



## Grade K - Sample Lesson Plan Introducing Safety

### Objectives/Goals

- Students will recognize that being safe is engaging in behaviors and practices to avoid harm and injury and be able to describe safety practices and make safer choices.
- Students will describe sun safety practices.

### Materials

- Teacher, Wear sneakers with laces
- Magazine pictures/internet images of safe and unsafe situations
- Grades K-2 Lessons - SunWise Tool Kit: <https://www.neefusa.org/sunwise>
- Images of sunglasses, sunscreen, full clothing, umbrellas

### Steps

#### *Step 1*

- Ask for volunteers to tell you what safety is. Give students the definition of safety as actions we take to avoid being injured or hurt

#### *Step 2*

- Ask each student: What are some of the ways they made themselves safer getting ready and coming to school in the morning? Did we tie our laces before we left the house? Give the example of an untied shoe lace and ask kids how that can be unsafe (i.e. risks of tripping and falling). Ask for volunteers to tell you how to make walking in shoes with laces safer –laceup your shoe. Check everyone’s shoes for tied laces; demonstrate the proper way to tie shoe laces. have students tighten up any loose laces.

### Step 3

- Additional discussion: did you walk to school this morning? Did you ride a bike? Did you ride in a car? Let's talk about some of the ways we made our morning safe as we did these things. Talk about how students arrived at schools in vehicles – if they were in a car did they buckle up or sit in a safety seat? Were they sitting in the back seat? Talk about vehicle safety; did they sit carefully on the bus behind the padded bus seat?

### Step 4

- Show some images of safe and unsafe situations (examples are readily available from the internet of riding bikes with/without helmets, pushing, unsupervised/supervised swimming, correct/incorrect seat belt usage).

### Step 5

- In reviewing the images, ask students to identify the safer situation. Ask them to tell you how the people with helmets, safety seats/seatbelts, staying away from hot water and the stove, are safer. Provide correct information.

### Step 6

- Complete one of the following 10-20 minute activities from the K-2 SunWise Lesson: *Hot Potato, A Sunwise Beach Party, Sunny Says, Keep an Eye on Sun Safety, WackySunglasses.*

### Step 7

- Alternatively, complete the following lesson provided by Ellen Booth in Scholastic Early Childhood Today (Author: Ellen Booth Church).

## Scholastic Early Childhood Today – Sun Safety/A Summer Safety Activity

### Materials

Sun-protection items to use as props, such as empty plastic sunscreen bottles, brimmed hats, sunglasses, loose and densely knit clothing, etc.; beach items to use as props, such as beach balls, towels, sand toys, etc.

Set Up and Prepare: Gather materials appropriate for a pretend trip to the beach and place them in the dramatic-play area or outside in the shade.

### Activities

1: Have a discussion about the sun. What do children know about the sun? Can they feel the difference between being in the sun and being in the shade? Tell children how the sun's rays can cause serious sunburn. Ask if anyone has had a sunburn, and what it felt like.

2: Introduce ways children can protect themselves from getting sunburned. Introduce sunscreen, sunglasses, the best type of clothing to wear (loose and densely woven fabrics), and brimmed hats.

3: Tell children that it is important to avoid direct exposure to the sun during

peak hours, which are between 10 a.m. and 3 p.m. (Quick tip to share: If they see that the length of their shadow is shorter than they are tall, they need protection from the sun. On the next bright, sunny day take children outdoors and try this simple experiment!)

4: Now invite children to take a pretend trip to the beach. Allow free time for children to explore their own way of using the props. Offer suggestions and ask questions to help children explore the uses and purposes of each sun-protection product.

<http://www.scholastic.com/teachers/lesson-plan/sun-safety-summer-safety-activity>

- Have students to go home and talk to their parents about safety rules and create a picture/write down at least 3 safety rules to share in class the next day. Have students share these rules. Discuss how many students brought in the same rules and that this is because these are ways of keeping the community safe. Remind them of additional safety rules that may have been left out.

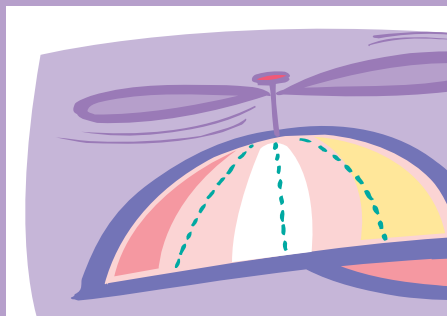
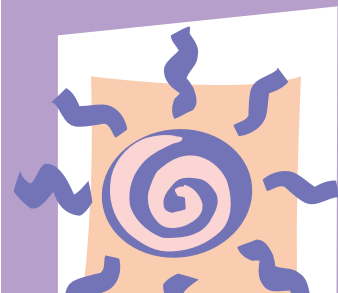
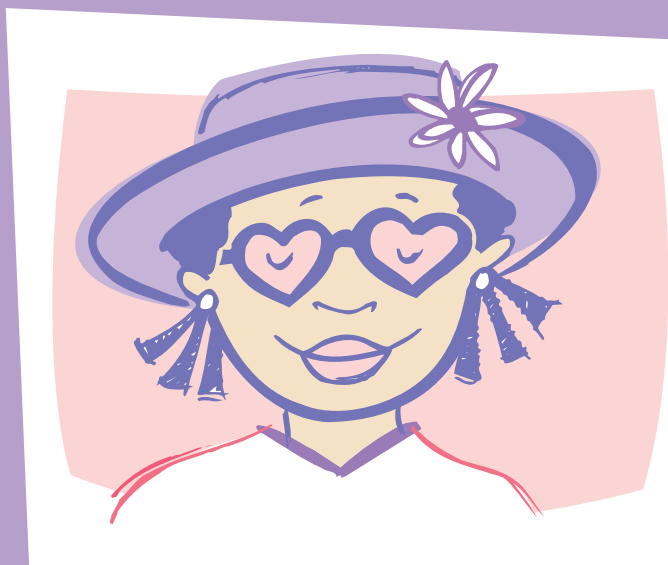
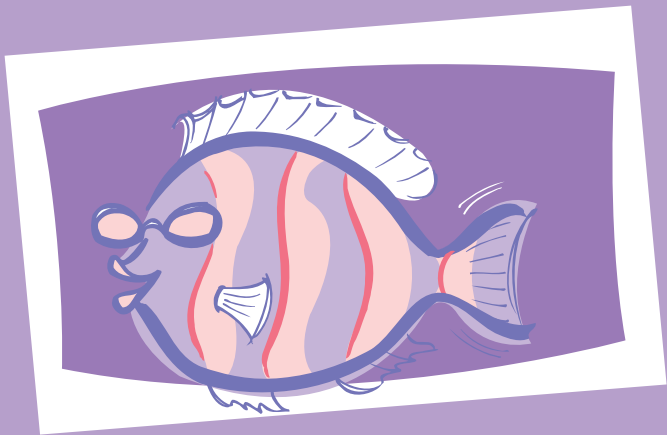
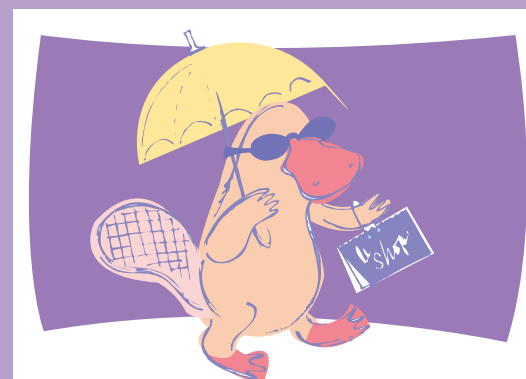
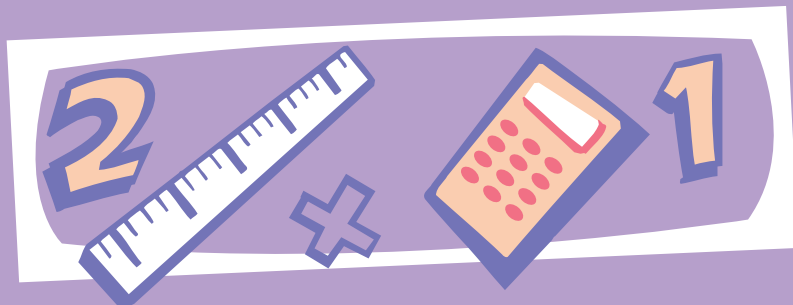
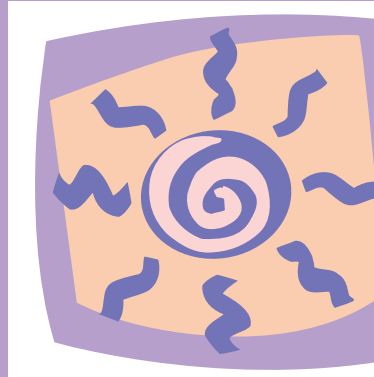
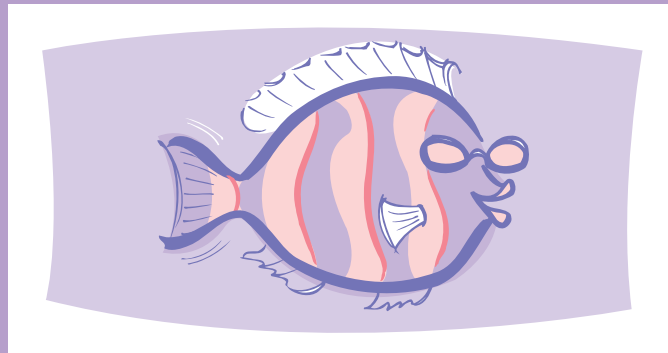
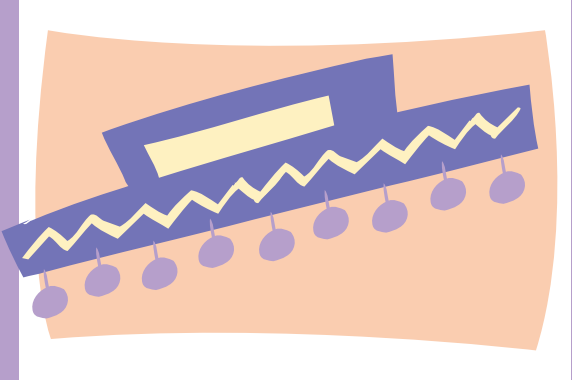
### **Assessment Idea**

- Give students a blank sheet with a header “Safety is...” and have them write a sentence or draw images to complete the sentence. Do students draw/write a safety behavior on their worksheet?
- In the classroom discussion, when given a choice between safe and unsafe behaviors, do students select the safe behavior?
- Give students a blank sheet with a header “Safety in the Sun” and have them paste images of items that protect them from the sun.
- Can students name one way of preventing sunburn?
- Did students complete homework assignment?

### **References**

- SunWise Tool Kit <https://www.neefusa.org/sunwise>
- Sun Safety: A Summer Safety Activity <http://www.scholastic.com/teachers/lesson-plan/sun-safety-summer-safety-activity>

# introduction



**SunWise**<sup>®</sup>   
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A Partnership Program of the U.S. Environmental Protection Agency  
[www.epa.gov/sunwise](http://www.epa.gov/sunwise)

## Acknowledgments

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American Academy of Dermatology

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Dermatology Nurses Association

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Melanoma Foundation of New England

National Association of Health Education Centers

National Council on Skin Cancer Prevention

National Oceanic and Atmospheric  
Administration

Prevent Cancer Foundation

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Sun Safety for Kids

The Skin Cancer Foundation

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## Why Sun Safety Education?

Overexposure to ultraviolet (UV) radiation is the primary environmental risk factor in the development of UV-related health effects. With one in five Americans developing skin cancer in their lifetime, education about sun safety is a vital step toward reducing risk and improving public health. Children are of particular concern, since unprotected exposure to the sun during youth puts them at increased lifetime risk for skin cancer. Other adverse health effects resulting from overexposure to UV radiation include eye damage and cataracts, immune system suppression, and premature aging of the skin.

Overexposure to the sun is an important health issue for all skin types. Many people believe that only lighter-skinned people need to be concerned about these effects. Though it is true that darker skin has more natural pigment, which acts as a protectant, darker skin is still susceptible to many of the damaging effects of UV radiation. The risk of other UV-related health effects is not dependent upon skin type.

The good news is that UV-related health effects are largely preventable by instituting sun-protection practices early and consistently. Schools and teachers can play a major role in protecting children by teaching and modeling sun safety behaviors.

### **The SunWise Program**

In 1998, after a successful collaboration with educators, medical professionals, environmental organizations, meteorologists, parents, and children, the U.S. Environmental Protection Agency (EPA) developed the SunWise Program to help educators raise sun safety awareness and foster behavior change. The program, designed to meet the diverse needs of schools and communities nationwide, helps students learn about the science of the sun, the risks of overexposure to the sun, and what can be done to protect themselves from the sun's harmful UV rays.

Recognizing the many issues schools and educators are asked to address daily, the SunWise Tool Kit provides maximum flexibility—elements can be used as stand-alone teaching tools or to complement existing

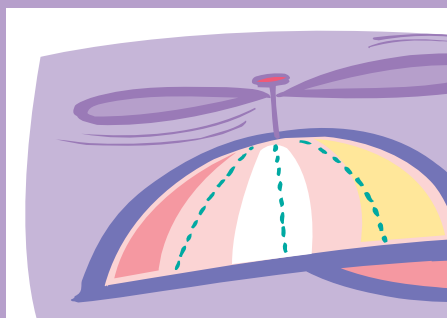
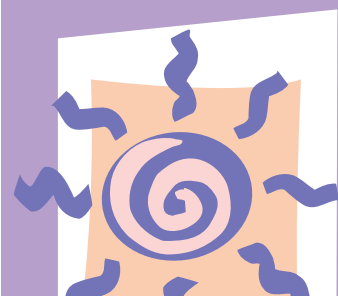
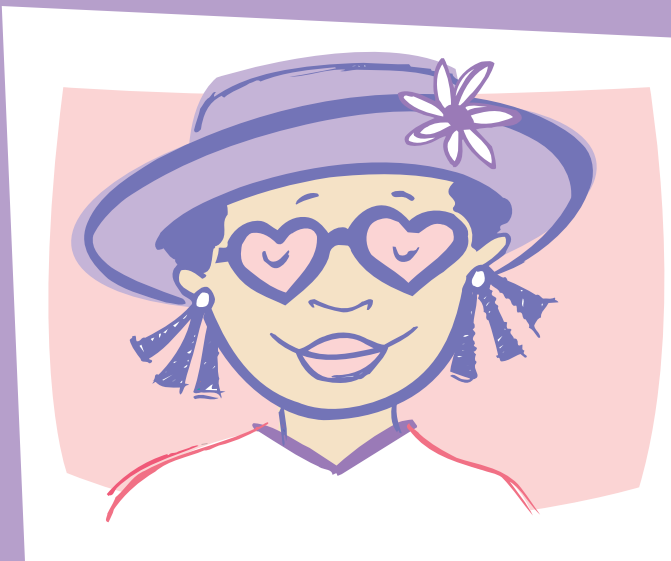
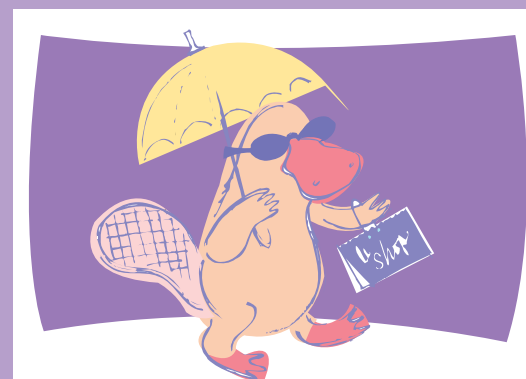
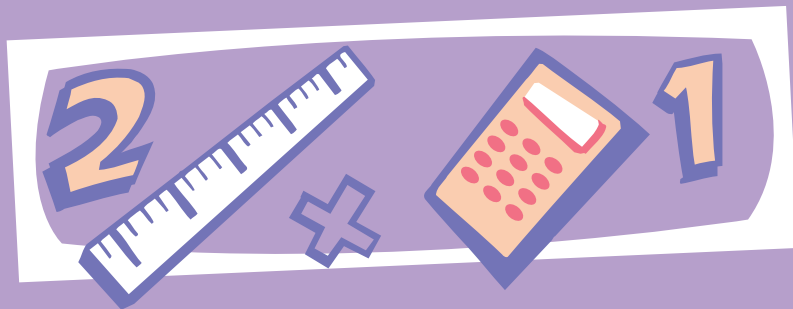
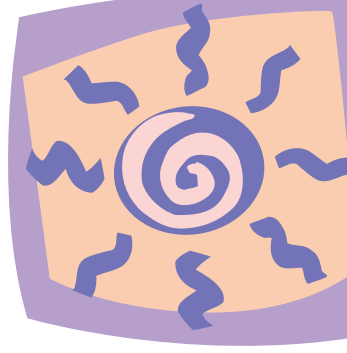
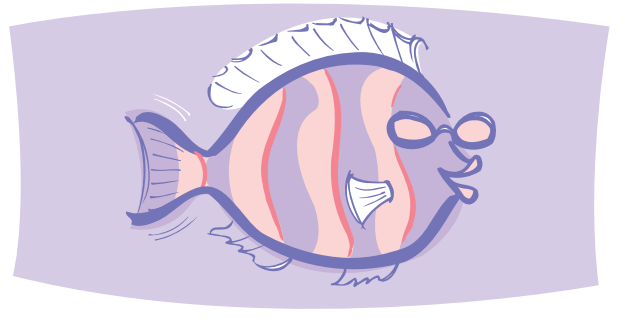
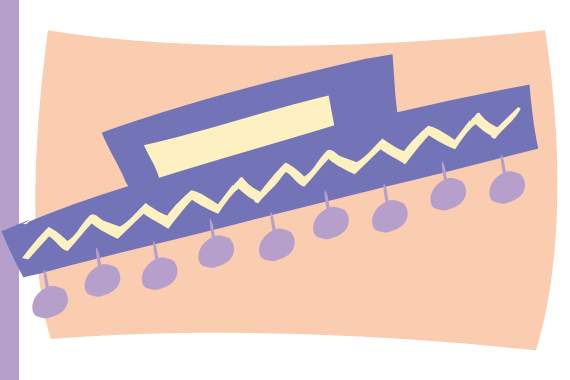
classroom activities and/or school curricula.

