SunWise
a program that radiates good ideas
A Partnership Program of the U.S. Environmental Protection Agency
www.epa.gov/sunwise

UV INDEX CHART

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UV Index Number	Exposure Level
2 or Less	Low
3 to 5	Moderate
6 to 7	High
8 to 10	Very High
11 +	Extreme

A SunWise Legend

Estimated Time
15 – 20 minutes

Supplies
Large paper
Markers
Paper for drawing
Crayons

Learning Objective
The students will learn that people from all over the world have different stories about the sun. Before the story is read, ask the students about the power of the sun, both good and bad. Write their ideas on the paper and then cover it up. After reading the story assess what they have learned by asking them to write a story about the sun and why it is important to people around the world.

Directions
Read to your class the story, "Coyote's Bright Adventure," about the origin of the sun according to the Native American Cahto Tribe of California (on the Student Page of this activity). Discuss with them the location of California in relation to where you are located. While doing this, explain to them that people from all over the world have different ideas and beliefs about the sun. Discuss what they remember from the story. Ask students to make up a story about the sun. Ask them why the sun is so important that people from all over the world tell stories about it (e.g., it makes plants grow, provides light). Suggest checking out a book about the sun the next time they go to the library.

A SunWise Legend

"Coyote's Bright Adventure"[1]

Many people around the world believe that the universe began in darkness and that a hero or an animal brought us the sun. There are Native Americans in California who are members of the Cahto Tribe that tell a story about a coyote. The tale is about how the coyote is responsible for bringing the sun into the world.

Coyote was taking a nap. He was having some trouble finding a comfortable position in which to take his rest. At first, he lay down with his head in the north. Unable to find the comfort he sought, he changed position and placed his head to the south. This didn't seem to work well either, so he laid his head down west. Finally, he tried the east. This seemed to be the best so far, and Coyote drifted off into a pleasant nap.

While sleeping peacefully, Coyote's forehead began to feel very hot and uncomfortable. It was so bad that he woke up from his nap. When he was fully awake, he realized that the feeling that woke him up was coming from his dreams. He had been dreaming about the sun. It was this dream that gave Coyote the idea to go get the sun, and bring it back as a gift for the people of the Earth.

Now, at this time, the sun was kept by an old woman in her house. Coyote knew that he must go to the old woman's house and trick her to help the sun escape. Coyote was very determined to get the sun and so he set out to the house.

Along the way, Coyote encountered three field mice that agreed to help him take the sun away from the old woman. The mice would bite through the ropes that held the sun down and when they finished Coyote would be free to run away with the gift.

When they got to the house Coyote asked the old woman if he could lie down in a corner to rest and promised her he would not bother her. This is when the plans begin to be put into action. Coyote settled down into the corner and covered himself with the blanket the old woman gave him. "Forgive me, old woman. Sometimes I can't fall asleep. It helps if I can sing a lullaby. I will sing it quietly and soon I will be asleep," said Coyote. The old woman agreed to his request and soon the Coyote's song actually put the old woman to sleep.

While she slept the mice began to cut the ropes that held down the sun, but they were so small it took them a long time to cut the ropes. Coyote knew he had to move quickly and he ran out of the house pulling the sun behind him. While he was running, a lizard picked up a stick and began beating the house. All the noise woke up the old woman, and she ran after Coyote. She yelled at Coyote to stop but he turned around and used his magic to turn her into stone. The old woman was trying to hide the sun!

When Coyote arrived home, he took his knife, cut the moon and the stars from the sun, and released them into the night. The people were so thankful for the gift of light they honored Coyote with many presents.

The afternoon that the people got the sun back they rejoiced. That evening they had a celebration. But on the next day, they were hot and their skin was changing color!!! They thought about what they could do to stay cool and protect their skin. They decided to take mud from the river bank and slather it all over their skin. It worked and that was the first sunscreen!

Even today, Coyote takes a special place in the hearts of the people, and they remember him by telling many more stories about their friend.

[1] Adapted from the book *Sun Lore: Folktales and Sagas from Around the World*, by Gwydion O'Hara.

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Action Steps for Sun Protection

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Do Not Burn

Avoid Sun Tanning and Tanning Beds

Generously Apply Sunscreen

Wear Protective Clothing

Seek Shade

Use Extra Caution Near Water, Snow, and Sand

Watch for the UV Index

UV Index Number	Exposure Level
2 or Less	Low
3 to 5	Moderate
6 to 7	High
8 to 10	Very High
11 +	Extreme

Get Vitamin D Safely

Early detection of melanoma can save your life

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For more information, visit us online at www.epa.gov/sunwise

Wacky Paper Sunglasses

Supplemental

Estimated time

20 minutes

Supplies

Scissors
Glue
Pencil
Cellophane sheets in various colors
Crayons or other decorations
Colorful construction paper (optional)

Learning Objective

The objective of this activity is to demonstrate the importance of wearing sunglasses to protect your eyes from the sun's harmful ultraviolet (UV) rays. Assess the students by asking them what they know about sunglasses and eye protection before starting the activity. Afterwards, ask what they learned from this lesson. Did it teach them anything new about cataracts and the importance of wearing sunglasses? What will they do differently now when outside?

Discussion

Discuss with students the importance of wearing sunglasses. Explain that appropriate sunglasses provide 99-100 percent UV protection, which will reduce sun exposure to your eyes. Demonstrate the UV blocking power of sunglasses by using the UV-sensitive Frisbee®. Place sunglasses on the Frisbee, expose the Frisbee to UV (take outside) and watch the Frisbee change color in a few seconds. Explain to the students that the sunglasses block the UV rays, thus keeping the area beneath the sunglasses from changing color.

