. The same holds true for UV exposure, whether from the direct sun or from indoor tanning technology. The sun weakens the skin's elasticity and can also cause dark patches and scaly gray growths, keratoses, which are often precancerous. Almost all of the more than 500,000 cases of skin cancer developed annually in the U.S. are considered by the American Cancer Society to be sun-related. Fortunately, if treated in time, the two most common forms of skin cancer, basal and squamous cell carcinoma are curable

The risk factors for skin cancer:

- heredity and excessive exposure (overexposure) to UV radiation
  (an adult who has had one severe sunburn as a child or adolescent-- has double the chance of developing melanoma)
- fair skinned, skin type one, notably persons with red or blond hair, are at highest risk
- occupational exposure to coal tar, pitch, creosote, arsenic compounds, or radium.

The signs of skin cancer:

- a skin growth that increases in size and appears pearly, translucent, tan, brown, black or multicolored
- a mole, birthmark or beauty mark that: changes color, increases in size or thickness, changes in texture and is irregular in outline
- a spot or growth that continues to itch, hurt, crust, scab, erode or bleed
- an open sore or wound on the skin that does not heal or persists for more than four weeks, or heals and then reopens.

If you think that you have any of the above symptoms, see your physician.

The ABCDs of skin cancer detection (self examination of moles, freckles and beauty marks):

- **A** -Asymmetry: common moles are round and symmetrical; early malignant melanomas are asymmetrical (a line drawn through themiddle will not create matching halves)
- **B** -Border: common moles have smooth, even borders; early malignant melanomas often have scalloped or notched (irregular) borders
- **C** -Color: common moles usually have a single shade of brown; different shades of brown or black are often the first sign of a malignant melanoma
- **D** -Diameter: common moles are usually the size of a pencil eraser (1/4") or smaller; early melanomas tend to be larger.

Melanoma, which makes up only 5% of all skin cancers, can be fatal.

Slide 14 If a person ever has a question or concern about something on the skin check with your doctor and a dermatologist.

Slides 15-18 These slides reinforce the appearance-based reasons to limit UV exposure and use protection.

Of course the most serious danger of sun tanning is the risk of skin cancer. Another long-term hazard is wrinkles, which are caused by the sun destroying the collagen in the skin. A suntan ages the skin and there's nothing you can do to reverse it. Instead, protect your skin from excessive UV light. Save your skin now and it will look good for life.

Slide 19 UV damage to eyes

Scientific researchers have been studying the long-term effects of sunlight on the human eye. A number of studies have shown a relationship between eyes that are unprotected from the sun's rays and conditions of the eyes such as cataracts (the clouding of the focusing lens inside the eye) and macular degeneration (results in a permanent loss of central vision). You may have a grandparent with either of these.

Cataracts, the leading cause of blindness in the world, can be caused by UV-A and UV-B rays. According to the "Vision Problems in the U.S." report by Prevent Blindness America, there are over 20 million people in America alone that suffer from the disease. UV-A penetrates deep into the eye and may injure the macula, the part of the retina responsible for sight in the center of the field of vision. UV-B is mainly absorbed by the cornea and lens of the eye and can damage these tissues. Photokeratitis, or "corneal sunburn," is a result of intense exposure to UV-B. The condition is extremely painful and sufferers can experience vision loss for 1-2 days. "UV rays are harmful to everyone," said Daniel Garrett, senior vice president of Prevent Blindness America. "Adults, children, men, women, no matter what your background, you are susceptible to eye damage from the sun if you don't take the necessary precautions."

Fortunately, effective eye protection is as simple as two easy steps. Wearing both a wide-brimmed hat or cap and the proper UV-rated sunglasses are all it takes to ward off the damaging effects.

Sunglasses should block out 99-100 percent of both UV-A and UV-B radiation, and don't have to be expensive to be effective. Consumers need to remember when purchasing sunglasses that just because the lenses may be tinted, it does not guarantee that they will block out UV radiation. Wraparound sunglasses are ideal.

Slide 20 Skin color and types

The color of you skin is determined by the amount of melanin it contains. This substance called melanin protects the skin from the sun's ultraviolet rays. A tan is visible proof that your skin is being damaged. When the ultraviolet radiation of the sun hits your skin, it stimulates cells known as melanocytes, which make the brown pigment called melanin. The melanocytes respond to the sun by making even more melanin to protect your skin from the sun. The melanin acts sort of like a barrier for the skin's cells and can give people the brown tint that is a suntan. We can't possibly tell you that getting a tan is safe, when it is not. Here as some examples of skin colors:

Fair skin
If you have fair skin, your hair is light-colored or red, your skin is fair, and it is always hard for you to tan. (Sometimes freckled.) You tend to burn easily and quickly.

Olive skin
Your skin, hair and eyes are all brown or dark brown. You tan quickly without burning.

Black skin
Your skin, hair and eyes are very dark and you don't burn easily. Black skin can burn in strong sunlight.