The SunWise Tool Kit activities are standards-based, cross-curricular, and innovative in their design. They encourage students to explore, assess, and understand their natural environment and those factors that affect their health. They also encourage students to be physically active, while protecting themselves from UV radiation at the same time. Ultimately, students will develop skills that will help them think critically, work cooperatively, and solve problems creatively, thus enabling them to make sound decisions about their health and environment. Students and teachers alike will increase their awareness of simple steps they can take to protect themselves from overexposure to the sun.

The time commitment necessary to implement SunWise is minimal, while the potential payoff is enormous.

Please visit our website, [www.epa.gov/sunwise](http://www.epa.gov/sunwise), for additional resources, including web-based overview lessons.

# how to use the SunWise Tool Kit



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## How to Use the SunWise Tool Kit

*The SunWise Program is designed to help educators raise sun safety awareness by addressing the science of the sun, the risk of overexposure to its ultraviolet (UV) radiation, and what students and their families can do to protect themselves from overexposure. This Tool Kit has been designed for K–8 educators from all over the United States and its territories. It will be used by schools with diverse requirements, curricula, and student bodies. In addition, across our nation, seasons, climate, and geography can differ dramatically. With so many variables, SunWise recognizes the need for maximum flexibility and encourages educators to adapt the Tool Kit components to meet their specific needs.*

*The time commitment necessary to implement SunWise can be minimal, as the activities can be easily integrated into existing curricula or completed as supplemental activities. It is the educator's choice as to how much time is invested. Using this Tool Kit and educating children about sun safety now can make a difference in the future health of children.*

*We envision the SunWise Tool Kit as a dynamic and continuously evolving learning tool. Over the course of its life it will be updated with additional activities and other learning aids focused on sun safety and the environment. We encourage your feedback and ideas.*



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### Tool Kit Organization

The Tool Kit is divided into the following ten sections:

#### Introduction

#### How to Use the SunWise Tool Kit

#### K–2 Activities

#### 3–5 Activities

#### 6–8 Activities

#### UV Meter Activities

#### SunWisdom

#### Policy Information

#### Resources

#### SunWise Materials

The activities are found on cards that are color-coded by grade level: (K–2) yellow; (3–5) turquoise; (6–8) lime green. Each activity contains subject area icons. The activities are designed to engage your students while ensuring that a sun safety message is being transmitted in a manner suitable to their skills and abilities.

For grades K–2, we have provided activities for students who are beginning to read and write, learning introductory scientific concepts, and performing simple mathematics.

The activities are short, simple, and fun—important elements for students at this grade level who have relatively short attention spans.

For grades 3–5, we have provided activities for students who are able to read and write more fluently, are familiar with scientific concepts, and are performing more complicated mathematics. These activities range in length of time and complexity, stimulating student interest while conveying the appropriate sun safety messages.



For grades 6–8, we have provided activities for students who are able to read and write fluently, have worked with scientific processes, and are performing complicated mathematics. On average, these activities will be longer and more complex, but just as enjoyable as the others. These activities will encourage the use of higher order thinking skills.

The activity pages are double-sided. The *Student Page* is easily photocopied while the *Teacher Page* is intended to be kept as a reference and notes page. These pages are organized by grade level and subject matter. Keep in mind that activities might fall into more than one subject area. On each *Teacher Page*, you will find a section called *Learning Objectives*. In this section you will see how the educational messages about science, risk, and/or prevention are integrated into the activity and what we hope your students will learn. We know it is important for teachers to assess what their students have learned; therefore, we have included *Assessments* in all the activities. Assessments serve as a measurement of the students' understanding of each activity's learning objectives.

Some of the activities contain classroom *Discussion Points*. As an integral part of the learning process, these discussion points will help you focus your students on the lessons' messages, which will assist them in relating what they have learned in the classroom to their behavior outside the classroom.

*Supplemental Activities* are short and meaningful assignments that students can complete on their own. These activities are brief, yet worthwhile, because they ultimately teach a very important lesson—sun safety.

*Matrices of the Academic Standards* are provided on the back of each grade level divider to help you find which educational criteria an activity meets. In developing these activities, an education expert verified that each activity meets the proper national standards for science, mathematics, health, physical education, social studies, and English language arts.

The *SunWisdom* section contains fact sheets and other materials that will give you the background information necessary to easily and thoroughly implement the SunWise Program.

The *Policy Information* section provides guidance for making changes outside the classroom. These changes will greatly help to reduce risks, reinforce SunWise learning, and increase sun safety.

*Resources* are an indispensable part of any classroom and are provided to help you enrich the SunWise activities.

In keeping with the intent of making these lessons hands-on and fun, the *SunWise Materials* section includes the UV-sensitive Frisbee<sup>®</sup>, which will help reinforce the lessons you have taught. The Tool Kit also contains a poster for mid-level students, and a story book and activity book for elementary students. These materials are available in both English and Spanish. Finally, to reward your students for their participation in the SunWise Program, we have also created the easily photocopied *Certificate of SunWisdom*.

At the end of this section you will find cards that list the educational standards used in the development of this Tool Kit.

## Educational Standards



### Health

[www.cdc.gov/healthyyouth/sher/standards/](http://www.cdc.gov/healthyyouth/sher/standards/)  
The health activities were reviewed according to the National Health Education Standards.

#### Standard 1

Students will comprehend concepts related to health promotion and disease prevention to enhance health.

#### Standard 2

Students will analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.

#### Standard 3

Students will demonstrate the ability to access valid information and products and services to enhance health.

#### Standard 4

Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.

#### Standard 5

Students will demonstrate the ability to use decision-making skills to enhance health.

### Standard 6

Students will demonstrate the ability to use goal-setting skills to enhance health.

### Standard 7

Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.

### Standard 8

Students will demonstrate the ability to advocate for personal, family, and community health.



### Physical Education

[www.shapeamerica.org/standards/pe/](http://www.shapeamerica.org/standards/pe/)  
The physical education activities were reviewed according to the National Physical Education Standards.

#### Standard 1

Demonstrates competency in a variety of motor skills and movement patterns.

#### Standard 2

Applies knowledge of concepts, principles, strategies and tactics related to movement and performance.

### Standard 3

Demonstrates the knowledge and skills to achieve and maintain a health-enhancing level of physical activity and fitness.

### Standard 4

Exhibits responsible personal and social behavior that respects self and others.

### Standard 5

Recognizes the value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction.



### English Language Arts

[www.corestandards.org/ELA-Literacy](http://www.corestandards.org/ELA-Literacy)

The English language arts activities were reviewed according to the Common Core English Language Arts Standards. The ELA Standards are divided into the following strands:

Reading: Literature (RL)

Reading: Informational Text (RI)

Reading: Foundational Skills (RF)

Writing (W)

Speaking and Listening (SL)

Language (L)

Each strand has a strand-specific set of College and Career Readiness Anchor Standards that are identical across all grades, and each grade also has grade-specific standards that correspond to the anchor standards.



### Mathematics

[www.corestandards.org/Math](http://www.corestandards.org/Math)

The math activities were reviewed according to the Common Core Math Standards.

Expressions and Equations

Geometry

Measurement and Data

Number Operations in Base Ten

Number Operations in Fractions

Number Sense

Operations and Algebraic Thinking

Ratios and Proportionality

Statistics and Probability



### Science

[www.nextgenscience.org/next-generation-science-standards](http://www.nextgenscience.org/next-generation-science-standards)

The science activities were reviewed according to the Next Generation Science Standards. The Standards are comprised of the following disciplinary core ideas:

Physical Sciences

Life Sciences

Earth and Space Sciences

Engineering, Technology, and Applications of Science



### **Social Studies**

[www.socialstudies.org/standards](http://www.socialstudies.org/standards)

The social studies activities were reviewed according to the National Council for the Social Studies (NCSS) standards. The themes that form the framework of the social studies standards are:

#### **Standard 1**

Culture

#### **Standard 2**

Time, Continuity, and Change

#### **Standard 3**

People, Places, and Environments

#### **Standard 4**

Individual Development and Identity

#### **Standard 5**

Individuals, Groups, and Institutions

#### **Standard 6**

Power, Authority, and Governance

#### **Standard 7**

Production, Distribution, and Consumption



### **Art**

#### **Standard 8**

Science, Technology, and Society

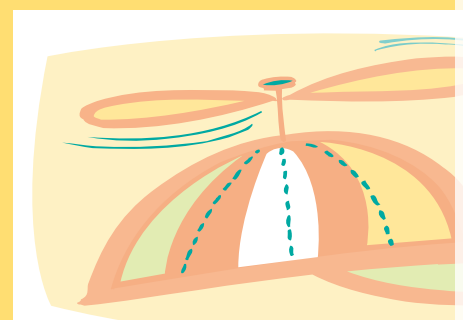
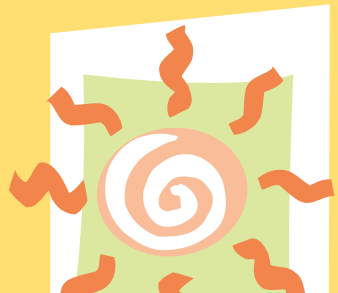
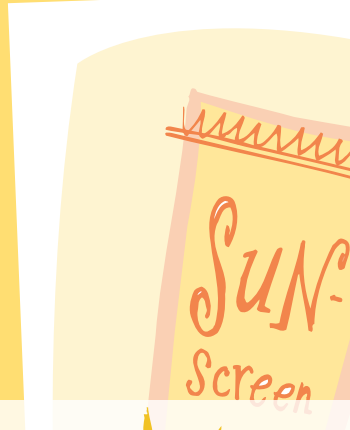
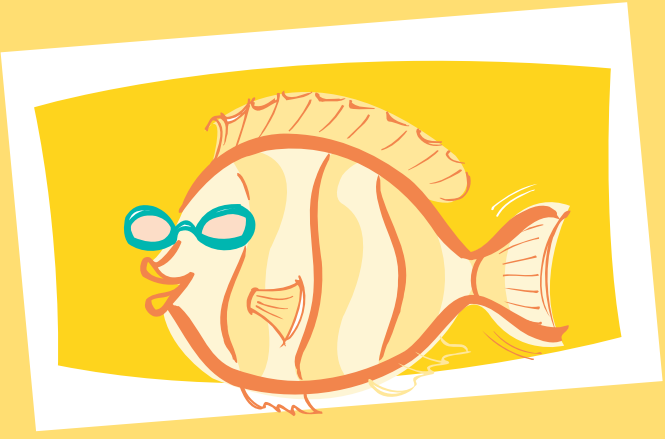
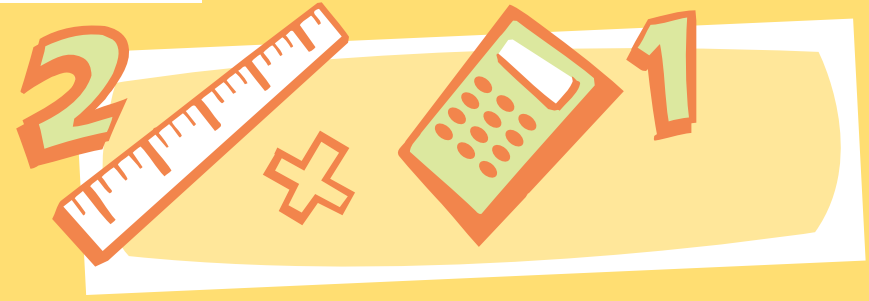
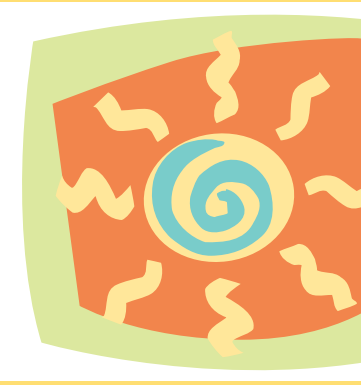
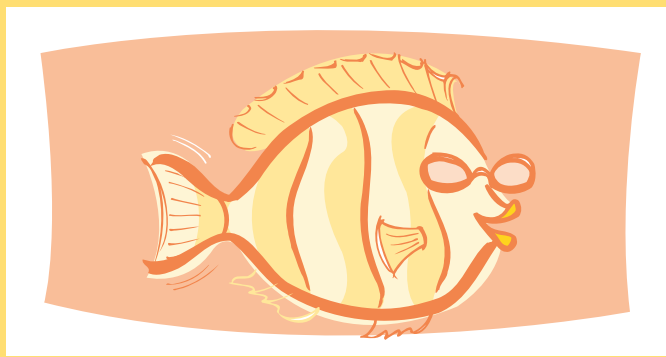
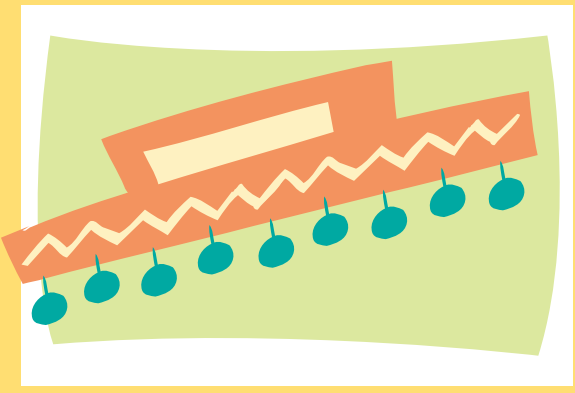
#### **Standard 9**

Global Connections

#### **Standard 10**

Civic Ideals and Practices

# grades K-2



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# K-2 EDUCATIONAL STANDARDS



## EDUCATIONAL STANDARDS

		<b>SUNWISE ACTIVITY TITLE</b>		<b>SUBJECT</b>	
<b>English Language Arts</b>	Ask and Answer Questions about Key Details in a Text (RI.K.1; RI.1.1; RI.2.1)	X	A SunWise Legend	English/LA, Social Studies	
	Actively Engage in Group Reading Activities (RL.K.10; SL.1.1b; SL.2.1b)	X	Hot Potato with the Sun	Health, P.E.	
	Use a Combination of Drawing, Dictating and Writing to Write Narratives (W.K.3; W.1.3; W.2.3)	X	A SunWise Beach Party	Math	
	Participate in Collaborative Conversations (SL.K.1; SL.1.1; SL.2.1)	X	Buy SunWise	Math, English/LA	
	Confirm Understanding of Text Read Aloud by Asking Questions (SL.K.3; SL.1.3; SL.2.3)	X	Speedy Sun Relay Race	P.E., Health	
	Participate in Shared Research Projects (W.K.7; W.1.7; W.2.7)		Sunny Says	P.E., Health	
	Describe with Relevant Details, Expressing Ideas and Feelings (SL.K.4; SL.1.4; SL.2.4)		Watch Your Shadow	Science, English/LA	
	Determine the Meaning of Words (RI.K.4; RI.1.4; RI.2.4)		The Sun Shines Around the World	Science, English/LA, Social Studies	
			Keep an Eye on Sun Safety	Science, English/LA	
			<b>Supplemental</b>		
<b>Health</b>	Health Concepts		Wacky Paper Sunglasses	Art, Science	
	Decision-making Skills		SunWise Word Search	English/LA	
	Goal-setting Skills				
	Health Enhancing - Behaviors and Risks				

**K-2 EDUCATIONAL STANDARDS**



**EDUCATIONAL STANDARDS**

		<b>SUNWISE ACTIVITY TITLE</b>		<b>SUBJECT</b>	
Mathematics	Measurement and Data		X	English/LA, Social Studies	Health, P.E.
	Operations and Algebraic Thinking		X	Math	Math, English/LA
	Number Operations in Base Ten		X X	P.E., Health	P.E., Health
Physical Education	Demonstrates Competency in a Variety of Motor Skills and Movement Patterns	X	X X	Science, English/LA	Science, English/LA, Social Studies
	Applies Knowledge of Concepts Related to Movement and Performance	X	X X	Science, English/LA	Science, English/LA
	Exhibits Responsible Personal and Social Behavior That Respects Self and Others	X	X X	Supplemental	Art, Science
Science	Patterns in Behavior That Help Animals Survive (1-LS1-2)			Wacky Paper Sunglasses	English/LA
	All Organisms Have External Parts That Protect Them (1-LS1-1)			SunWise Word Search	
	All Animals Have Body Parts That Provide Information About Their Surroundings (1-LS1-1D)				
Social Studies	Patterns of Sunrise and Sunset Can Be Observed, Described, and Predicted (1-ESS1-1)		X		
	Culture	X			
	People, Places, and Environment				

\*Please note that the standards listed in the above table have been paraphrased. For more information on the standards used, please refer to the Educational Standards section of the Tool Kit (page 3).

# A SunWise Legend

## Wise Heart Saves the Day<sup>1</sup>

Once upon a time, a very long time ago, there lived a young Indian boy who was both smart and kind and who longed to make the world a better place for his people. His name was Wise Heart, and he belonged to the Cahto Indian Tribe that lived in what is now northern California. The world in which Wise Heart lived was cold and barren, with few plants or trees. During the day, his world was gloomy and grim, lit by only a faint, dim light that seemed to come from very far away. At night, his world was always cloaked in deep darkness, a darkness that was broken only by the campfire and the torches that the elders alone were allowed to carry.

Wise Heart knew that the world had not always been such a dark and gloomy place. Sometimes as his tribe huddled around the campfire at night, the elders told stories—ancient stories—of a time when a bright light they called the Sun had warmed the world during the day, while its distant relatives, the Moon and Stars, had filled the night. Wise Heart had also seen the ancient tribal cave paintings that showed a world filled with the bright light of the Sun and with towering trees and plants. Whenever Wise Heart or the other children asked the elders how the world had lost its Sun, Moon, and Stars, the elders would become quiet and warn the children not to ask such questions.

One night, while Wise Heart slept, he dreamed of the beautiful, Sun-filled world that he had seen in the cave paintings. There were blue skies, trees laden with delicious fruit, and smaller plants with fragrant flowers. Then, in his dream, he heard the sound of a fiercely shrieking wind, and the Sun suddenly seemed to be torn from the sky, leaving only a dim glow in its wake. Wise Heart woke from his dream troubled and unable to fall back asleep.