UV rays can cause cataracts and other eye damage. Cataracts are a form of eye damage in which a loss of transparency in the lens of the eye clouds vision.

Directions

If time permits, create your own pair of wacky sunglasses to show your class. You may also want to copy the sunglasses template and alter it to become a "connect the number dots" activity.

Instruct students to either cut out the sunglasses provided on the Student Page or draw and cut their own out of a colorful piece of construction paper.

Next, students should cut out the eyepieces. You should have some of the cellophane pieces cut out in squares to fit the frame of the sunglasses.

Instruct the students to spread the glue around the edges of the eyepiece and place each cellophane piece within the eyepiece frame area. After the glue is dry, students can decorate the rest of the glasses.

Instruct students that the cellophane they are using for the lenses in the sunglasses does NOT protect against UV rays. Explain to students how to look for and read the tag found on sunglasses in the store so that they will select glasses that offer adequate protection.

Wacky Paper Sunglasses

Supplemental

Directions

1. Cut the sunglasses out of your paper.
2. Cut out the eyepieces of your sunglasses.
3. Choose a color of cellophane for your eyepieces.
4. Glue the pieces of the sunglasses together. Spread glue on the eyepiece frame and glue the cellophane paper onto your sunglasses.

   Now, make your sunglasses wacky by decorating them!

UV Frisbee® Science

Estimated Time
30 – 40 minutes

Supplies
UV Frisbee
Sunscreen (a variety of protection levels including baby oil, SPF 15, and SPF 30)
2" x 2" swatches of cloth (a variety of materials including cotton, UV blocking fabric, and "tan-through" fabric)
Plastic wrap or hotel shower cap
Stop watch
Newspaper
Masking tape and marker

Learning Objective
The objective of this activity is to demonstrate the effects of UV radiation and the effectiveness of different ways to block UV radiation. After completing this activity, students should be able to describe at least three ways they can protect themselves against harmful UV radiation. After the lesson, ask students whether their behavior will change and how. (See the *SunWisdom* section of the Tool Kit for a list of sun safety tips.)

UV Frisbee® Science

Directions

Observe the UV Frisbee as your teacher applies a variety of materials to it. Record your observations on the data chart below. Write down the color of the UV Frisbee after each material is applied to it. Use the data you have collected to answer the questions.

	Frisbee Color (before exposure)	Frisbee Color (after exposure)
material #1		
material #2		
material #3		

Questions

1 Did the UV Frisbee change color when exposed to normal room light? Why or why not?

2 What happened to the color of the UV Frisbee in the sunlight? After five minutes?

3 What effects did the different sunscreens have on the UV Frisbee?

4 What did you note about the part of the UV Frisbee that was covered with cotton cloth?

This activity is adapted from the Project LEARN module *Ozone In Our Atmosphere.*

SunWise Word Scramble

Estimated Time

15 – 20 minutes

Directions

By unscrambling the SunWise words the students will be exposed to key vocabulary associated with sun safety. Have a sun safety discussion before you assign the task to start the students thinking about certain sun safety vocabulary.

Questions and Answers

1. What does UV stand for? Can you see or feel UV rays? *Ultraviolet. No.*
2. What forms a thin shield around the earth and protects us from the sun's harmful UV rays? *The thin shield around the earth is known as the ozone layer.*
3. At what time is the sun at its highest point in the sky? *Solar noon.*
4. During what hours should you limit your exposure to the sun? *You should limit your exposure to the sun between 10 a.m. and 4 p.m.*
5. What are some effects of too much exposure to the sun? *Some of the effects of too much exposure to the sun are wrinkles, skin cancer, and eye damage.*

Unscrambled SunWise Words

sun
sunblock
sunburn
mole
sunglasses
long sleeve shirt
hat
skin cancer
beach
ultraviolet rays
wrinkles
sunwise
protect
umbrella
shade
ozone
reflection
melanoma
prevention

Physical Education Variation

The teacher should write the 19 scrambled words from the Tool Kit activity in chalk on a concrete play surface without letting students see the words. Students line up about 50 yards away and take turns trying to decipher the first word. The first student runs to the first word. If s/he can decipher the word, s/he writes it next to the scrambled version. If s/he doesn't, s/he runs back and hands the chalk to the next student until all words have been revealed. Teachers might want to mention the words to students ahead of time when discussing sun safety with the class. Older students may choose to create their own word scramble. Divide students into groups. One group creates 15 scrambled sun safety words; another group must unscramble the words. Groups then trade off. The first group timed as the fastest wins. Larger classes might require 30 or more words. Additional words can be found throughout the SunWise Tool Kit.

SunWise Word Scramble

Directions

Unscramble this list of words.

nsu _____

cksluobn _____

nrusbun _____

lmeo _____

sgalusnses _____

nlgosevelestirh _____

tha _____

niksrecnac _____

aebhc _____

ratluloietvysra _____

swlrknic _____

neswisu _____

coptert _____

luberlma _____

esdha _____

znoeo _____

ntirfelceo _____

mmnaaleo _____

ntvopeerin _____

Questions

1 What does UV stand for? Can you see or feel UV rays?

2 What forms a thin shield around the earth and protects us from the sun's harmful UV rays?

3 At what time is the sun at its highest point in the sky?

4 During what hours should you limit your exposure to the sun?

5 What are some effects of too much exposure to the sun?