Knowing your skin type will help you decide how long you can expose yourself to the sun without burning. If you have dark skin, you will be able to stay out longer than someone with pale skin, and you will burn less easily. Everyone needs to protect their skin from excessive UV rays.

Melanin can only protect your skin so much. If you continue to be exposed to the sun, the UV radiation can eventually damage your skin. That damage shows up on fair-skinned and olive-skinned people as: brown age spots, freckled skin, freckled skin, skin cancer, sagging skin that looks older than it is, WRINKLES!!!, AND MORE WRINKLES and brown age spots too!

Slide 21 Although popular images in the media (even Barbie) may make it seem that tan skin is desirable, most of the bronze models and stars are using makeup and sunless tanners to achieve that look. It is not worth harming oneself for a current fashion trend. In time, tanning will hurt a persons looks with wrinkles and other problems.

Historically, it was a sign of status to be pale, and in other parts of the world such as Asia and Africa, people want their skin to be lighter and do the opposite of tanning. They are bleaching their skin and causing harm by trying to look lighter. Lesson: the most beautiful and healthy color for us is our natural one.

History of tanning (optional information)

It was over 400 years ago that Copernicus declared that the sun was the center of our universe. Throughout history, the human race has had a special relationship with the sun. Primitive societies

in every continent have worshiped the sun as the god that provided warmth and made the crops grow.

There are many examples, throughout history (and the history of tanning), of societies who **valued pale skin.** The Romans and Greeks, for example, used lead paints and chalks to whiten their skin, often with disastrous long-term effects like lead poisoning.

Arsenic was another favorite skin whitener, further demonstrating that people throughout history have shown poor judgment!

By the mid-10th century, arsenic became the preferred skin whitener, once again with sometimes deadly results. Other methods of making the skin white were less poisonous -- during the reign of Queen Elizabeth, women painted thin blue lines of their foreheads to give their skin a translucent look, and carried parasols or wore masks whenever they ventured outdoors.

These fashion trends found their way to America, where no Southern belle or Northern society debutante dare go out in the sun without her parasol to protect her delicate pallor. It wasn't until the 20th century that society began accepting bronzed skin.

For many years, people have associated a deep bronze tan with health and beauty, but this was not always the case.

The beginning of the history of tanning is quite interesting...

Tanning came into vogue by accident. In 1923 French designer, Coco Chanel was seen leaving a nobleman's yacht with a deep suntan after cruising from Paris to Cannes. Although she later claimed to have stayed out in the sun too long, her tan soon set a fashion trend. The looser clothes, which became fashionable during the "Jazz Age", meant that women were freed from clothes that covered all of their skin, which naturally led to more tanning.

Further into the history of tanning we discover...

It also became fashionable to spend holidays baking at the beach; F. Scott Fitzgerald's novel Tender is the Night showed off the world of celebrities spending time on the beaches of the French Riviera.

From the thirties onward tanning became even more popular.

At the same time fashions were changing, so were lifestyles. Women came out of the house to enjoy outdoor life, with hiking, picnics, lawn tennis and other "acceptable" yet still "feminine" activities. Soon, fashionable women everywhere threw away years of tradition to be tanned.

On beaches throughout Europe, women sunbathed, wearing decorative sun hats and shawls not for protection but as fashion statements. Brown and beige-tinted powders and creams were created to be brushed on the places the sun had missed. The fashion world featured clothes for women who wanted to flaunt their new tans; shoes were worn without stockings and sleeveless dresses became stylish. Bathing costumes that had covered women's legs with bloomers, now bared the leg, and swimming became an acceptable sport for women. The suntan had arrived...as the symbol of wealth

and leisure. A tan in the winter meant the bearer had enough money and status to afford a vacation to an exotic, warm climate.

The History Of Tanning: Bikinis!

The fifties saw the very first bikinis, and the "all-over" tan became even more popular. Self-tanning products such as brown creams and dyes also became available, allowing people to "patch" any white spots in their tan or even to simulate a tan.

Even with these products, however, tanning was mostly restricted to the summer months, except for a privileged few who could make winter trips to warmer climes like Florida or the Caribbean.

By the 1970s, an entire generation had baked their bodies in the sun, totally oblivious to the fact that the sunburns they had acquired in their youth would develop into skin cancers 10 to 20 years later.

It wasn't until 1979 that the FDA concluded that sunscreens could help prevent skin cancer, and developed the first rating system for SPFs. In 1985, alarmed at the growing incidence of skin cancer, the American Academy of Dermatology (AAD) became the first medical society to start a public education skin cancer campaign, warning the public about the dangers of overexposure to the sun. In 1988, the AAD held a consensus conference on photo aging and photo damage. The conclusion from that conference was that **"there is no safe way to tan."**

The indoor tanning industry first became popular in the 1970s and by the 1980s had taken hold in the United States. Today between 20,000 and 24,000 salons are listed in the Yellow Pages, claiming 22 million clients each year.