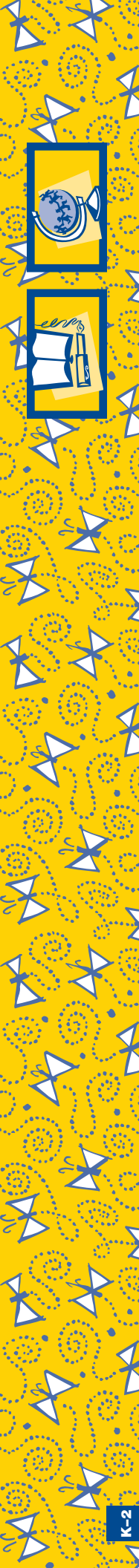
When the dim light of day returned, Wise Heart cautiously approached the oldest and most respected of the elders, a stooped old man named Running Water. The boy recounted his dream and asked the old man if he knew what had happened to the Sun so many years before. At first Running Water scolded the boy and warned him not to wonder about such things. Finally, however, seeing the boy's determination to know the truth, Running Water relented. He told the boy that many years before, an Evil Spirit had become jealous of the brilliance and warmth of the Sun and had stolen it from the sky and hidden it in a deep canyon on the far side of the world. The Evil Spirit had also stolen the Moon and Stars and hidden them away as well so that the humans would not have enough light to be able to search for and free the Sun from its captor. From that day on, Running Water explained, the world had been dimly lit. Bound with thick ropes to a giant boulder, the Sun could make only a few of its rays reach above the edge of the deep canyon.

All that day Wise Heart thought about Running Water's words. He watched his people as they struggled to survive by eating the few fish in the stream and few small plants on the hillsides. By the time darkness fell, Wise Heart had made a decision. He would journey across the mountains, to the far side of the world. He would find the deep canyon where the Sun, Moon, and Stars were being held by the Evil Spirit, and somehow, he would free them. That, he decided, was how he would help make the world better for his people.

Early the next evening, Wise Heart secretly set out for the distant mountains, carrying only a skin of water, some dried fish, and a sharp knife. As he traveled, he asked the kind spirits of his people to help him, and they did. Guided by a fierce and powerful eagle and thousands of fireflies, Wise Heart found his way through the steep, dark mountain range. A sure-footed







mountain goat led him to the edge of the deep canyon in which the Evil Spirit was guarding the Sun, Moon, and Stars. Just at that moment, a traveling family of field mice offered to chew through the ropes that bound the Sun, Moon, and Stars while Wise Heart distracted the Evil Spirit. Accepting their offer of help, Wise Heart climbed cautiously over the rim of the canyon and slowly began to climb down the steep cliff toward the canyon floor below. Just as he reached the bottom, the silence was suddenly pierced by the same sound of shrieking wind that he had heard in his dream. The Evil Spirit, red-faced and shaking with rage, stepped between Wise Heart and the Sun, Moon, and Stars and demanded to know why the boy had intruded in his canyon. Before Wise Heart could answer, the Evil Spirit noticed the boy's water skin and demanded that he be given some water to quench his thirst and to cool his sun-scorched body. In reply, Wise Heart said, "Powerful spirit, I am happy to give you all my water, but first let me add some special herbs that will quench your thirst and cool your sun-scorched body better than plain water." The Evil Spirit agreed, and after Wise Heart had added the herbs, which were really sleeping herbs, he drank the water greedily. Soon after, the Evil Spirit fell asleep.

Immediately, as if on cue, the family of mice began gnawing through the thick ropes that held the Sun, Moon, and Stars captive. When they had almost completed their task, the Evil Spirit, feeling the heat of the Sun's rays as it slowly began to ascend into the sky, awoke from his slumber. With a piercing shriek, the Evil Spirit rushed to recapture the Sun. Just before he could do so Wise Heart cut through the remaining fragments of rope with his knife. With the ends of the rope held

tightly in his hands, Wise Heart and the mice sailed into the sky. A short time later, as the Sun passed over Wise Heart's village, they all jumped safely into the soft boughs of the tallest fir trees. From there, Wise Heart looked up to see the first and most beautiful sunrise that he would ever see.

Wise Heart returned to his tribe as a hero. The people hailed him as the Sun Guard and thanked him for returning light and warmth to the day and light to the night. Almost immediately, the trees and plants began to grow larger, and the people danced and celebrated in the warmth and brightness of the Sun. After several hours, however, the people began to complain. They said, "It's too hot! I'm thirsty!" Others complained of feeling tired and of their skin feeling red and sore. Wise Heart was amazed that his gift that had at first caused so much joy was now causing so much pain and discomfort. He thought for a moment and then quickly led his tribe to the river's edge. There he told his people to drink deeply and to coat their skin with mud from the riverbank. He told them, "The mud will soothe your skin and protect it from the powerful rays of the Sun," and they found that he was right. Now Wise Heart was truly a hero. His tribe could now enjoy the Sun and all the beauty it gave to the world, without being hurt by its powerful rays. Even today, Wise Heart is a hero, for though he did not know it, he had developed the first sunscreen with an SPF of 45!

The legend is available with illustrations at the Children's Melanoma Prevention Foundation website, [www.melanomaprevention.org](http://www.melanomaprevention.org).

<sup>1</sup> This story has been adapted from traditional tales by Jane Shanny and Mary Ellen Maguire-Eisen of the Children's Melanoma Prevention Foundation.



## 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 “Wise Heart Saves the Day,” a legend about the origin of the sun inspired by 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.



## Hot Potato with the Sun

### Estimated Time

Teacher's discretion

### Supplies

Ball (preferably yellow)

Music

### Directions

Have the students make a large circle and pretend the ball is the sun. Students pass the ball to each other as music plays. When the music stops, the student with the ball should say one way to protect themselves from the sun. For more sun safety tips, please see the *SunWisdom* section of the Tool Kit.

Students should do the SunWise Word Search supplemental activity located in the back of the K-2 section of the Tool Kit as a follow-up to this activity.

Hippos secrete their own  
oily pink sunscreen.



# A SunWise Beach Party

## Directions

You and some of your classmates are having a SunWise Beach Party. What will you bring? Look out because some of your classmates might not be 100 percent SunWise! Answer the questions.

## Questions

How many students bring

- 3 6 2 4



How many students bring

- 7 4 3 5



How many students bring

- 6 3 5 7



How many students bring

- 4 6 2 5



How many students bring all SunWise items?

- 7 1 5 4

7				
6				
5				
4				
3				
2				
1				



## A SunWise Beach Party

### Estimated Time

15 minutes

### Supplies

Crayons or pencils

### Learning Objective

The objective of this activity is to have students answer questions and interpret data about the variety of ways they can protect themselves from the sun's harmful UV rays. After completing this activity, students should understand that using sunscreen, hats, sunglasses, and umbrellas are examples of SunWise behavior. Assess whether the students understand they must protect themselves from the sun's harmful UV rays by asking them to draw a picture of their SunWise family on a visit to the beach or park.

### Directions

In preparation for this activity, discuss with your students the importance of being SunWise. Stress the prevention steps as listed in the *SunWisdom* section of the Tool Kit.

### Questions and Answers

How many students bring beach umbrellas?

3 6 2 4

How many students bring sunscreen?

7 4 3 5

How many students bring hats?

6 3 5 7

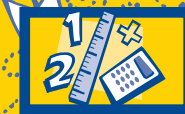
How many students bring sunglasses?

4 6 2 5

How many students bring all SunWise items?

7 1 5 4

Camels have bumps over their eyes that act as built-in sun hats to help keep out bright sunlight.



# Buy SunWise

## Directions

Your class is taking a trip to the store to buy sun-safe products. Working in your small group, select the items you want to purchase to be sun safe. Record your selections on the chart.

Figure out how much all of your items will cost together. You may use calculators.

What coins and bills would you use to purchase all of the items? Show the coins and bills your group selected by marking your chart or cutting and pasting the coins and bills on to paper.



dollar \$1.00



quarter  
\$.25








dime  
\$.10



nickel  
\$.05



penny  
\$.01

Product	Cost	Bills and Coins
	\$7.79	
	\$8.34	
	\$9.27	
	\$12.67	
	\$12.89	



## Buy SunWise

### Estimated Time

30–60 minutes

### Materials:

Chart of items and prices for possible purchase  
Charts of various coins and bills  
A page of dollars and coins for students to cut out  
and glue/paste (optional)  
Calculators (optional)

### Learning Objective

The objective of this activity is to help students:  
1) understand that there are many products that can be used to protect their skin from the sun's harmful UV rays; 2) understand that various coins have different values and can be used in multiple combinations to make the same amount; and 3) become familiar with the process of making purchases.

### Directions

Engage the class in a large group discussion to assess students' understanding of the importance of having and using sun-safe items to protect their skin from the sun's harmful UV rays. After determining that human skin can be harmed from the sun and that we should use products to protect ourselves, divide the students into small groups to complete the tasks. Select activities that are appropriate for your class.

- Assign students to small groups and instruct them to select the items they would purchase to be safe from the sun. Have each group record their selections on the provided chart.
- Once selections are made, ask the group to determine how much money they would need to purchase the items and what coins they would use to make the purchase. Have each group record what coins and bills they will use on the provided chart, or cut and paste their coins and bills on to paper.
- Have each group of students share their selection of products and the bills/coins they chose with the class.
- Help the students make conclusions about sun safety and the use of money. Instruct the students to draw themselves using the products they selected to protect themselves from the sun.

*The skin is the largest, most visible organ of the body and is the fastest growing part of the body. It makes up 16 percent of the body's weight.*



## Speedy Sun Relay Race

### Directions

One student in your group will be the “model.” The model’s job is to dress in sun-safe clothes as fast as possible with the help of the team. Across the field will be a pile of clothes. Each team member, besides the model, will take turns running to the pile, selecting one sun-safe item, and running it back to the model. The first team to have a completely SunWise model is the winner!



Polar bears have special eyelids that act like sunglasses and shield their eyes from the blinding glare from the sun's rays reflecting off of the snow.

Rhinos use mud as a natural sunblock. They roll over in the mud to make sure they have a thick coating on their skin to protect themselves from the sun.





## Speedy Sun Relay Race

### Estimated Time

30 minutes

### Supplies

One set of the following SunWise and non-SunWise clothes and items for each team:

Long-sleeved shirt (preferably with collar)

Long pants (optional)

Hats (wide-brimmed, cowboy)

Sunglasses

Empty bottles of sunscreen, some with SPF's of 30 and higher, some with lower SPF's.

Shoes (optional)

Various other articles of clothing that are not sun safe, like tank tops, t-shirts, shorts, baseball caps, visors, etc.

*Note: Make sure that the clothes are large enough for each student to put on and take off easily.*

### Learning Objective

This activity will challenge students to think quickly about sun-safe behavior by selecting correct sun-safe clothes when presented with several options. Assess whether the students learned how these clothes will help protect them from the sun's harmful UV rays by asking them the following questions:

- What are three items that the model is wearing that you would pick to protect yourself? Explain why you chose these three items.
- How many of you dress like the model when you play outside? Why do you think dressing like this is safer for you?
- What will you remember to put on before you leave your house to protect yourself from UV rays? Explain why you would take these actions.

### Directions

Organize the class into teams of five or more and line them up at the start of the racecourse. Place the pile of clothes at the other end of the racecourse.

Have each team select one student to be the SunWise model. This student will stay at the starting point of the race, donning sun-safe clothes. The other team members should each take turns running to the pile of clothes, selecting one item, and bringing it back to the model.

The first team to have a completely SunWise model is the winner. The SunWise models should be wearing a protective hat, long-sleeved shirt, and sunglasses, and be carrying a bottle of sunscreen with SPF of 30 or higher. Incorrectly dressed models must decide what they are missing, and the other team members must continue bringing back items until the model is sun safe.



## Sunny Says

### Estimated Time

20 minutes

### Learning Objective

This activity will teach children to distinguish between the helpful and harmful effects of the sun. Assess the students by asking them to tell you the effects of overexposure to the sun and not wearing sunscreen and proper clothing. They should also list some positive effects of the sun.

### Discussion Point

Discuss with the class the importance of protecting themselves from the sun. Too much sun can hurt the skin and eyes. On the other hand, the sun is beneficial because it helps our bodies make vitamins and helps things grow, such as fruits, vegetables, flowers, and trees (which provide protective shade).

### Physical Education Variation:

Have children line up side-by-side or in small groups/teams of two to three students. Children take three big jumps (giant steps, or other appropriate movement) forward after every correct response. Those who respond incorrectly remain still but advance the next time they respond correctly. The goal is to reach the other side of the field as either an individual or team. The first individual or team at the finish can share with others what they know to be correct “Sunny Says” actions and why it is important to know and practice this behavior.

### Directions

The format follows “Simon Says.”

For example:

*Sunny Says grow like a tree.*

*Sunny Says put your hat on.*

*Take your hat off.*

*Sunny Says protect your nose.*

*Sunny Says sprout like a flower.*

*Sunny Says put your shades on.*

*Take your shades off.*

*Sunny Says look at your watch.*

*Sunny Says find your shadow.*

*Sunny Says put sunscreen on your nose.*

*Sunny Says put sunscreen on your arms.*

*Sunny Says read the SPF number on the sunscreen container.*

Students responding to a non-“Sunny Says” command will be eliminated from play. Continue the game until there is a winner.



## Watch Your Shadow

### Directions

Using the sun as your light, you are going to trace your shadow. Choose a partner and stand in the sun on the sidewalk or blacktop. With a piece of chalk, your partner will trace your shadow starting from your feet. Write your name in your shadow.

Later in the day, trace your shadow again. Remember to position your feet in the same spot.

### Questions

- 1 Is your shadow always the same size?
- 2 Can the moon make shadows?
- 3 What is the shadow rule?





## Watch Your Shadow

### Estimated Time

At least two 15-minute intervals during one day

### Supplies

Chalk (use different color chalk for each time of day you trace your shadow)

School yard with dark cement or blacktop

Clear, sunny day

Watch or clock

### Learning Objective

The objective of this activity is to demonstrate to students what causes a shadow, how shadows change from morning to evening, and how they can tell by the length of their shadows what times of day they should seek protection from the sun's harmful UV rays. Ask the students to guess how their shadow will change during the day. Once the day is over, ask them to compare their prediction to the actual shape and size of their shadow. Have students explain why the movement of the Earth over the course of the day causes shadows to change.

### Directions

Take the students outside in the morning and again around noon. Have students choose a partner. Instruct the students to trace their partner's shadow using a piece of chalk on the cement surface of the schoolyard. They should begin tracing the shadow from the feet. Write the time students traced their shadows so later they can see how the different positions of their shadows correlate to the time of day.

Go outside later in the day and have each student stand on the feet of their first shadow tracing. Instruct them to have their partner retrace their new shadow on top of the original.

### Discussion

Discuss how shadows are formed. A shadow is a dark figure or image cast onto the ground by our bodies blocking the light of the sun. Both the sun and the moon can create shadows. We have noticeable shadows throughout the day; however, our shadows are much shorter closer to noon when the sun is overhead. Explain to the students that when their shadows are long (during the early and late parts of the day) the sun is not as intense. When their shadows are short (during the middle part of the day) the sun is more intense, and they are at a greater risk from the sun's damaging UV rays. Also mention that visible light causes shadows, not UV rays. UV rays are present even on cloudy days. Nevertheless, the shadow rule is a good indication of UV intensity. Teach the students the shadow rule, "Watch your shadow. Short shadow, seek shade!"

### Questions and Answers

- 1 Is your shadow always the same size? *No. Your shadow is long in the early morning and late afternoon, and short during the midday.*
- 2 Can the moon make shadows? *Yes. When there is a full moon, the light is bright enough to create a shadow, but no UV rays are emitted from the moon.*
- 3 What is the shadow rule? *"Short shadow, seek shade!"*



# The Sun Shines Around the World

## Estimated Time

20–45 minutes

## Supplies

Map of the world (for display)

Magazines and photos of foreign places and people

## Learning Objective

This activity teaches students about a variety of ways people all over the world protect themselves from the sun's harmful UV rays, as well as to understand that all organisms have external parts that are used in different ways to survive, and that all organisms have body parts that capture and convey different kinds of information. After completing this activity, students should be able to describe at least two different ways individuals from the country investigated practice sun safety.

## Directions

Assign students to work in small groups. Each group should choose a country to research. Perhaps you have been on an exciting trip and would like to share your photos or postcards with your students. If necessary, provide a list of countries that have different climates than the United States to help students with their selections. Discuss the chosen locale, its people, and customs, especially pertaining

to sun protection. Use the questions to stimulate discussion and to reinforce sun safety lessons.

If students are not able to do short research projects, provide them with pictures from four different countries, including pictures of people, houses, clothing, and landscapes from each country. Have students take one set of pictures and work in groups to discuss the questions.

## Vocabulary Words

*Custom*—A habit or an established way of doing something.

## Questions and Answers

- 1** What is the name of the country researched?  
*Students should be able to name the country.*
- 2** Where is the country? *Students should be able to point to the location of the region on the map.*
- 3** What types of houses do the people live in?  
*Answers should match according to the country researched.*
- 4** What kinds of clothes do the people wear?  
*Answers should match according to the country researched.*
- 5** What are three differences between your home state or town and the place researched? *Answers should match according to the student's home state or town and the country researched.*

- 6 Describe the climate of the country. *Students should compare the climate of the country to the United States.*
- 7 What are the average temperatures in the summer and winter? *Answers should match according to the country researched.*
- 8 Based on the climate of the country, would you predict that people who live there need to protect themselves from the sun? Describe how people who live in the country protect themselves from the weather, including the sun. *Students should be able to describe at least two different ways individuals from the country researched practice sun safety.*
- 9 Why is it important to protect your body from the weather, including the sun? Which of your body parts are most important to protect from the weather/sun? *Answers should reflect students' understanding and the country researched.*
- 10 If your eyes were damaged, how would your life be different? *Answers should reflect students' understanding.*

### Additional Resource

[www.nationalgeographic.com/maps/index.html](http://www.nationalgeographic.com/maps/index.html)

Offers a variety of interactive map tools and a brief summary of each country of the world, such as goods produced, literacy rates, or GDP.

Meerkats have black rings around their eyes that absorb the sun's rays and protect their eyes from sun damage.



## Keep an Eye on Sun Safety

### Estimated Time

15–20 minutes

### Supplies

Paper

Pens or Pencils

Who Am I? Animal Quiz, available on the SunWise website ([www.epa.gov/sunwise/doc/Animal\\_WhoAmI.pdf](http://www.epa.gov/sunwise/doc/Animal_WhoAmI.pdf))

### Learning Objective

The aim of this activity is for students to learn the importance of protecting their eyes from overexposure to the sun’s harmful UV rays. By understanding animal adaptations for sun protection and drawing a sun-safe habitat for zoo animals, students will draw connections to the ways they can protect themselves from overexposure to the sun. Assess if they have learned how to protect their eyes from UV radiation by asking what they should do when they play outside.

