SUN EXPOSURE
**Strand 5: Personal Health and Wellness**

**Standard 1: Core Concepts**
- 5.2 Explain the importance of regular health screening or exams.
- 5.3 Analyze the importance of rest and sleep for personal health.
- 5.11 Describe the dangers of exposure to UV light, lead, asbestos, pesticides, and unclean air and water, and strategies for avoiding exposure.

**Standard 2: Access Information**
- 5.5 Demonstrate the ability to access accurate information about personal health products.

**Standard 3: Health Behaviors**
- 5.6 Describe health practices that can prevent the spread of illness.
- 5.7 Apply knowledge about symptoms of illness to determine whether medical care is required.
- 5.8 Describe personal strategies for minimizing potential harm from exposure to the sun.

**Standard 4: Influences**
- 5.9 Analyze the social influences that encourage or discourage a person to practice sun safety
OBJECTIVES

- Explain the consequences of exposure to ultraviolet (UV) radiation on personal appearance and a person’s health.
- Identify statistics that indicate an increasing health risk for skin cancer.
- Explain the dangers of indoor tanning devices that emit UV rays.
- Distinguish between the myths and facts related to sun exposure.
- To recognize growths on the skin that require medical help.
- Identify ways to keep skin healthy when exposed to the sun.
UNDERSTANDING UVA AND UVB

- The sun's ultraviolet A (long wave) (most abundant) and ultraviolet B (short wave) rays vary in size.

- Ultraviolet (UV) radiation is part of the electromagnetic (light) spectrum that reaches the earth from the sun.

- It has wavelengths shorter than visible light, making it invisible to the naked eye.

- These wavelengths are classified as UVA, UVB, or UVC, with UVA the longest of the three.

- UVC is absorbed by the ozone layer and does not reach the earth. (shortest rays)
Sunlight consists of 3 types of ultraviolet rays:

**UVA** rays are most common and cause skin aging and wrinkling. Tanning beds usually use UVA rays.

**UVB** rays cause sunburns, cataracts, and immune system damage.

**UVC** rays, the most dangerous, are absorbed by our ozone layer.

Fig. 2
• Ozone is a naturally occurring gas in the atmosphere.

• The ozone layer absorbs 97–99% of the sun’s high frequency ultraviolet light which potentially damages the life forms on Earth.

• It is mainly located in the lower portion of the stratosphere from approximately 8 to 30 miles above Earth.

The Ozone thickness varies depending on the time of year and changing weather conditions.
The ozone layer protects us from the sun's rays but it is becoming thinner.

This causes the earth to become warmer.
Many popular consumer products like air conditioners and refrigerators involve halons, these chemicals can damage the ozone layer.
Both UVA and UVB, penetrate the atmosphere and play an important role in conditions such as premature skin aging, eye damage (including cataracts), and skin cancers.
The Ultraviolet (UV) light that penetrates our skin is made up of two types of radiation:

UV-A rays and UV-B rays
Melanocytes produce melanin to protect the skin from UV rays.

If UV rays exceed what can be blocked by your level of melanin, sunburn results.
• By damaging the skin's cellular DNA, excessive UV radiation produces genetic mutations that can lead to skin cancer.

• Both the U.S. Department of Health and Human Services and the World Health Organization have identified UV as a proven human carcinogen.

• UV radiation is considered the main cause of nonmelanoma skin cancers, including basal cell carcinoma and squamous cell carcinoma.
WHY SPEND TIME ON SUN SAFETY?

- Unprotected exposure can cause skin cancer and skin damage.
- Skin cancers are the most commonly diagnosed cancers.
- Since 1973 the number of new cases of melanoma, the most dangerous type of skin cancer, has increased 150%, and melanoma mortality rates have increased by 44%.
One in five Americans develops skin cancer during their lifetime.

One American dies of skin cancer every hour.

People who have had severe sunburns as children and adolescents are at higher risk for skin cancer.
- Youth are particularly at risk of overexposure since 80% of the average person’s lifetime UV (ultraviolet radiation) exposure occurs before age of 18.

- An estimated twenty-eight million Americans are tanning indoors annually, even though the ultraviolet radiation they receive can cause skin cancer.
Handouts:
- Wrinkles and Scars – Who Wants Them?
- What Does the Data Tell Us?
- Why is Everyone Worried?
- Indoor Tanning – Easy and Quick, But...