1997:
In a survey in Seventeen magazine, 2/3 of the teens say they look better with a tan and feel healthier, more sophisticated, and 50% say they looked more athletic.

1998:
A report from the Annual Meeting of the American Association for the Advancement of Science questions the value of sunscreens, leading to national publicity. Some products promising UVA and UVB protection do not protect adequately against UVA and may give sunbathers a false sense of protection, the report says.

1999:
The AAD continues to urge Americans to use sunscreens, avoid sunbathing and cover up. It is estimated that more than one million Americans will developed skin cancer in 1999, with 9,800 dying from the disease, 7,800 of them from malignant melanoma. Yet despite these alarming figures, men and women still enjoy the tanned look. Just look around you on any warm summer day - you'll see them, the seekers of the sun.

2000 - now:
The skin cancer rates were still growing, but the sun-worshipers are still out there or still tanning at the tanning salon all year round. Today the effects of sun exposure are becoming an increasing concern due to the decline in the earth's ozone layer. The ozone layer screens out the most harmful

of the ultraviolet rays, but is becoming thinner all over the world, and holes that fluctuate in size have developed in various places. This situation increases the risk of skin cancer and of sunburn.

Sun Protection is very important, clothes, sunglasses, shade, and sunscreen, sunscreen, sunscreen, every two hours when outdoors! SPF of 15 or 20 -- even better! 30... that works too! If it is raining, okay none needed.

Slide 22 A joke for you. After the audience giggles, reiterate, don't fry your skin and end up wrinkled like this bacon.

Slide 23 Have fun outside but protect yourself. Mention the various methods of UV protection. Hats, cover-up clothing, sunglasses, shade, sunscreen. There are many different sunscreen formulas available now. Everyone could find one they liked using.

Use sunscreens that block both UVA and UVB rays of the sun. Sun protection factor, SPF, is equal to the amount of time you can stay in the sun without burning. So, if the average person can sit in the sun for 10 minutes before burning, and you apply a sunscreen with an SPF of 10, you can sit in the sun for 10 X 10 minutes without burning. Very pale-skinned people should use a very high SPF or a total sunblock. Sunscreen should be applied 15 minutes before going out as it takes a while to bond with the skin and start working.

If you are going to be outside for a while, reapply sunscreen every 2 hours and after swimming or sweating. The ingredients wear out after 2 hours. If you'll be in the direct sun, wear a sunscreen with a higher SPF, like SPF 30. If you'll be playing sports, make sure the sunscreen is waterproof and sweat-proof.

Slide 24 Reminder to apply sunscreen all over

Slide 25 Reinforce shade for protection and mention reflection danger on surfaces

Slide 26 Follow theme of reflective surfaces for areas that have snow sports. Ask audience if anyone has gotten a sunburn when out on the snow or water.

Slide 27 A wrinkly attention getting iguana. Repeat that although this lizard is just wrinkly, wrinkles and other skin problems are from excessive UV rays.

Slide 28-29 Closing slides. The sun's rays are necessary for life on earth but we also need to protect ourselves from too much UV exposure. We should go outside and have fun but be sunsafe while we are out.

Slide 30

Dermascan viewing

The last slide prepares the audience for what they may see in the Dermascan. At this time a short introduction of the machine, demo, and overview of procedure is advised. Students should be asked to line up and take a turn to look at themselves. An adult should stand by the machine to answer questions, keep things orderly, and prevent uninvited viewing of others through the viewing port on the back of the machine. When everyone has had a turn, additional opportunities to look at a person, inside the dermascan can be done by using the viewing port on the back of the machine. This

viewing should only be done with the other person's permission. Additionally an adult may volunteer to allow students to look at their image, this is especially powerful if the adult displays a lot of sun damage, and tells students they wish they had known about UV damage when they were younger.

For best viewing in the Dermascan:

- Keep glasses on
- Explain that everything looks purplish/blue, some things fluoresce such as braces
- The goal is to look for the lack of, or presence of dark brown purple spots, those spots indicate UV damage. The spots are like freckles; persons with visible freckles will appear more so in the Dermascan. Often the spots are areas that get burned such as noses and cheeks
- Be sure curtains are closed, excess light degrades the effect
- Instruct viewer to get very close to the mirror and look at their own face
- If the viewer has makeup, sunscreen, or lotion on the viewing will be compromised
- Oily skin, lotion, lip balm, or any type of oil will appear orange
- Dust, lint, or other dry particles will be small white/blue reflective spots
- Persons with very dark skin will not show contrast on their faces
- Viewers will often notice how eyes look. Use this as an opportunity to point out how light enters the eyes and how sunglasses protect against UV damage to eyes

SunSafe in the Middle School Years
Developed at Norris Cotton Cancer Center
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Website: http://sunsafe.dartmouth.edu