### Directions

Describe to the students the situation of Sammy the sea lion, who is living at the zoo without any shade in his habitat. Explain to the students that the sun can damage Sammy’s eyes if he doesn’t have any shade, especially since the sun can reflect off the water of his swimming pool. Have the students draw an improved habitat that will help keep Sammy’s eyes healthy.

Teach the students about animals that have specialized body parts or behaviors to protect them from the sun. Use the “Who Am I? Animal Quiz” as a guide. You may also refer to the “SunWise Animals” on the SunWise website. Have students learn about the animals and where they live, and then make associations about how all animals, including humans, need to protect themselves from the sun.

Ask the students to think of ways that they can keep their eyes safe in the sun. Explain that the most important ways are avoiding overexposure to the sun by wearing sunglasses (appropriate sunglasses block 99-100% of UV rays), wearing a wide-brimmed hat, seeking shade when UV rays are most intense (between 10 a.m. and 4 p.m.), paying attention to the UV Index when planning outdoor activities, and watching out for reflective surfaces, such as water, snow, and sand.

### Activity Enrichment

- Connect this activity with the UV-sensitive Frisbee activity. Have the students bring their sunglasses to class and test their effectiveness using the Frisbee. Place the sunglasses on the inner surface of the Frisbee and then carry it outside. Once the Frisbee has changed color, carry it back indoors and remove the sunglasses. If there is a white area in the shape of the sunglasses, then the sunglasses are effective at blocking UV radiation.
- Connect this activity with a visit to your local zoo or aquarium. Plan a sun-safe animal tour using the “SunWise Animals” resource on the SunWise website.

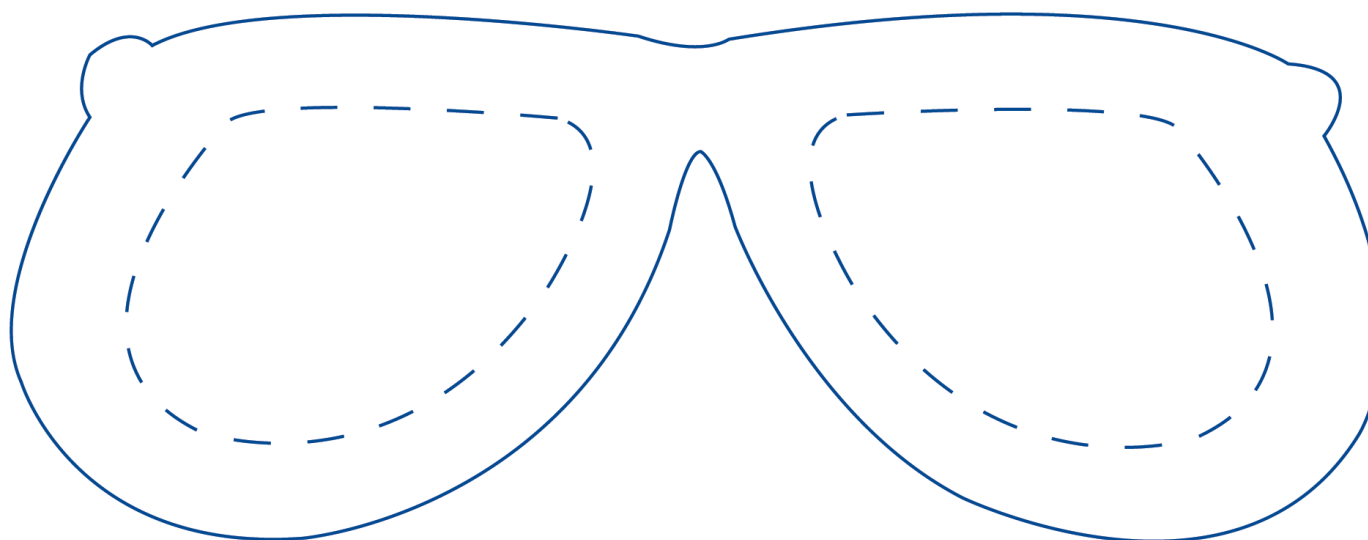
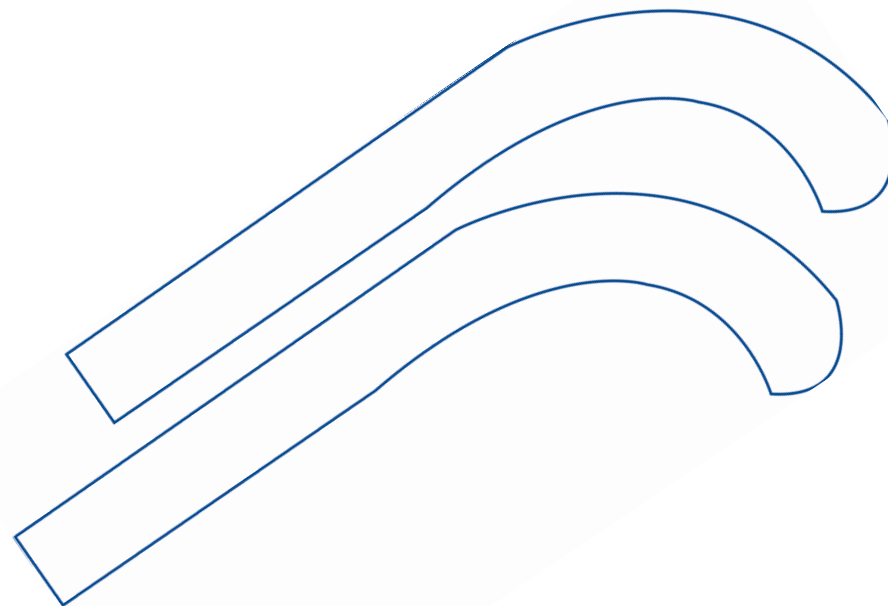


# Wacky Paper Sunglasses

## 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!







# 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

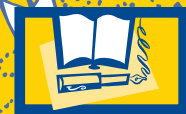
(take outside) and watch the Frisbee change color in a few seconds. Explain to the students that the sunglasses block the UV rays, thus keeping the area beneath the sunglasses from changing color. UV rays can cause cataracts and other eye damage.

Cataracts are a form of eye damage in which a loss of transparency in the lens of the eye clouds vision. Discuss with students what it would be like if their eyes were damaged or if they were blind. Ask them how their lives would be different. Next, discuss with students how their eyes help them. Ask them what they would have trouble doing or knowing if they couldn't see.

### 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.



# SunWise Word Search

## Supplemental

**Directions**  
Find and circle  
the SunWise words.

- HAT
- LIP BALM
- LONG SHORTS
- SHIRT
- PANTS
- SUNGLASSES
- SUNSCREEN
- TREE
- SHADE

L	A	B	C	D	P	E	F	S	G	H
I	I	J	K	L	A	M	N	U	O	S
P	Q	P	R	S	N	T	U	N	U	H
W	X	Y	B	Z	T	A	B	S	E	I
A	E	F	G	A	S	H	I	C	D	R
T	R	E	E	K	L	L	M	R	A	T
O	P	Q	R	S	T	M	U	E	H	W
H	A	T	X	Y	Z	A	B	E	S	D
E	F	G	H	I	J	K	L	N	M	N
L	O	N	G	S	H	O	R	T	S	O
S	U	N	G	L	A	S	S	E	S	P



# SunWise Word Search

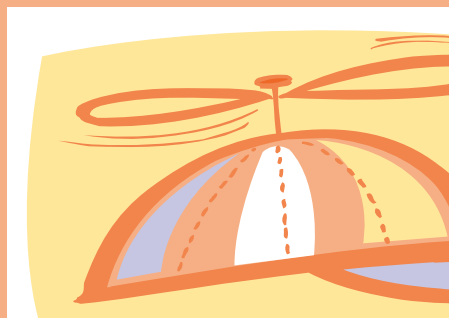
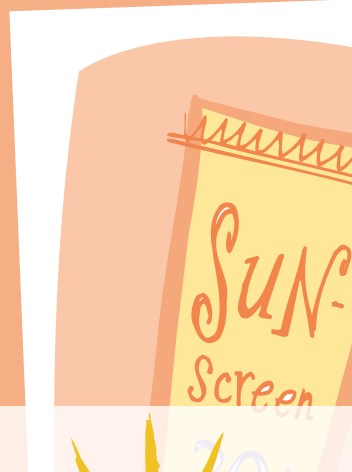
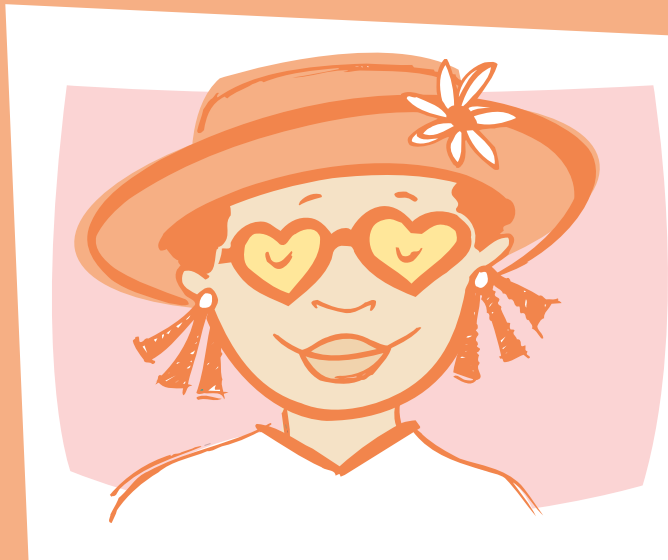
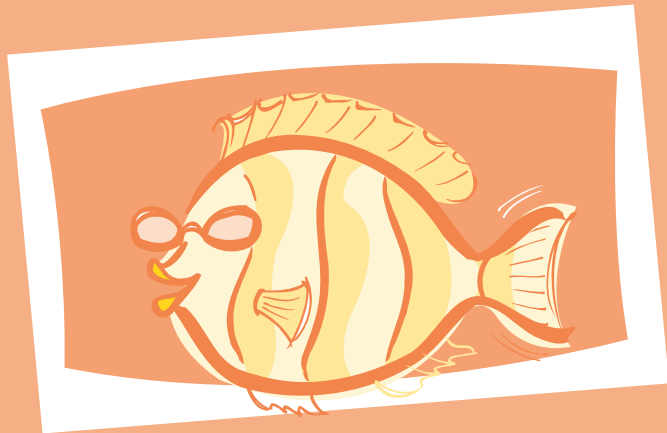
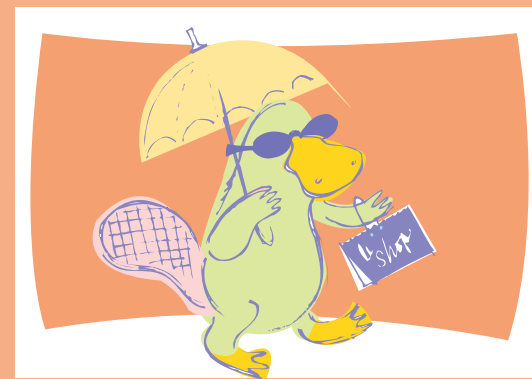
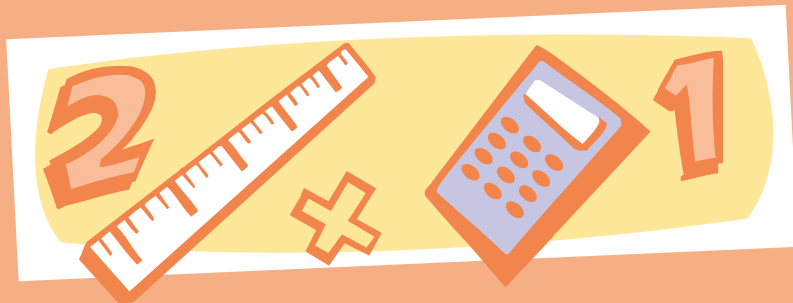
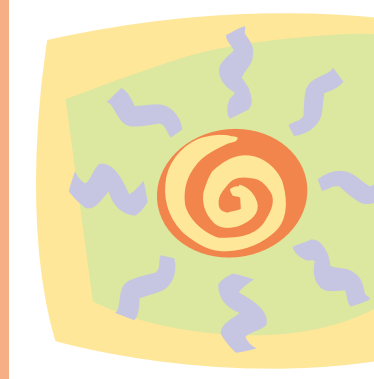
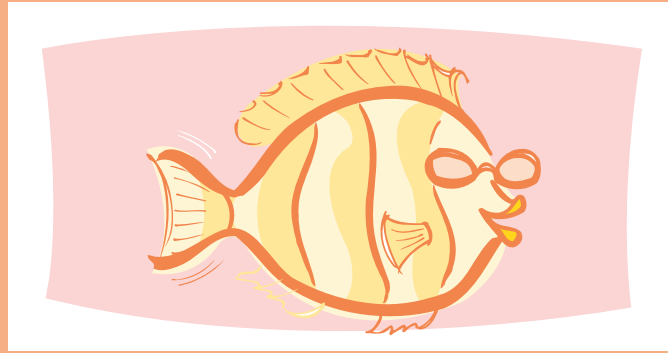
## Supplemental

### Word Search Words

- HAT
- LIP BALM
- LONG SHORTS
- SHIRT
- PANTS
- SUNGLASSES
- SUNSCREEN
- TREE
- SHADE

L	A	B	C	D	P	E	F	S	G	H
I	I	J	K	L	A	M	N	U	O	S
P	Q	P	R	S	N	T	U	N	U	H
W	X	Y	B	Z	T	A	B	S	E	I
A	E	F	G	A	S	H	I	C	D	R
T	R	E	E	K	L	L	M	R	A	T
O	P	Q	R	S	T	M	U	E	H	W
H	A	T	X	Y	Z	A	B	E	S	D
E	F	G	H	I	J	K	L	N	M	N
L	O	N	G	S	H	O	R	T	S	O
S	U	N	G	L	A	S	S	E	S	P

# uv meter



**SunWise**<sup>®</sup>  
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A Partnership Program of the U.S. Environmental Protection Agency  
[www.epa.gov/sunwise](http://www.epa.gov/sunwise)

Daily reporting of ultraviolet (UV) intensity data by school children will enable students to understand the scientific concepts related to ozone layer depletion and UV radiation. It will help them modify their outdoor behaviors to limit exposure and future incidences of adverse health effects.

This section includes instructions for operating your hand-held UV meter as well as three activities beyond entering your data on the SunWise Internet Site. These activities are aligned with the national educational standards as identified on the educational standards matrix cards for grades 3–5 and 6–8. Good luck with your UV monitoring efforts!

### **UV Meter Activities**

- 1** What Works? Effectively Blocking UV Rays
- 2** Chart and Graph UV Intensity
- 3** Reflecting UV Radiation

## Hand-held UV Meter: Device Operating Instructions

*The activities in this section require the use of an ultraviolet (UV) meter. If you choose to purchase a hand-held UV meter, several vendors can be found on the Internet. We urge you to check the open market for price, quality, and delivery terms before purchasing any items. EPA cannot endorse the products and services of these vendors.*

*Some hand-held UV meters measure the intensity of the sun's UV rays based upon the UV Index (UVI) scale of 0 to 11+ (low to extreme).*

### UV Index Values

UV Index values depict intensity levels on a 0 to 11+ scale in the following way:

Index Number	Intensity Level
≤ 2	Low
3 to 5	Moderate
6 to 7	High
8 to 10	Very High
11+	Extreme

While you should always take precautions against overexposure, you should take special care to adopt safeguards such as SPF 30+ sunscreen, hats, sunglasses, protective clothing, etc., as the UV Index value gets higher.

Registered SunWise schools and partners can enter daily UV forecast and intensity data by logging on to the SunWise website at [www.epa.gov/sunwise/enterdata.html](http://www.epa.gov/sunwise/enterdata.html). Detailed instructions for entering the data can be found on the site.

### Precautions

- Use your meter to monitor only the sun's natural radiation. It should never be used to measure UV from artificial sources such as tanning beds.
- Staying in the shade does not provide complete protection from UV radiation due to the scattering effect of UV radiation.
- High temperature and humidity may lead to incorrect results. Do not leave the device in conditions of high humidity or temperature for long periods.
- The meter may fail to operate correctly if the sensor window is not kept clean. Remove dirt with a piece of soft cloth moistened in alcohol (ethanol, isopropanol). Use cleaning fluids sparingly.
- Upon leaving the factory, the meter is carefully calibrated. Improper handling (water immersion, strong shocks) may alter the meter's parameters. Handle with care.

Your UV meter should not replace your common sense or current method of avoiding skin and eye damage from the sun.

### About the UV Index

The UV Index, developed by the National Weather Service and EPA, provides a forecast of the expected risk of overexposure to the sun and indicates the degree of caution you should take when working, playing, or exercising outdoors. The UV Index predicts UV intensity on a 0 to 11+ scale, where  $\leq 2$  indicates a low risk of overexposure, and 11+ means an extreme risk. Calculated on a next-day basis for every ZIP Code across the United States, the UV Index takes into account clouds and other local conditions that affect the amount of UV radiation reaching the ground in different parts of the country.

For more detailed information on UV radiation and the UV Index, read the fact sheets that can be found in the *SunWisdom* section of this Tool Kit or log onto the SunWise website, [www.epa.gov/sunwise](http://www.epa.gov/sunwise).



uv meter



## What Works? Effectively Blocking UV Rays

### Directions

Take the UV meter outside. Check and record the unfiltered UV level. Next, cover the meter with a plastic bag, and apply sunscreen on the outside of the bag over the sensor area. Check and record the UV level and sunscreen SPF number. Try this for a variety of sunscreens with different SPF numbers. Use a clean bag for each sunscreen application.

Next, try the same experiment with sunglasses. Cover the UV meter sensor area with different pairs of sunglasses. Record your results. Lastly, try it with different types and colors of cloth.

### Vocabulary Words

*Sensor*—The area on the UV meter that senses the UV level.

*SPF*—Sun Protection Factor; a number indicating how protective a sunscreen is against UVB rays.

### Questions

- 1 What SPF number seems to be the most protective against the sun's harmful UV rays? How much of a difference did it make?
- 2 Which pair of sunglasses filtered out the most UV rays? Were they UV sunglasses?
- 3 What kind of cloth filtered out the most UV rays? Was there any difference in similar types of cloth but with different colors?
- 4 From what you have learned from this experiment, what precautions should you take when going outside in order to protect yourself from the sun's harmful UV rays?