Divide the class into the same number of groups as topics.
Each group will receive a handout that provides information on one topic related to UV radiation exposure and our health.

In each group, discuss the facts on the handout.
Use pictures, words, shapes and symbols (mapping) to demonstrate an understanding of the topic. Using poster paper to draw on.

Present your finding to the class.
Variation: class can present a skit, radio or television news broadcast, creative posters or another method.
ACTIVITY 2

- Have students do alone or in small groups of 4 or 5 per group.
- Distribute handout “Facts or Myths”.
- Students will discuss and write “Fact or Myth” on each statement.
- Later, use the following slides
1. People with dark skin do not get sunburns. 
   Myth: Everyone can be sunburned. Especially those with fair skin and red or blond hair.

2. A lot of sun exposure is needed to get enough vitamin D to build strong bones. 
   Myth: Usually 5 – 15 minutes three times a week is enough. The body produces Vitamin D and Dairy products and other foods have it.

3. Some UV rays can go through window glass. 
   Truth: Yes UVA rays does. UVB rays are blocked by window glass.
Retired Truck Driver
4. People do not need to worry about sun exposure on cloudy or cool days.

Myth: The temperature does not matter. Clouds only block 20%.

5. People who live or frequently vacation at high altitudes are more likely to have sun damage if they do not protect themselves.

Truth: UV radiation goes up 4% to 5% every 1000 feet above sea level.

6. The sun’s rays are stronger closer to the equator.

Truth: Yes, those rays are more direct.
7. The sun’s rays reflect off snow, ice, sand, concrete, boat decks and water.  
   **Truth:** Yes, it may even be more harmful.

8. Some medications increase a person’s sensitivity to the sun.  
   **Truth:** Check with doctor. Acne medications and antibiotics.

9. It is best to keep infants under six months of age out of the sun.  
   **Truth:** Infant skin can burn quickly.

10. Some clothing allows UV rays through to the skin.  
    **Truth:** Darker fabric with tight weave offers more protection.
11. It doesn’t matter if clothing is wet or dry, it will protect you from the sun. Myth: All garments lose 1/3 of their sun-protective ability when wet.

12. If you are underneath the water’s surface, the harmful rays of the sun cannot reach you. Myth: UV rays penetrate 3 feet into the water.

13. The sun is strong enough in the winter to worry about protecting yourself when outdoors. Truth: Snow reflects 80% of the sun’s rays
14. Once you have applied sunscreen, you do not need to worry.
   Myth: Apply 30 minutes before exposure and every 2 hours after. SPF 15

15. Tanning beds and other indoor tanning devices that give off UV rays are as dangerous as the rays of the sun.
   Truth: The dangers are the same.

16. It is better to have a “base tan” from a tanning salon if you know you are going to be out in the sun. The “base tan” helps to prevent sunburn.
   Myth: A base tan doubles the problem. The skin is already damaged and continues to do so.
17. If you don’t get burned, sun exposure is safe.  
   Myth: Always a risk of damage and skin cancer.
18. Unprotected sun exposure has been proven to help some skin conditions.  
   Myth: Consult with a doctor. It is always a risk. Professional org. take a very strong stand.
19. If you are under a beach umbrella, you are safe from the sun. 
   Myth: UV rays still bounce off the water, sand and decks.
20. You do not need to worry about getting sun after 4:00 pm.  
   Myth: Less intense only. Still exposure can cause damage.
What to Look For

- **Basal Cell and Squamous Cell Cancer:**
  2. A red scaly, sharply outlined *patch*.
  3. A *sore* that does not heal.
  4. Frequently appears on sun-exposed areas of the body, such as the face, ears, neck, lips, and backs of the hands.

- **Melanoma:**
  - Starts as a small, *mole-like* growth; then, grows and changes
ABCD RULE

- A is for **Asymmetry**: One-half of a mole or birthmark does not match the other half.
- B is for **Border**: The edges are irregular, ragged, notched, or blurred.
- C is for **Color**: The color is not the same all over, but may have differing shades of brown or black, sometimes with patches of red, white or blue.
- D is for **Diameter**: The area is larger than 6 millimeters, or about ¼ inch, which is the size of a pencil eraser or is growing larger.
LOOK FOR DANGER SIGNS IN PIGMENTED LESIONS OF THE SKIN

Consult your dermatologist immediately if any of your moles or pigmented spots exhibits:

A Asymmetry—one half unlike the other half.