## What Works? Effectively Blocking UV Rays

### Estimated Time

40–50 minutes

### Supplies

UV meter

Plastic bags

Pairs of UV and non-UV sunglasses

Variety of sunscreens with different SPF numbers

Variety of fabric pieces

### Learning Objective

This activity will show students that different sunscreens, coverings, and sunglasses can have a real effect on UV levels. This will emphasize to students the need to wear sunscreen, while at the same time helping them distinguish the effectiveness of different types. Assess student comprehension by asking them to predict what levels of protection different materials would offer, other than the ones you've tried in the experiment.

### Directions

Take the UV meter outside. Have one student check and record the unfiltered UV level. Next, have the class take turns covering the UV meter with plastic bags and applying different sunscreens on the outside of the plastic bag over the sensor area. Make sure the students apply an even amount, no thicker than you would apply on your body. Have the students check and record the UV reading

and sunscreen SPF number with each sunscreen. Try this for a variety of sunscreens with different SPF numbers. Use a clean bag for each sunscreen application.

Next, try the same experiment with sunglasses.

Have the class cover the UV meter sensor area with different pairs of sunglasses, and record the results.

Finally, try covering the sensor with different types and colors of cloth and record the results.

### Questions and Answers

- 1 What SPF number seems to be the most protective against the sun's harmful UV rays? How much of a difference did it make? *Since SPF 15 filters out 93 percent of UVB radiation, and SPF 30 filters out 97 percent, there should be little noticeable difference with SPF numbers higher than 15; there should be a difference between 4 and 15.*
- 2 Which pair of sunglasses filtered out the most UV rays? Were they UV sunglasses? *Answers may vary. Yes, if the UV reading was low.*
- 3 What kind of cloth filtered out the most UV rays? Was there any difference in similar types of cloth but with different colors? *Your answers will vary. Generally, tighter weave provides greater protection.*
- 4 Given what you have learned from this experiment, what precautions should you take when going outside in order to protect yourself from the sun's harmful UV rays? *Answers will vary, but students might say wearing sunscreen of SPF 30 or higher, UV blocking sunglasses, and tightly-woven clothing.*



uv meter



## Chart and Graph UV Intensity

### Directions

Working with a partner or group, take turns going outside to record the UV intensity with the UV meter and the weather conditions (sunny, cloudy, rainy, etc.) at approximately the same time each day.

Record your findings in a logbook or chart.

After all the data is recorded, graph and analyze your data.

### Questions

- 1 What difference does the weather make in the UV intensity each day?

- 2 On which days are the sun's UV rays the most dangerous? The least? Why?





## Chart and Graph UV Intensity

### Estimated Time

This activity should take a few minutes each day for recording data. The graphing and discussion should take 40-50 minutes once the data is collected. The entire activity could last one to two weeks, depending on how the class is divided.

### Supplies

- UV Meter
- Logbook or chart for data

### Learning Objective

This activity will emphasize that harmful UV rays are present in any type of weather, not just when sunny. Students should always be SunWise, even on a cloudy day. Assess student comprehension of this message by asking the class to make a list of the clothing they wore each day of the experiment. Ask them how they would change that behavior now, knowing that there were UV rays present even on the cloudy days.

### Directions

Divide the students into pairs or groups. Each pair will take turns going outside to record the UV intensity with the UV meter and the weather conditions (sunny, cloudy, rainy, etc.) at approximately the same time each day. Students may also use the SunWise website, [www.epa.gov/sunwise/windex.html](http://www.epa.gov/sunwise/windex.html), to retrieve current UV readings and past UV data.

Students should record their findings in the logbook or chart that you provide.

After all the data is recorded, instruct the students to graph and analyze the data.

### Questions and Answers

- 1 What difference does the weather make in the UV intensity of each day? *The sun's UV rays are less affected by the weather than many students would think.*
- 2 On which days are the sun's UV rays the most dangerous? The least? Why? *UV rays on cloudy days, as well as sunny days, can cause damage to unprotected skin and eyes. UVB rays fluctuate with time of day and season. UVA rays are consistent throughout the day and year and can pass through clouds.*



uv meter



## Reflecting UV Radiation

### Directions

In this activity, you will work with your teacher to determine the changes in UV intensity by comparing UV readings between direct sunlight and a variety of reflective surfaces.

Using the chart below, record the correct values taken from the UV meter as the meter is placed in a variety of scenarios.

### Questions

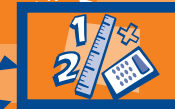
- 1 In which scenario was the UV intensity the greatest? What was the UV reading?
  
- 2 In which scenario was the UV intensity the least? What was the UV reading?
  
- 3 Which surface was most UV-reflective? Which was least UV-reflective? Why?

- 4 What are some similarities between your behavior in the sun and the scenarios in which you placed the UV meter? What are some differences?
  
- 5 List some additional scenarios you participate in—sitting inside a sun-filled room or car, for example. What do you think the UV intensity would be if the meter were placed in the same scenario?

Scenarios	UV Meter Reading
In direct sunlight	
In shade	
Reflecting off sand	
Reflecting off water	
Reflecting off aluminum foil	



uv meter



## Reflecting UV Radiation

### Estimated Time

30 minutes

### Supplies

UV meter

Plastic bag (to protect the UV meter)

A large bowl, bucket, or dishpan

1 lb. of sand

1 gallon of water

Aluminum foil (enough to line the bowl)

### Learning Objective

The goal of this activity is to demonstrate changes in UV intensity by comparing UV readings from direct sunlight and a variety of reflective surfaces. Assess the prior knowledge of the students by asking them to predict readings caused by the different surfaces and why they selected those values. After the activity, discuss their results. Compare their predictions with their actual results.

### Directions

Take students outside on a sunny day. Choose a location that offers students proper shade coverage, but allows you to place the experiment materials in direct sunlight. Take a UV reading using the UV meter. Have students record the UV reading in the appropriate space on the chart provided, or one that they have constructed to collect data. Use the UV meter in the scenarios listed, and instruct the students to record the readings in the appropriate spaces on their chart. Remember, the UV meter is not waterproof. Don't forget to protect it with the plastic bag.

### UV Meter Scenarios

Take a reading with the UV meter facing down toward the sand.

Take a reading with the UV meter facing up on the sand simulating sunbathing.

Take a reading with the UV meter pointing toward the bowl of water placed in the sun.

Take a reading with the UV meter pointing toward the aluminum foil placed in the sun.

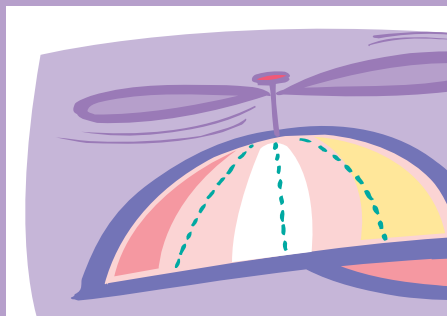
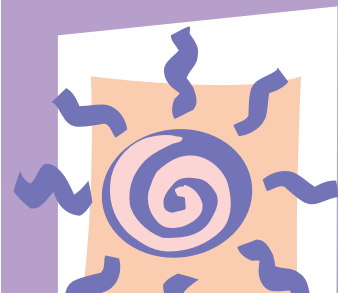
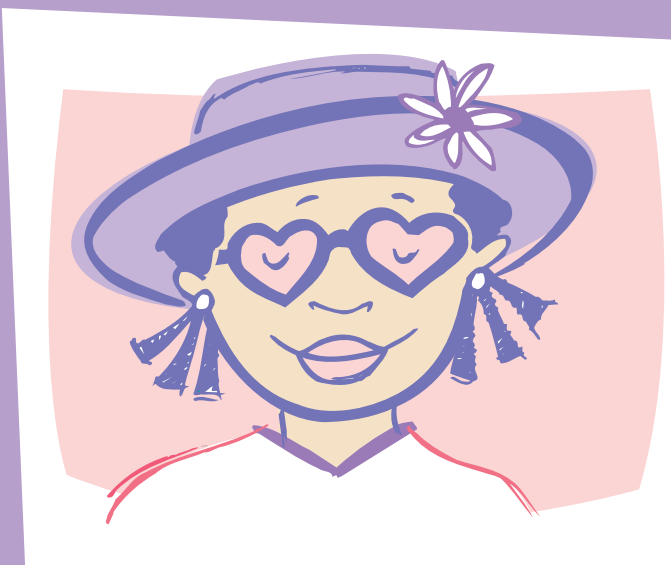
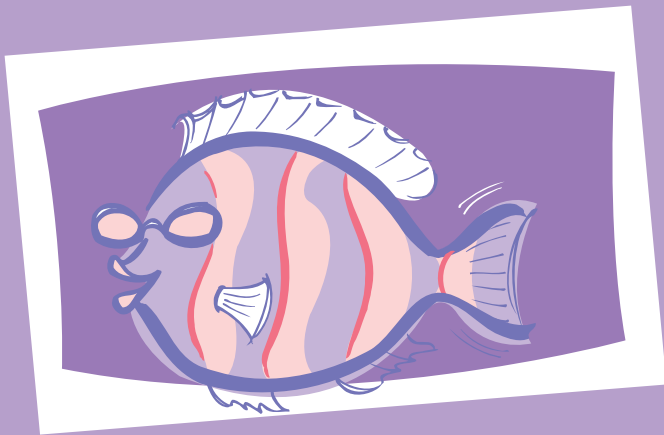
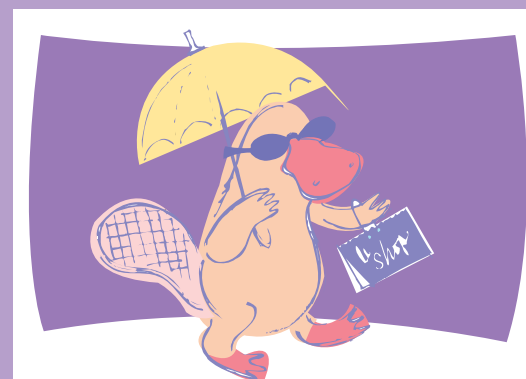
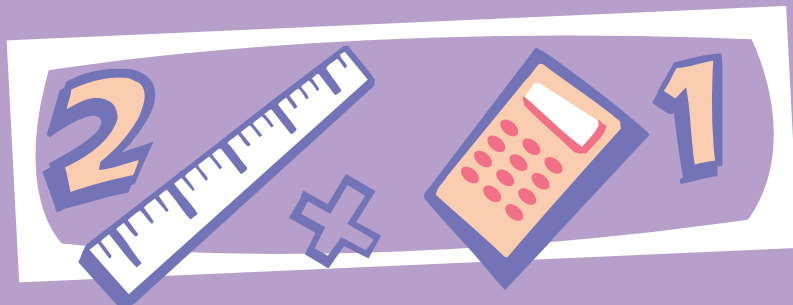
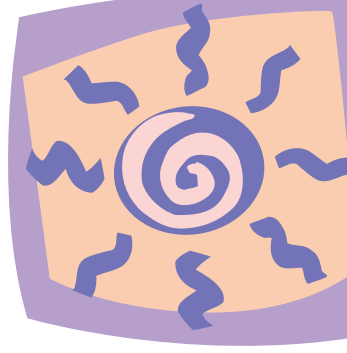
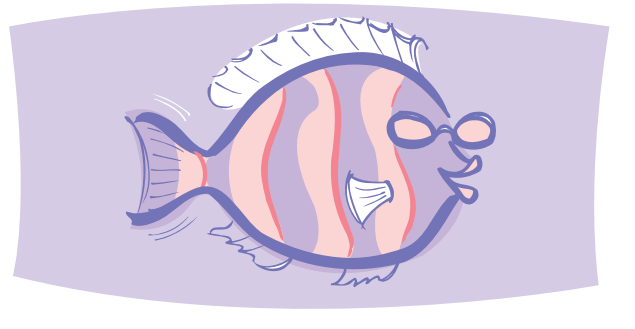
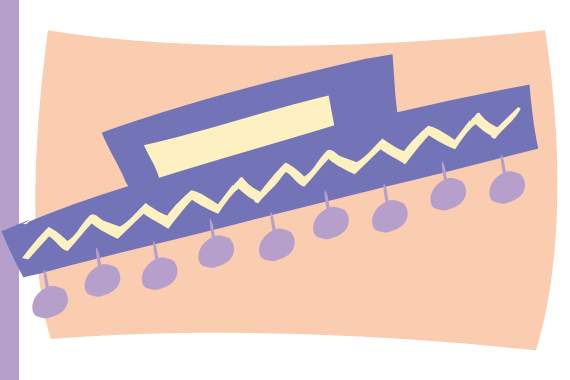
After your students have completed this experiment, return to your classroom to discuss the findings.



### Questions and Answers

- 1** In which scenario was the UV intensity the greatest? What was the UV reading? *Answers will vary.*
- 2** In which scenario was the UV intensity the least? What was the UV reading? *Answers will vary.*
- 3** Which surface was most reflective? Which was least reflective? Why? *Answers will vary.*
- 4** What are some similarities between your behavior in the sun and the scenarios you placed the UV meter in? What are some differences? *The scenarios were designed to mimic our behavior in the sun. Differences would include the use of sunscreen, sunglasses, or protective clothing; the use of these items would add protection from the UV rays.*
- 5** List some additional scenarios you participate in; sitting inside a sun-filled room or car, for example. What do you think the UV intensity would be if the meter was placed in the same scenario? *Try it out. The answers will vary depending on whether the windows are treated to block UV rays. Car windshields generally protect against UVA and UVB, while the side windows are not as protective.*

# policy information



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## Becoming a SunWise School

The school day makes up a major part of a child's everyday life. The time children spend outside of the classroom, including recess, lunch, physical education classes, field trips, and after-school activities, can result in a significant amount of sun exposure, especially if it occurs during the hours of peak sun intensity from 10 a.m. to 4 p.m. Children need to be physically active, but must learn to protect themselves from overexposure to ultraviolet (UV) radiation. Given that sun damage is cumulative, schools need to recognize that everyday exposure counts. Overexposure to the sun can cause serious health problems such as skin cancer, cataracts, and immune system suppression. Schools can play a major role in preventing these adverse health effects by:

- Instilling SunWise behaviors in students and staff through education.
- Providing a school environment that is SunWise, including both physical and policy enhancements.

Becoming a SunWise School may require changes to the school's physical environment and policies and practices. Some changes may take longer than others to implement. Some changes may involve costs, but many can be implemented with little or no cost to the school. The key is to recognize sun safety as an important health issue, and to make changes that are feasible and realistic for your school. Skin cancer and the other harmful health effects from overexposure are largely preventable, and by making these changes, positive steps are taken toward a healthier future.

The federal government has classified UV radiation as a human carcinogen, along with other cancer-causing agents such as asbestos, radon, and tobacco smoke.



## Why Being SunWise is Important for Children

### School Age Focus

Skin cancer experts and researchers used to warn the public that children need to use sun protection to prevent skin cancer *later* in life. Now the experts and researchers are warning the public that children need to use sun protection to prevent skin cancer *at an early age* and *later* in life. Two recent studies find that melanoma and the two major types of nonmelanoma skin cancer—basal cell and squamous cell carcinoma—are rising dramatically in young Americans. First, the incidence of pediatric melanoma in US cancer registries increased 46 percent from 1973 to 2001 among children (age < 20 years) and young adults (age 20 to 24 years). Second, a population-based study using very complete and extensive data from Minnesota demonstrated an increase in the incidence of nonmelanoma skin cancer among young women and men, with a particularly strong increase in basal cell carcinoma in young women. The authors of both studies concluded by calling for a strong focus and emphasis on skin cancer prevention in young populations, including young adults.

### Melanoma: A Teen Survival Story

As mentioned, it is important for people of all ages, young and old, to be sun safe. Kim Clark, a high school soccer star from Arizona and a volunteer for The SHADE Foundation, knows how important it is to be SunWise. Here is her story:

*How old were you when you were diagnosed with melanoma?*

Kim: I was 13. But I had my first mole removed when I was 9 years old. Then at 13, I was told it was Stage IV melanoma. Again, now at 14, I have had a couple more moles removed.

*What was it like when the doctor told you that it was melanoma?*

Kim: I was very shocked. I didn't know what melanoma meant. When you read on the Internet or in books, people don't get melanoma at the age of 13. It affected my family drastically, but we became stronger. I went through the church and talked with many of my friends and family. They all gave me a lot of support. We realized that it does happen to young kids and we need to really think about how we are protecting ourselves. I made a saying with my dad that we're going to score the goal and we're going to win the game to fight cancer.

*How difficult was it to go through treatment?*

Kim: I had to get 4 radiation shots for the surgery so they could find where the cancer was feeding from. The radiation shots hurt really bad. They took lymph nodes out of my underarm and a few sentinel nodes. They cut down to the muscle in my back and there is now a 5-inch scar. The results came back that they got it all, so I was lucky not to have to get chemo.

*You've been playing soccer for a long time, so you've spent a lot of time outside. Was sun protection anything you ever thought about before?*

Kim: I put sunscreen on, but I never really thought about if I was putting it on the right way or if I was putting on enough. I wasn't really aware of what could happen. I'd put it on because my parents told me to, but then I never reapplied it while spending hours in the sun. I never really burned and I have never used a sun-tanning booth.

*How have your sun protection behaviors changed?*

Kim: I've learned how to put on sunscreen the right way. An hour before I go out into the sun, I glaze it over my body and let it soak in. Then when I get to my destination, I put it on again and rub it in. I do it every hour while I'm outside. There are some special shirts that have sun protection in them that I wear under my soccer jersey and then I put sunscreen on. My parents also bought portable shade structures to use on the soccer fields so we can sit in the shade on the sidelines.

*How easy is it to follow sun protection practices now?*

Kim: I find it pretty easy. Easy enough that I should have done it before. Most of my friends have realized that, "Hey, we know someone who has gone through this." They have pulled together and wear sun protection. All of my friends do it.

*What is your opinion on the look of being tan?*

Kim: I think it looks ugly and it's kind of stupid to be doing that. I think that pale is pretty. All of my friends say that they're going to be pale with me. Some kids at school comment on how pale I am, but I just tell them that I know the consequences.

*Why is it important for you to become a spokesperson for sun protection?*

Kim: I want to help spread sun protection awareness to everybody. I want to let people know that it can happen to young people too.

# Becoming a SunWise School

## Step One

### Define Goals

Examples of some goals that you might set for your school are:

- Increase sun safety awareness in your school and surrounding communities.
- Adopt practical sun protection measures.
- Help students acquire SunWise behaviors through education about the dangers of overexposure to ultraviolet (UV) rays and measures they can take to protect themselves.
- Encourage students and staff to use broad-spectrum SPF 30+ sunscreen and wear protective clothing, appropriate hats, and sunglasses when outdoors.
- Provide a physical environment that is sun safe, i.e., with shade coverings or trees.
- Communicate with parents and community members about your school's SunWise practices.

## Step Two

### Evaluate Your School

The “*Evaluate Your School*” tool is located on page 5 of this policy section. This tool can be very helpful in assessing the current state of your school's sun protection practices and what you can do to make your school more SunWise. Please take a couple of minutes to take this “quiz” and add up the total number of points to obtain your score. Refer to the score key for helpful hints for what steps to take to implement SunWise practices in your school. Then advance to Step Three.

## Step Three

### Write an Official SunWise School Sun Safety Policy

Formalizing your school's Sun Safety Policy in writing will assist in putting your goals into action. It will also help you communicate your school's policy to staff, students, and the surrounding community.

Please note, the term “policy” throughout this document may be defined somewhat loosely. School policy can often imply official

regulations. Here, we are referring to practices and procedures that are developed and adhered to within each school to benefit the health and safety of its students.

The SunWise policy section contains many helpful ideas for practical and feasible practices that your school can adopt. We realize that some may be easier to implement than others. In addition, some may require permission and/or input from school principals, the superintendent, other staff, and community members. We offer a number of suggestions to facilitate the process of involving school leaders and getting them on board with these practices, including:

- Make an appointment with the school principal to discuss sun protection practices you would like to implement in your school.
- Be prepared with background information on the importance of sun protection in general, development of sun-safe health habits, and having a sun-safe school environment.

### Step Three continued

- Have support from parent-teacher organizations, other parent groups, and/or other staff members.
- Include an action plan with ideas of what practices you would like to implement, how they can be implemented, how funds can be made available, and what contacts you will likely need.

### Suggested Focus Areas for Your SunWise School Sun Safety Policy

By completing and reviewing the *Evaluate Your School* tool, you are now ready to develop a school sun safety policy. Please refer to the Checklist (page 7) of this policy section. Use this Checklist as a goal-setting tool and check off which practices you will work on implementing in your school. Options include:

#### Environment

- Increase the number of shelters and trees to provide adequate shade on the school grounds.
- Schedule outdoor activities before 10 a.m. and after 4 p.m., especially during the months when UV radiation is most intense.
- Hold outdoor activities in shady areas whenever possible.

### School Practices

- Incorporate the SunWise curriculum into the health or regular classroom curriculum. (See *Integrating Sun Protection into Lesson Plans*, page 16).
- Work with parents to provide SPF 30+, broad-spectrum, water-resistant sunscreen for student use.
- Make sunscreen available to students.
- Find out if any students have sun sensitivities or sunscreen allergies and allow for necessary precautions.
- Allow children to wear sunglasses that block 100 percent of UVA and UVB, and hats, which will help protect the face, neck, eyes, and ears, whenever the children are outside.
- Ensure that sun safety policies are reflected in the planning of all outdoor events, including field trips.
- Provide resources and education to staff on sun protection and the SunWise curriculum.
- Sign up to receive the daily UV Index and occasional UV Alerts (visit [www.epa.gov/sunwise/uvindex.html](http://www.epa.gov/sunwise/uvindex.html) and click on Enviro Flash), and let children and staff know what the UV intensity

is expected to be. For more information on the UV Index, please see the *SunWisdom* section.

### Behavior

- Encourage staff and parents to act as role models for students by practicing sun-safe behaviors.
- Encourage the daily application of sunscreen before school and prior to outdoor activity.
- Encourage students to use available shaded areas for outdoor activities.

Look to your community to help enhance your program ideas. Local medical professionals, business people, media, and others can provide skills, information, and materials to support your SunWise School Sun Safety Policy. Also, remember to include parents in your efforts. They can help raise awareness and support in the community for future funding of environmental changes, such as planting trees or building shade structures.

### Step Four

#### Communicate with Parents and Community Members

SunWise safety messages must be reinforced beyond the classroom in order to change policies and behaviors. Making sure that the SunWise

### Step Four continued

message is reinforced in both home and community environments is a vital component in the creation of sun-safe behaviors in students. This can be achieved through active communication with parents, guardians, area news services, and other community members.

- Communicate your rationale for the policy changes and the goals that you expect to achieve.
- Use language that is inclusive and understandable to your audience (parents, staff, students, and the community at large).
- Regularly reinforce sun safety behaviors in a positive way through newsletters, parent-teacher meetings, and student/teacher activities.
- Refer to templates located in this policy section for communication outlets, including permission slips, a parent handbook, and example blurbs and articles for newsletters and nurse's notes.

The following are some other suggestions for getting students, staff, parents, and your community involved with your school's sun safety policy:

- Distribute your school's SunWise policy, as well as relevant fact sheets from the *SunWisdom* section of this Tool Kit, to staff, parents, and the local community.
- Forge partnerships with other teachers and administrators, parent organizations, local nonprofit and civic organizations, recreational programs, businesses, and the media, in particular weathercasters. Use partnerships to build support for the program and sun safety policies.
- Involve the media to the fullest extent. Distribute press releases about SunWise activities that your school is sponsoring to local media outlets.
- Encourage students, staff, parents, and other community members to sign up for EnviroFlash UV Index emails.
- Present a sun safety information session at a staff, school council, and/or PTA meeting.
- Network with your local businesses and encourage them to provide incentives, such as hats, sunglasses, and sunscreen, to reinforce the habits and messages of sun protection.
- Get your local community involved and excited by organizing a SunWise block party, field day, or assembly. Invite all of your students, staff, parents, and community members. Keeping your SunWise School Sun Safety Policy fresh in the minds of your community will ensure enduring SunWise behaviors and better health for all.
- Team up with organizations listed in the Resources section of this Tool Kit to help promote sun safety awareness and practices.
- Participate in and sponsor commemorative programs where donations can lead to planting trees or constructing shade structures on your school grounds.

The following pages contain examples of correspondence you might use to inform parents about your SunWise School Sun Safety Policy and alert the media to your SunWise activities. In addition, you will find a sample SunWise School Sun Safety Policy. Use these examples as starting points for your own outreach activities.

## Evaluate Your School

Use this evaluation tool by answering the following questions to determine your school's current sun protection practices. Add up the total number of points from all of the questions below and refer to the key for suggestions on how to make your school more SunWise.

Assess the use of school grounds in relation to availability and use of shade:

How many trees or shade structures are on your school grounds?

- 2 Many      1 Few      0 None

Are shaded areas available to students during lunch, recess, physical education, and sports?

- 2 Yes      1 Somewhat      0 No

Approximately what proportion of outdoor space is sheltered by structures and/or trees?

- 2 66–100%      1 33–66%      0 0–33%

Can the amount of shade be realistically increased in areas of high student use?

- 2 Yes      1 Somewhat      0 No

Are there currently any future plans for adding new trees/structures or new construction or renovations that would provide more shade?

- 2 Yes  
1 Possibly, if can secure funding  
0 Not at this time

Assess current school policies for aspects that encourage or discourage SunWise practices:

Are the students allowed to apply sunscreen in school?

- 2 Yes  
1 Only on field trips/field days  
0 No

Are teachers and nurses allowed to apply/help apply sunscreen to students?

- 2 Yes  
1 Teachers monitor while students apply it themselves  
0 No, they are not allowed

Are students allowed to wear hats on school grounds?

- 2 Yes, but not in the building  
1 Only allowed on field days/field trips  
0 No

At what time of day are outdoor activities scheduled?

- 2 All activities are before 10 a.m. and after 4 p.m.  
1 Try to avoid 10 a.m. to 4 p.m.  
0 Most activities are between 10 a.m. and 4 p.m.

Are sun safety facts and reminders often communicated with parents through the use of newsletters, nurse's notes, education pamphlets, etc.?

- 2 Yes, written forms of communication often include sun safety information
- 1 A summer reminder is usually distributed
- 0 No

Are parents or guardians included in sun safety decisions made by the school?

- 2 Yes
- 1 Somewhat
- 0 No

Look at current student and staff behaviors through a SunWise lens:

How many students come to school wearing sunscreen?

- 2 Most
- 1 Some
- 0 None

What are the sun safety behaviors of school staff and administration? Do they act as role models in the reinforcement of school policies?

- 2 Most wear sunscreen and protective clothing, seek shade
- 1 Some try to practice a few sun safety behaviors
- 0 None

Do students and staff make use of available shade during outdoor activities?

- 2 Yes, shade is mostly utilized
- 1 Somewhat
- 0 No

### 0-9 Points

Your school still has some work to do to make it SunWise. The SunWise Program will greatly help in the efforts to integrate sun safety into your school's daily practices. The first step is realizing that this is an important issue that affects your students' and staff's health. The next step is to raise the awareness of your school community. By using this Tool Kit to integrate a sun safety curriculum into classroom lessons and to establish sun-safe practices, your school will become SunWise. Please review the Checklist (see page 7) for many important steps that can be taken in your school.

### 10-19 Points

Your school has already taken some important steps toward becoming SunWise. However, by using this Tool Kit, you can improve your school's efforts even further. It may be helpful to take a closer look at your school grounds to assess where it may be possible to increase the amount of shade. Consider adding other practices noted on the Checklist (see page 7). Other ideas are to increase the amount of communication already sent to parents regarding the importance of sun safety through outlets such as newsletters, and to develop protocols for sunscreen and protective clothing, hats, and sunglasses use.

### 20-28 Points

Your school is doing a really good job at being SunWise. By using this Tool Kit, you can help improve the efforts even further. Besides supplying a creative curriculum, it also suggests further opportunities that your school can take to expand current practices. In addition to suggestions from above, it might be beneficial to work on fundraisers to increase the amount of available shade on the school grounds, or to try to adjust outdoor activities to occur outside the 10 a.m. to 4 p.m. time period.

## *Developing a School Sun Safety Policy Checklist*

Please review the following menu of sun protection practices. Check off (✓) the selections that are most feasible to implement in your school (select all that apply).

### **Environment**

- Increase the number of shelters and trees on the school grounds.
- Adjust schedule of outdoor activities.
- Hold outdoor activities in shady areas whenever possible.

### **School Practices**

Incorporate the SunWise Program into the health or regular classroom curriculum (see *Integrating Sun Protection into Lesson Plans*, pages 16-18).

- Work with parents to provide sunscreen for student use.
- Make sunscreen available to students at school.
- Allow children to wear sunglasses and hats whenever they are outside.
- Ensure that sun safety policies are reflected in the planning of all outdoor events, including field trips (see *Sample Language template*, pages 11-12).
- Provide resources and education to staff on sun protection and the SunWise Program.

- Sign up for EnviroFlash UV emails and report the daily UV Index to the student body and staff.

### **Behavior**

- Encourage staff and parents to act as role models for students by practicing sun-safe behaviors.
- Encourage the daily application of sunscreen before school and prior to outdoor activity.
- Encourage students to use available shaded areas for outdoor activities.

### **Communication**

- Communicate your rationale for the policy changes and the goals that you expect to achieve with the school community.
- Regularly reinforce sun safety behaviors and facts through newsletters, a parent handbook, parent-teacher meetings, and student/teacher activities (see *Sample Language template*, pages 11-12).
- Work with parent-teacher organizations to coordinate fundraisers for sun protection initiatives and to organize educational opportunities in the community (see *Donation Letter template*, page 13).

## Sample Letter to Parents

### Dear Parent/Guardian/Caregiver:

At [School Name], we are committed to providing your child with a healthy environment. Overexposure to the sun can cause serious health problems such as skin cancer, premature aging of the skin, and other skin disorders; cataracts and other eye damage; and immune system suppression. We know children need to be physically active, but they must learn to protect themselves from overexposure to ultraviolet (UV) radiation. The amount of time children spend outside the classroom, including recess, lunch, physical education classes, field trips, and after-school activities, can result in a significant amount of sun exposure. Our school has developed sun safety practices to provide each student the support needed to be sun safe. Sun damage to the skin is cumulative. Because of these factors, we ask that you support us as we strive to make [School Name] a sun-safe school.

Please help us reinforce the sun safety messages that children will be learning in school by encouraging them to use and practice the following actions:

### Do Not Burn

Overexposure to the sun is the most preventable risk factor for skin cancer.

### Avoid Sun Tanning and Tanning Beds

UV rays from tanning beds and the sun cause skin cancer and wrinkling. If you want to look like you've been in the sun, consider using a sunless self-tanning product, but continue to use sunscreen with it.

### Generously Apply Sunscreen

Generously apply sunscreen to all exposed skin using a Sun Protection Factor (SPF) of at least 30 that provides broad-spectrum protection from both ultraviolet A (UVA) and ultraviolet B (UVB) rays. Reapply every two hours, even on cloudy days, and after swimming or sweating.

### Wear Protective Clothing

Wear protective clothing, such as a long-sleeved shirt, pants, a wide-brimmed hat, and sunglasses, when possible.

### Seek Shade

Seek shade when appropriate, remembering that the sun's UV rays are strongest between 10 a.m. and 4 p.m.

### Use Extra Caution Near Water, Snow, and Sand

Water, snow, and sand reflect the damaging rays of the sun, which can increase your chance of sunburn.

### Check the UV Index

The UV Index provides important information to help you plan your outdoor activities in ways that prevent overexposure to the sun's rays. Developed by the National Weather Service and EPA, the UV Index is issued daily nationwide. To receive daily UV forecasts via email sign up for EnviroFlash at [www.epa.gov/sunwise/uvindex.html](http://www.epa.gov/sunwise/uvindex.html).

### Get Vitamin D Safely

Get Vitamin D safely through a diet that includes vitamin supplements and foods fortified with Vitamin D. Don't seek the sun.

Skin cancer and the other harmful health effects from overexposure are largely preventable, and by making these changes, positive steps are taken toward a healthier future.

Enclosed with this letter is a copy of [School Name]'s new sun safety policy. Please contact [contact name and phone number] if you have any questions or concerns, or if you would like further information on sun protection.

Sincerely,

[School Contact or Official]



## Sample Press Release

**[Date]**

**[Contact Name and Telephone Number]**

**[Your City, State]**

**[School Name]**

Kicks Off SunWise Program

- [School Name] announced this week that it will initiate a new policy of sun protection practices to become a SunWise School. Overexposure to the sun's harmful ultraviolet (UV) rays can result not only in a painful sunburn, but can also lead to serious health problems, including skin cancer and eye damage.
- [School Name] believes that it is important to get involved because the school environment provides the opportunity to reach a significant number of youth at a time when health habits are still being formed.

- *[Optional: If events are planned, include:]* Locally, an event will be held in recognition of [School Name]'s partnership with the U.S. Environmental Protection Agency to become a SunWise School. There will be a *[details of event—what, where, when, contact information]*. All community members are welcome to attend.
- The SunWise Program consists of a variety of efforts that the school will undertake to encourage children and their families to be sun safe. SunWise aims to create a healthier environment by minimizing overexposure to UV radiation.

### Facts about Sun-Related Illnesses

- Overexposure to the sun may lead to skin cancer, cataracts, immune system suppression, and premature aging of the skin.

- More than 3.5 million cases of skin cancer are diagnosed each year, making it the most common of all cancers in the United States.
- Locally, *[add recent local state statistics, visit statecancerprofiles.cancer.gov]*

### Action Steps for Sun Protection Do Not Burn

Overexposure to the sun is the most preventable risk factor for skin cancer.

### Avoid Sun Tanning and Tanning Beds

UV rays from tanning beds and the sun cause skin cancer and wrinkling. If you want to look like you've been in the sun, consider using a sunless self-tanning product, but continue to use sunscreen with it.

### **Generously Apply Sunscreen**

Generously apply sunscreen to all exposed skin using a Sun Protection Factor (SPF) of at least 30 that provides broad-spectrum protection from both ultraviolet A (UVA) and ultraviolet B (UVB) rays. Reapply every two hours, even on cloudy days, and after swimming or sweating.

### **Wear Protective Clothing**

Wear protective clothing, such as a long-sleeved shirt, pants, a wide-brimmed hat, and sunglasses, when possible.

### **Seek Shade**

Seek shade when appropriate, remembering that the sun's UV rays are strongest between 10 a.m. and 4 p.m.

### **Use Extra Caution**

#### **Near Water, Snow, and Sand**

Water, snow, and sand reflect the damaging rays of the sun, which can increase your chance of sunburn.

### **Check the UV Index**

The UV Index provides important information to help you plan your outdoor activities in ways that prevent overexposure to the sun's rays. Developed by the National Weather Service and EPA, the UV Index is issued daily nationwide.

### **Get Vitamin D Safely**

Get Vitamin D safely through a diet that includes vitamin supplements and foods fortified with Vitamin D. Don't seek the sun.

For more information on these SunWise events or [School Name]'s SunWise Program, please contact [Contact Name and telephone number/email] and visit [www.epa.gov/sunwise](http://www.epa.gov/sunwise).

## Sample Language

### Newsletters & Parent Communication

#### For Newsletters and Nurse's Notes

Including sun protection awareness information and action steps in school newsletters is a productive way of communicating these important messages to parents. It is suggested to use a combination of types of messages including some awareness and action messages. Focus on specific action steps that parents can take to help make their child sun safe, as well as on providing the information to explain why it is so important.

#### Awareness Information

- Sunburns during childhood are harmful and painful. It can take less than 10 minutes for a child's skin to burn. Childhood sunburns increase the risk for skin cancer later in life.
- Childhood burns can begin to increase the risk for skin cancer occurrence as early as the late teen years and early to mid-twenties.
- A significant amount of lifetime sun exposure occurs before age 18. Protecting skin and eyes during the

first 18 years of life can reduce the risk of some types of skin cancer by up to 78 percent. Melanoma is a cancer that can affect younger people and can start as early as adolescence.

- Children learn healthy habits best at a young age. With sun damage accumulating over a person's lifetime, teaching the importance of sun safety habits at a young age is a priority.
- Your child is at the age when important health habits are still being formed. Now is the time to help your child learn necessary sun protection behaviors to protect his/her skin from the damage that can appear later in life. Prevention efforts are needed across settings targeting schools, families, and communities.