B Border irregular—scalloped or poorly circumscribed border.

C Color varied from one area to another; shades of tan and brown; black; sometimes white, red or blue.

D Diameter larger than 6mm as a rule (diameter of pencil eraser).
OTHER WARNING SIGNS

- A sore that does not heal.
- A new growth.
- Spread of pigment from the border of a spot to surrounding skin.
- Redness or a new swelling beyond the border.
- Changes in sensation, such as itchiness, tenderness, or pain.
- Change in the surface of a mole such as scaliness, oozing, bleeding, or the appearance of a bump or nodule.
Risk Factors for Skin Cancers

• Unprotected and/or excessive exposure to UV rays, indoors or outdoors.

• A fair complexion and/or blond or red hair and light-colored eyes.

• A family history of skin cancer.

• Lots of moles or atypical moles.
Risk Factors for Skin Cancers

• Treated for skin cancer in the past.
• Lives or frequently vacations in tropical or subtropical climates or at high altitudes.
• Has freckles and burns before tanning.
• Takes medicines that increase a person’s sun sensitivity.
• Had severe sunburns as a child or teen.
Protect Yourself!

- Slip on a **long-sleeved** shirt!
- Slop on sunscreen with a **SPF of 15** or higher.
- Slap on a wide-brimmed **hat**!
- Wrap on **sunglasses** with 99%-100% UV absorption.
- Seek **shade**.
- Avoid the **sun** between 10:00 am and **4:00 pm**.
How to Choose Wisely

• Labeled SUNSCREEN
• Broad-Spectrum – Both UVA and UVB
• Sun Protection Factor (SPF) of 15 or Higher
• Waterproof or Water Resistant
• Expiration Date
It’s All in How You Use It

• Apply a generous amount to all exposed skin, about a palm full or one ounce.
• Apply 30 minutes prior to going out into the sun.
• Reapply every two hours and immediately after swimming, toweling dry, or sweating.
• Use sunscreen on hazy or cloudy days and on cool or cold days.
• Use a lip balm with a SPF of 15 or higher.
Facts on Indoor Tanning

People who used indoor tanning devices that emit UV rays had the following increased risk for cancer:

- **2.5** times more likely to develop squamous cell cancer (skin cancer) that people who did not use them.
- **1.5** times more likely to develop basal cell cancer (skin cancer) compared to those who did not use them.
- Research shows that the younger people were when they began using indoor tanning devices the more likely they were to develop basal cell and squamous cell cancers.
More Facts on Indoor Tanning

- Using tanning booths, beds, and lamps might add to the incidence of melanoma, a deadlier form of skin cancer.
- Women who tanned in a salon once a month or more at any age had a 55% greater risk of melanoma than women who did not use tanning salons.

Some states have laws that prohibit young people from using tanning booths or beds.
The World Health Organization (WHO) recommends that, **worldwide**, no person under the **18** years of age should use a **sun** bed.

Tanning salons and tanning equipment (beds, booths, and sunlamps) are not **registered** or **inspected** by the state and operators or tanning salons are not licensed.
**Activity #3 Advice to the Sun Lovers**

- F- 56 Activity Alone or in groups
- Each group will receive a case study. They will complete the following task:
  - Review their case study.
  - Formulate advice to give to the characters in the case study. The advice should be specific about how to avoid harmful UV radiation.
  - When finished, ask each group to read their group’s situation and share the suggested advice.
Activity #4  Protective “Gear”

• With a partner or alone, select two activities they would do if they could.
  – Go to the beach or water park
  – Hike in the woods
  – Biking, horseback riding, skateboarding...
  – Go snowboarding or snow skiing
  – Go fishing, play soccer, baseball outdoors...
  – Go to the park

• Go to next slide
• Students will develop a list of protective “gear” you would need to take with you in order to participate safely in the activity.

• Call on students to share their answers or have students draw their answers on paper.

• Later, have the students indicate responses related to sun safety.
Evaluate Activity - slip – slop – slap!

- **Slip on a shirt:** preferable long sleeves and pants. Light color clothes, not porous.
- **Slop on sunscreen:** SPF 15 or higher. Reapply.
  - Waterproof, water resistant, expiration date...
- **Lip balm:** with a SPF of 15 or higher.
- **Slap on a hat:** wide brim, protect your ears.
- **Wrap on sunglasses:** UV absorption
- **Seek shade**
- **Avoid sun** between 10:00 am and 4:00 pm.