#### Action Steps

- On appropriate days, please apply sunscreen to your child prior to sending him/her to school. We strongly encourage that your child bring and wear a sun-protective hat for all outdoor activities. To find out what the UV intensity is

predicted to be, sign up for Enviro-Flash daily UV Index emails by visiting [www.epa.gov/sunwise/uwindex.html](http://www.epa.gov/sunwise/uwindex.html).

- We encourage children to enjoy physical activity and fresh air year-round. However, proper precautions should be taken to ensure that your child's outdoor time is a safe time. It is very important for all children to protect themselves from overexposure to the sun.
  - ▮ Limit sun exposure, especially during the sun's peak hours of 10 a.m. to 4 p.m.
  - ▮ Use a sunscreen with an SPF of at least 30 every day.
  - ▮ Reapply sunscreen every 2 hours during outdoor activity.
  - ▮ Apply sunscreen at least 20 minutes prior to going outdoors.
  - ▮ Wear a hat with a wide brim to protect the face, neck, and ears.
  - ▮ Wear protective clothing, such as long pants and a long-sleeved shirt, and UV-protective sunglasses, to help protect skin and eyes.

- ▶ Encourage play in the shade.
- ▶ Check the UV Index.
- ▶ Be aware that water, sand, snow, and concrete can all reflect the sun’s UV rays.
- ▶ Avoid and discourage tanning salon use.

**Example Article**

Most children enjoy spending time outdoors, whether it is before or after school, during recess or gym class, or on weekends. We encourage children to enjoy physical activity and fresh air year-round. However, proper precautions should be taken to ensure that when outdoors, your child is safe from the sun. Just like children need mittens and warm hats to be safe from the cold, they need sunscreen and hats to be safe from the harmful rays of the sun.

Skin cancer is the most common form of cancer in the United States, but it is also the most preventable. Children can learn good health habits while they are young to help them be sun safe. Excessive and unprotected sun exposure increases the risk of skin damage later in life.

[*School Name*] believes that this is an important health issue; therefore we are taking some necessary steps to incorporate sun safety into our school day. If you have any suggestions or comments regarding these sun protection practices, please contact [*Contact Name and telephone number*] or your own health care provider.

**For Permission Slip**

In order to ensure that sun safety policies are reflected in the planning of all outdoor events, including field trips, consider adding language about sun protection to the permission slip. An example of wording on a permission slip follows:

“During this field trip/field day, your child will be outdoors for a substantial period of time. Please send your child to school with sunscreen and a hat. Your child’s teacher will give him/her time to put on the sunscreen. Also, please apply sunscreen to your child before sending him/her to school.”

**For Parent Handbook**

Most school handbooks currently contain a section on appropriate clothing suggestions for winter

weather, such as coats, boots, and gloves. The suggested language below expands the clothing section to include suggestions for warm weather and sun protection.

Example: “We request that parents provide appropriate clothing and hats for their children, with attention to weather conditions—cold or warm, sunny or rainy. It is also strongly encouraged that parents apply sunscreen to their child prior to sending him/her to school on days where the weather warrants it.”

**For Sample Policy: Curriculum Addition**

The inclusion of a sun safety program such as SunWise in health or regular classroom education is one key part of the new policy. Providing students with the necessary knowledge and skills, while creating an environment that reinforces these practices, will be most effective.

Example: “Incorporate the SunWise Program into the health or regular classroom curriculum. Included is a chart designed to assist staff in determining how this integration can be accomplished.”

## *Donation Letter—Sample*

John Smith  
Town Tree Farm  
111 Main Street  
Town, State 00000

Dear Sir/Madam:

I am the *[insert title/position]* at *[School Name]*. The purpose of this letter is to inform you that we are committed to providing our children with a healthy and safe environment. Overexposure to the sun can cause serious health problems such as skin cancer, premature aging of the skin, and other skin disorders; cataracts and other eye damage; and immune system suppression.

We know children need to be physically active, but they must learn to protect themselves from overexposure to ultraviolet (UV) radiation. Our school has developed sun safety practices to provide each student the support needed to be sun safe. Sun damage to the skin is cumulative. At *[School Name]*, we recognize that everyday sun exposure matters.

Because of these factors, we're asking businesses like yours, who believe in the health and safety of the children in our communities, for donations to help our school increase the shade on our school property. Our school needs to improve sun protection for our children. The plan is to plant trees and construct shade structures to optimize the shade usage for our children and staff. These trees and shade structures will contribute to the beautification of our school environment, but more importantly, they will provide much needed shade and reduce the possible risk of skin cancer for our children.

I will give you a call in the near future to see if a donation would be possible. In the meantime, if you have any questions, please contact me at *[insert phone number]* or *[insert email address]*.

Thank you in advance for your consideration and support.

Sincerely,

*[Name]*

*[Title/Position]*

## Sample SunWise School Policy

To assist you with the development of your SunWise School Policy, refer to the Checklist (see page 7) to select the practices that your school has chosen to implement. Adapt this template with your new school policy for inclusion in the school handbook:

At [*School Name*], we are dedicated to the health and well being of our community. Because of this, we have developed this SunWise policy to ensure that all students and staff attending our school are protected from overexposure to the harmful ultraviolet (UV) rays of the sun. This policy documents our SunWise protection practices in the areas of environment, school policies, and behavior. These practices will be applied to all outdoor school events, including recreational activities and field trips.

### Objectives

The goals of our SunWise policy are:

- Increase sun safety awareness in our school and in our surrounding communities.
- Adopt practical, realistic sun protection measures.
- Help our students acquire SunWise behaviors by educating them about the dangers of overexposure to UV rays and measures they can take to protect themselves.
- Develop strategies that encourage students and staff to make responsible decisions about sun safety.
- Encourage students and staff to use broad-spectrum sunscreen and wear protective clothing, appropriate hats, and sunglasses when outdoors.
- Open a line of communication with parents and community members about our school's SunWise policy.

### Environment

In the creation of a sun-safe environment for staff and students, [*School Name*] will:

- Increase the number of shelters and trees to provide adequate shade on the school grounds.
- Try to schedule outdoor activities before 10 a.m. and after 4 p.m., especially during the months when UV radiation is most intense.
- Hold outdoor activities in shady areas whenever possible.

### Policy

It is our policy that [School Name] will:

- Subscribe to EPA's daily EnviroFlash UV emails and disseminate UV Index values when appropriate.
- Include parents and guardians in creation of all SunWise school policies.
- Work with parents to provide SPF 30+, broad-spectrum, water-resistant sunscreen for student use.
- Make sunscreen available to students and staff.
- Ensure that sun safety policies are reflected in the planning of all outdoor events, including field trips.

### Behavior

Our school believes in encouraging sun-safe behaviors in our students and staff. [School Name] will:

- Encourage staff and parents to act as role models for students by practicing sun-safe behaviors.
- Encourage the daily application of sunscreen before school and prior to outdoor activity.
- Allow children to wear sunglasses that block 100 percent of UVA and UVB, and hats, which will help protect the face, neck, eyes, and ears, whenever they are outside.
- Encourage students to use available shaded areas for outdoor activities.

### Evaluation

[School Name] will, in collaboration with parents, guardians, and community members, review the effectiveness of this SunWise policy each year. We will:

- Review the SunWise behaviors of students and staff.
- Assess the amount and quality of shade provided on school grounds.
- Assess the use of shade by students and staff.

References from:

*Fun for Everyone*, Anti-Cancer Council of Victoria, SunSmart, 1994.

*The Sun Safety Activity Guide*, National Safety Council.

Special thanks to Karen Emmons, Ph.D. and Jodie Zwirn, MPH, Dana Farber Cancer Institute, and Alan Geller, RN, MPH, Harvard University, for their contributions to the updated *Policy Information* section.

## Integrating Sun Protection into Lesson Plans

*Instructions: Sun protection can be integrated throughout all aspects of the regular classroom curriculum in each grade. Use this tool as a guide to find appropriate sun protection lessons for the classroom. Determine the skills to be used and the amount of time allotted before selecting an activity.*

Grades K–2 Activities	Subjects	Approximate Time (Minutes)	Focus/Skill	Pages
A SunWise Legend	English/LA, Social Studies	15–20	Story, sun	1–3
Hot Potato with the Sun	Health, P.E.	varies	Reinforcement	5
A SunWise Beach Party	Math	15	Addition, drawing	7–8
Buy SunWise	Math, English/LA	30–60	Counting, money	9–10
Speedy Sun Relay Race	P.E., Health	30	Running, game	11–12
Sunny Says	P.E., Health	20	Game	13
Watch Your Shadow	Science, English/LA	2 intervals of 15 minutes each	Shadows, demonstration	15–16
The Sun Shines Around the World	Social Studies, English/LA, Science	20–45	Geography, research, customs	17–18
Keep an Eye on Sun Safety	Science, English/LA	15–20	Creative thinking, presentation	19
<b>SUPPLEMENTAL</b>				
Wacky Paper Sunglasses	Art, Science	20	Crafts, cutting, demonstration	20–21
SunWise Word Search	English/LA	varies	Reinforcement	22–23

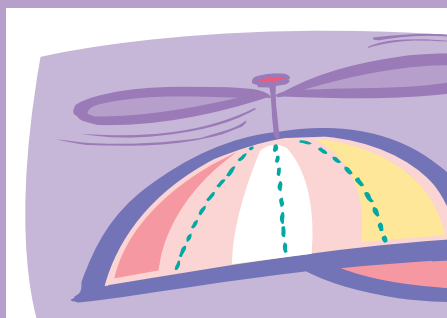
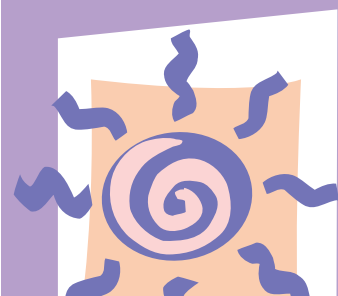
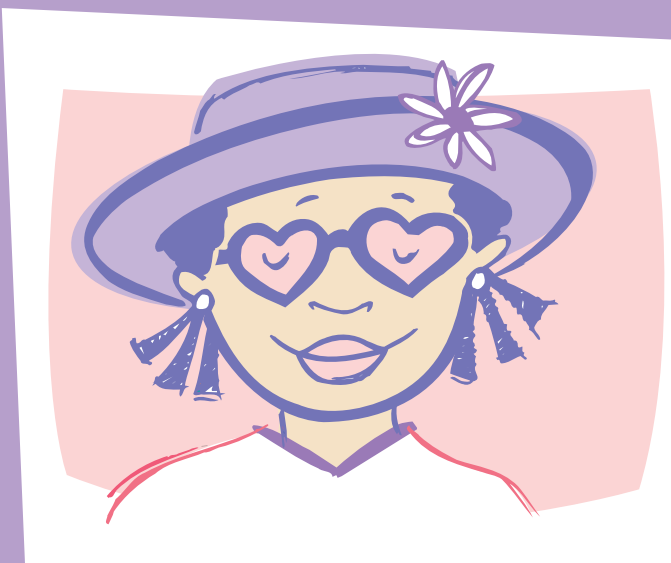
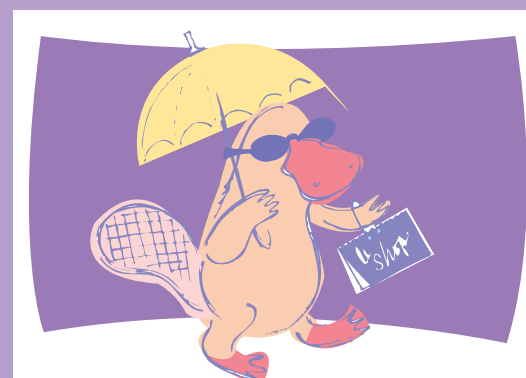
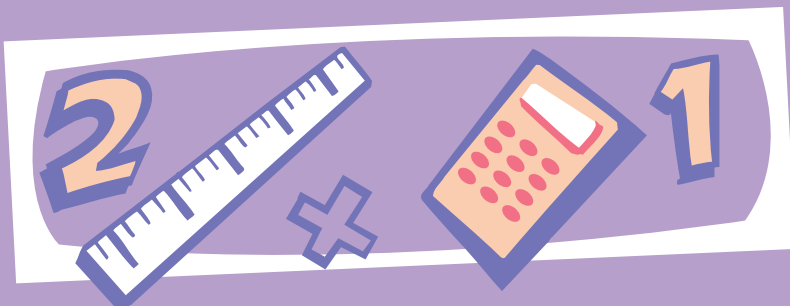
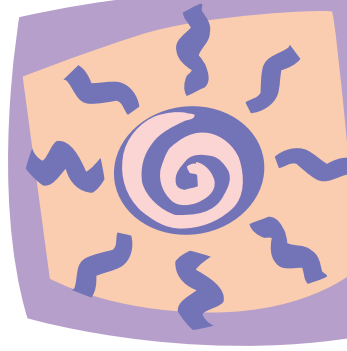
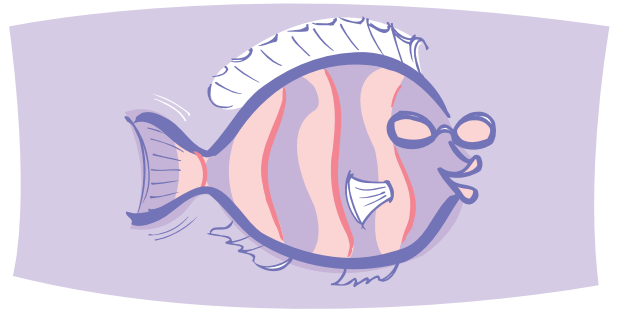
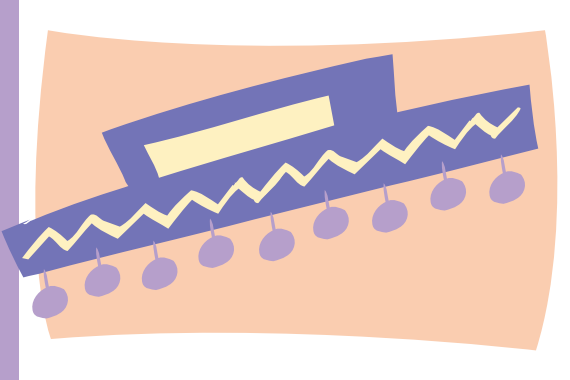
*Grades 3–5 and 6–8 continue on the following pages.*



Grades 3–5 Activities	Subjects	Approximate Time (Minutes)	Focus/Skill	Pages
Sun Scoop	English/LA, Health, Science	30–60	Investigating, reporting	1–2
SunWise Word Scramble	English/LA	15–20	Reinforcement	3–4
SunWise Virtual Vacation	English/LA, Social Studies	45	Internet, research, writing	5–7
The Sun Shines Around the World	English/LA, Science, Social Studies	20–45	Geography, research, customs	9–10
Sun Myths from the Internet	English/LA, Social Studies	30–45	Internet, research, writing	11–12
SunWise Fashion Show	Health	60	Presentation	13–14
UV Frisbee Fun	English/LA, Health, P.E.	30	Demonstration, game	15–16
Personal Skin Assessment	Health, P.E., Social Studies	30	Self-assessment	17–18
Sun Safety Survey	Math	20	Percentages, graphs	19–20
SunWise Word Problems	Math	40–50	Word problems	21–22
Measure Your Shadow	Math, Health, Science	3 intervals of 15 minutes each	Shadows, demonstration, graphs	23–25
Speedy Sun Relay Race	P.E., Health	30	Game	27–28
Sun Science	Science, English/LA	30	Demonstration	29–30
The Ozone and Me	Science, English/LA	30	Reading, ozone, atmosphere, Earth	31–34
UV Frisbee Science	Science	30–40	Demonstration, charting	35–37
Map a SunWise Town	Social Studies, Science	40–50	Maps, measure, draw, writing	39–40
Be a SunWise Traveler	Math, Social Studies, English/LA, Science	45–60	Computations, maps, reading	41–43
A SunWise Legend	English/LA, Social Studies	60	Creative writing, mythology	45–47
Keep an Eye on Sun Safety	English/LA, Science	30–45	Creative thinking, presentation	49–51
<b>SUPPLEMENTAL</b>				
Sunny Crossword	English/LA	10–15	Reinforcement	53–58
WordWise	English/LA	45–50	Writing	59–60
<b>UV METER ACTIVITIES</b>				
What Works? Effectively Blocking UV Rays	Science	40–50	Demonstration, observation	UV 3–4
Chart and Graph UV Intensity	Science, Math	40–50	Charting, measure, predicting	UV 5–6
Reflecting UV Radiation	Science, Math	30	Demonstration, predicting	UV 7–9

Grades 6–8 Activities	Subjects	Approximate Time (Minutes)	Focus/Skill	Pages
A Sunny Performance	English/LA, Health	50–60	Presentation, creative thinking	1–2
SunWise Show	English/LA, Health	2–3 classes	Creative writing, presentation, crafts	3–4
Sun Scoop	English/LA, Health, Science	30–60	Investigating, reporting, writing	5–6
SunWise Virtual Vacation	English/LA, Health, Social Studies	45	Internet, research, writing	7–10
Sun Mythology	English/LA, Social Studies	30–45	Creative writing, mythology	11–12
Sunsational Scientists in History	English/LA, Social Studies	30–45	Research, astronomy, writing	13–15
The Sun Shines Around the World	English/LA, Science, Social Studies	20–45	Geography, research, customs	17–18
Why Does Winter Make Some People SAD?	English/LA, Health	30–45	Comprehension, health effects	19–22
Sun-safe Beach Party	English/LA, Health, P.E.	30–45	Situational	23–24
UV Frisbee Fun	English/LA, Health, P.E.	30	Demonstration, game	25–26
Personal Skin Assessment	English/LA, Health, P.E., Social Studies	30	Self-assessment	27–28
Bargain Shopper	Math	45	Budget, research	29–30
Skin Cancer in Your State	English/LA, Math	40–50	Percentages, ratios, graphs	31–35
SunWise Surveyor	English/LA, Health, Math, Science	1–2 classes	Maps, dimensions	37–39
You Are the Architect	English/LA, Health, Math, Science, Art	more than 1 class period	Drawing, creative thinking	41–42
Detecting UV Light Using Tonic Water	English/LA, Science	40–50	Demonstration, writing	43–44
Gumdrop Science	Science	40–50	Demonstration, ozone, atmosphere, Earth	45–48
UV Frisbee Science	Science	30	Demonstration, charting	49–51
Be a SunWise Traveler	English/LA, Health, Math, Social Studies	45–60	Computations, maps, reading	53–55
A SunWise Legend	English/LA, Social Studies	60	Creative thinking, mythology	57–59
Keep an Eye on Sun Safety	English/LA, Health, Science	30–45	Creative thinking, presentation	61–63
Wild for Sun Protection	Science, English/LA	30–60 per activity	Research, presentation	65–68
UV ABCs	Science, Health, English/LA	2–3 classes	Research, presentation	69–71
<b>SUPPLEMENTAL</b>				
SunWise Flier	English/LA	30–45	Computer graphics	72–74
SunWise Word Problems	Math	40–50	Word problems	75–76
<b>UV METER ACTIVITIES</b>				
What Works? Effectively Blocking UV Rays	Science	40–50	Demonstration, observation	UV 3–4
Chart and Graph UV Intensity	Science, Math	40–50	Charting, measure, predicting	UV 5–6
Reflecting UV Radiation	Science, Math	30	Demonstration, predicting	UV 7–9

# resources



**SunWise**<sup>®</sup>  
a program that **radiates** good ideas  
A Partnership Program of the U.S. Environmental Protection Agency  
[www.epa.gov/sunwise](http://www.epa.gov/sunwise)

## Resources: Organizations

### **American Academy of Dermatology**

*[www.aad.org](http://www.aad.org)*

### **American Academy of Pediatrics**

*[www.aap.org](http://www.aap.org)*

### **American Cancer Society**

*[www.cancer.org](http://www.cancer.org)*

### **American Meteorological Society**

*[www.ametsoc.org/stationscientist/](http://www.ametsoc.org/stationscientist/)*

### **American School Health Association**

*[www.ashaweb.org](http://www.ashaweb.org)*

### **Arizona Department of Health Services**

*[www.azdhs.gov/phs/sunwise/](http://www.azdhs.gov/phs/sunwise/)*

### **Cancer Research UK**

*[www.cancerresearchuk.org/sunsmart](http://www.cancerresearchuk.org/sunsmart)*

### **Centers for Disease Control and Prevention**

*[www.cdc.gov/cancer](http://www.cdc.gov/cancer)*

### **Children's Melanoma Prevention Foundation**

*[www.melanomaprevention.org](http://www.melanomaprevention.org)*

### **Coalition for Skin Cancer Prevention in Maryland**

*[www.sunguardman.org](http://www.sunguardman.org)*

### **Colette Coyne Melanoma Awareness Campaign (CCMAC)**

*[www.ccmac.org](http://www.ccmac.org)*

### **Melanoma Foundation of New England**

*[www.mfne.org](http://www.mfne.org)*

### **Melanoma Research Foundation**

*[www.melanoma.org](http://www.melanoma.org)*

### **National Aeronautics and Space Administration (NASA)**

*[www.nasa.gov](http://www.nasa.gov)*

### **National Cancer Institute**

*[www.cancer.gov](http://www.cancer.gov)*

### **National Council on Skin Cancer Prevention**

*[www.skincancerprevention.org](http://www.skincancerprevention.org)*

### **National Oceanic and Atmospheric Administration (NOAA)**

*[www.noaa.org](http://www.noaa.org)*

### **National Safety Council Environmental Health Center**

*[www.nsc.org](http://www.nsc.org)*

### **National Science Foundation**

*[www.nsf.gov](http://www.nsf.gov)*

### **National Weather Service**

*[www.cpc.ncep.noaa.gov](http://www.cpc.ncep.noaa.gov)*

### **National Wildlife Federation**

*[www.nwf.org](http://www.nwf.org)*

**New York State Department of Health**

*[www.health.ny.gov/diseases/cancer/](http://www.health.ny.gov/diseases/cancer/)*

**Prevent Cancer Foundation**

*[www.preventcancer.org](http://www.preventcancer.org)*

**Richard David Kann Melanoma Foundation**

*[www.melanomafoundation.com](http://www.melanomafoundation.com)*

**Sécurité Solaire**

*[www.securite-solaire.org](http://www.securite-solaire.org)*

**SHADE Foundation of America**

*[www.shadefoundation.org](http://www.shadefoundation.org)*

**SHAPE America**

*[www.shapeamerica.org](http://www.shapeamerica.org)*

**Sierra Club**

*[www.sierraclub.org](http://www.sierraclub.org)*

**The Skin Cancer Foundation**

*[www.skincancer.org](http://www.skincancer.org)*

**Sun Safety Alliance**

*[www.sunsafetyalliance.org](http://www.sunsafetyalliance.org)*

**SunSmart Programme**

*[www.sunsmart.com.au](http://www.sunsmart.com.au)*

**Ulman Cancer Fund for Young Adults**

*[www.ulmanfund.org](http://www.ulmanfund.org)*

**University of Colorado at Boulder**

*[www.colorado.edu/ScienceDiscovery](http://www.colorado.edu/ScienceDiscovery)*

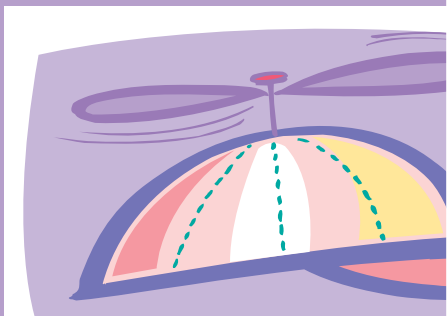
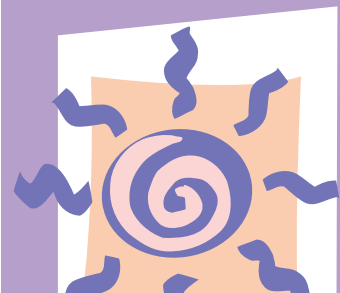
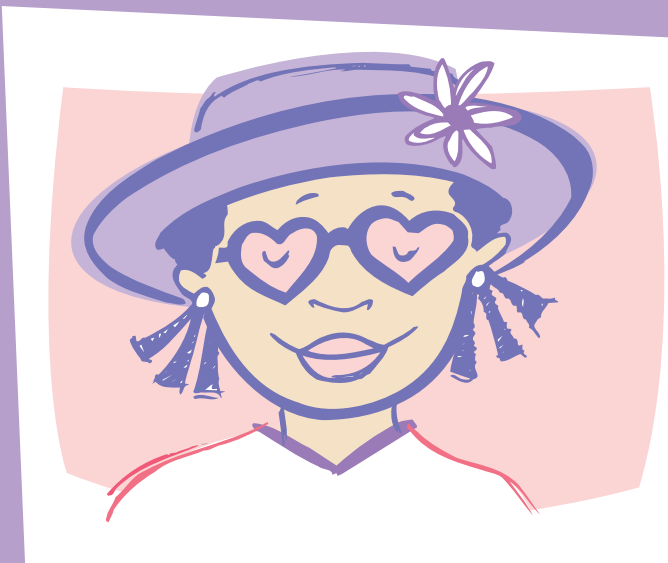
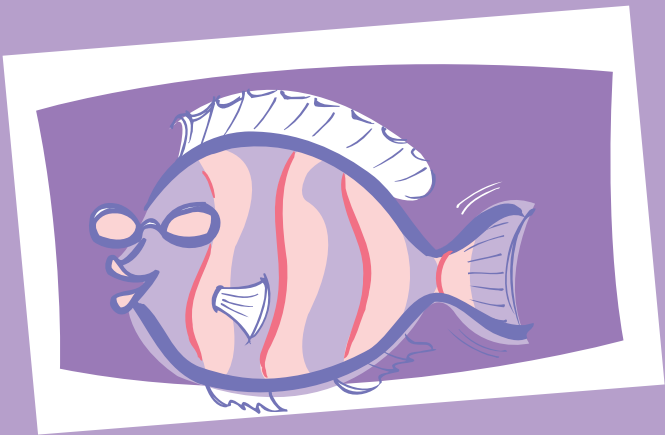
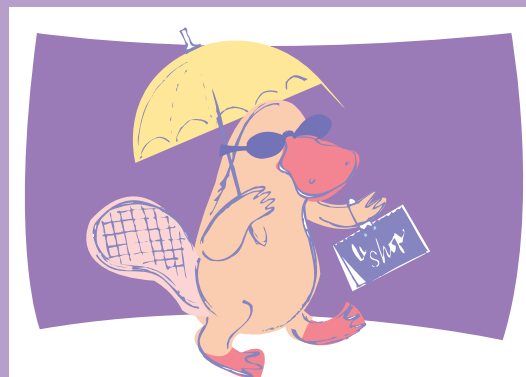
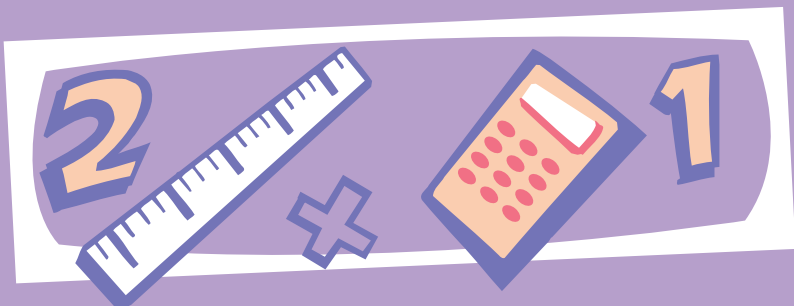
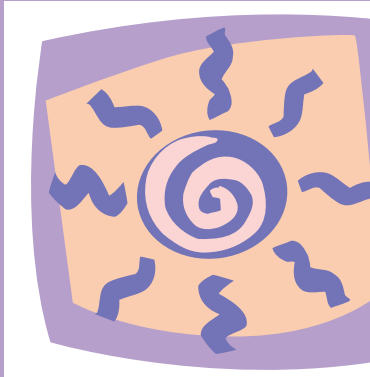
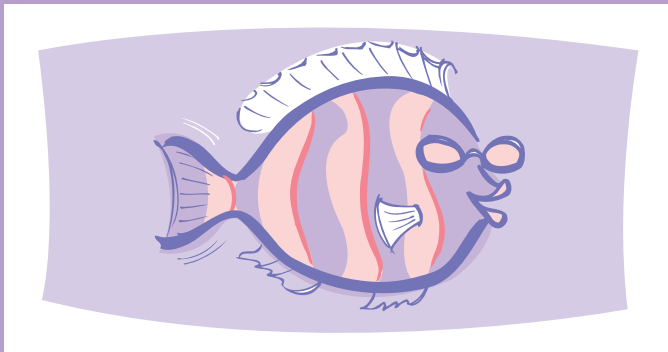
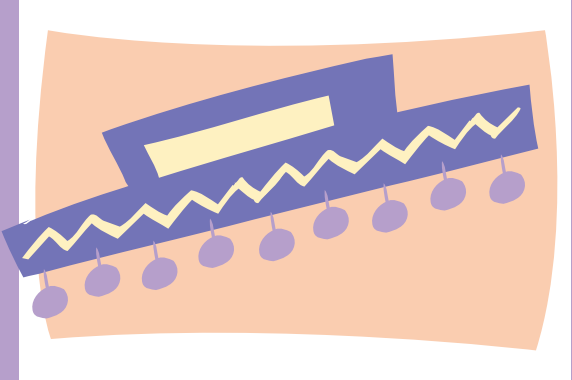
**U.S. Department of Health and Human Services**

*[www.hhs.gov](http://www.hhs.gov)*

**World Health Organization INTERSUN Programme**

*[www.who.int/uv/en](http://www.who.int/uv/en)*

# SunWisdom



**SunWise**<sup>®</sup>   
a program that **radiates** good ideas  
A Partnership Program of the U.S. Environmental Protection Agency  
[www.epa.gov/sunwise](http://www.epa.gov/sunwise)

## Action Steps for Sun Protection

*While some exposure to sunlight can be enjoyable, too much can be dangerous. Overexposure to ultraviolet (UV) radiation in sunlight can result in a painful sunburn. It can also lead to more serious health effects, including skin cancer, premature aging of the skin, and other skin problems; cataracts and other eye damage; and immune system suppression. Children particularly need sun protection education, since unprotected exposure to the sun during youth puts them at an increased lifetime risk for skin cancer.*

### **Be SunWise**

Most people are not aware that skin cancer, while largely preventable, is the most common form of cancer in the United States, with more than 3.5 million cases diagnosed each year. By following a number of simple steps, you can still enjoy your time in the sun while protecting yourself from overexposure. In cooperation with a number of leading public health organizations, the U.S. Environmental Protection Agency (EPA) is providing these action steps to help you and your family be “SunWise.” Other than staying

indoors, no single step can fully protect you from overexposure to UV radiation, so use as many of the following actions as possible.

### **Do Not Burn**

Overexposure to the sun is the most preventable risk factor for skin cancer.

### **Avoid Sun Tanning and Tanning Beds**

UV rays from tanning beds and the sun cause skin cancer and wrinkling. If you want to look like you’ve been in the sun, consider using a sunless self-tanning product, but continue to use sunscreen with it.

### **Generously Apply Sunscreen**

Generously apply sunscreen to all exposed skin using a Sun Protection Factor (SPF) of at least 30 that provides broad-spectrum protection from both ultraviolet A (UVA) and ultraviolet B (UVB) rays. Reapply every two hours, even on cloudy days, and after swimming or sweating.

### **Wear Protective Clothing**

Wear protective clothing, such as a long-sleeved shirt, pants, a wide-brimmed hat, and sunglasses, when possible.

### **Seek Shade**

Seek shade when appropriate, remembering that the sun’s UV rays are strongest between 10 a.m. and 4 p.m.

### **Use Extra Caution Near Water, Snow, and Sand**

Water, snow, and sand reflect the damaging rays of the sun, which can increase your chance of sunburn.

### **Check the UV Index**

The UV Index provides important information to help you plan your outdoor activities in ways that prevent overexposure to the sun’s rays. Developed by the National Weather Service and EPA, the UV Index is issued daily nationwide.

### **Get Vitamin D Safely**

Get Vitamin D safely through a diet that includes vitamin supplements and foods fortified with Vitamin D. Don’t seek the sun.

Early detection of melanoma can save your life. Carefully examine all of your skin once a month. A new or changing spot should be evaluated.

## Use as Directed: Getting the Most Out of Sunscreen

The U.S. Food and Drug Administration (FDA) is the federal agency responsible for regulating sunscreens. Effective June 18, 2012, FDA issued final regulations that established a standard test for over-the-counter (sold without a prescription) sunscreen products that determine which products are allowed to be labeled as “Broad Spectrum.” FDA extended the compliance dates for testing and labeling until December 17, 2012 for most over-the-counter sunscreen products.

Prior FDA rules on sunscreens dealt almost exclusively with protection against sunburn, which is primarily caused by ultraviolet B (UVB) radiation from the sun, and did not address ultraviolet A (UVA) radiation, which contributes to skin cancer and early skin aging. After reviewing the latest science, FDA determined that sufficient data are available to establish a “broad spectrum” test for determining a sunscreen product’s

UVA protection. Passing the broad spectrum test shows that the product provides UVA protection that is proportional to its UVB protection.

Sunscreen products that pass the broad spectrum test are allowed to be labeled as “Broad Spectrum.” These “Broad Spectrum” sunscreens protect against both UVA and UVB rays. Scientific data demonstrated that products that are “Broad Spectrum SPF 15 [or higher]” have been shown to reduce the risk of skin cancer and early skin aging when used with other sun protection measures, in addition to helping prevent sunburn. Other sun protection measures include limiting time in the sun and wearing protective clothing.

EPA follows the recommendation of the National Council on Skin Cancer Prevention in recommending the use of SPF 30 or higher sunscreen. The SPF value indicates the level of sunburn protection provided by the

sunscreen product. All sunscreens must be tested according to an SPF test procedure. The test measures the amount of ultraviolet (UV) radiation exposure it takes to cause sunburn when a person is using a sunscreen in comparison to how much UV exposure it takes to cause sunburn when they do not use a sunscreen. The product is then labeled with the appropriate SPF value indicating the amount of sunburn protection provided by the product. Higher SPF values (up to 50) provide greater sunburn protection. Because SPF values are determined from a test that measures protection against sunburn caused by ultraviolet B (UVB) radiation, SPF values only indicate a sunscreen’s UVB protection. However, sunscreens that pass the new broad spectrum test will have demonstrated that they also provide ultraviolet A (UVA) protection that is proportional to their UVB protection. To pass the broad spectrum test, sunscreens with higher SPF values



will provide higher levels of UVA protection as well. Therefore, under the new label requirements, a higher SPF value for sunscreens labeled “Broad Spectrum SPF [value]” will indicate a higher level of protection from both UVA and UVB radiation.

FDA advises the public to be aware that no sunscreens are “waterproof” because all sunscreens eventually wash off. Sunscreens can only be labeled as “water resistant” if they are tested according to the required SPF test procedure. Sunscreens labeled “water resistant” will also be required to state whether the sunscreen remains effective for 40 minutes or 80 minutes when swimming or sweating, and all sunscreens will be required to provide directions on when to reapply.

In summary, the final rule includes the following requirements:

- **Broad Spectrum designation.** Sunscreens that pass FDA’s broad spectrum test procedure, which measures a product’s ultraviolet A (UVA) protection relative to its ultraviolet B (UVB) protection, may be labeled as “Broad Spectrum SPF [value]” on the front label. For Broad Spectrum sunscreens, SPF values also

indicate the amount or magnitude of overall protection. Broad Spectrum SPF products with SPF values higher than 15 provide greater protection and may claim additional uses, as described in the next bullet.

- **Use claims.** Only Broad Spectrum sunscreens with an SPF value of 15 or higher can claim to reduce the risk of skin cancer and early skin aging if used as directed with other sun protection measures. Non-Broad Spectrum sunscreens and Broad Spectrum sunscreens with an SPF value between 2 and 14 can only claim to help prevent sunburn.
- **“Waterproof,” “sweatproof” or “sunblock” claims.** Manufacturers cannot label sunscreens as “waterproof” or “sweatproof,” or identify their products as “sunblocks,” because these claims overstate their effectiveness. Sunscreens also cannot claim to provide sun protection for more than 2 hours without reapplication or to provide protection immediately after application (for example— “instant protection”) without submitting data to support these claims and obtaining FDA approval.

- **Water resistance claims.** Water resistance claims on the front label must indicate whether the sunscreen remains effective for 40 minutes or 80 minutes while swimming or sweating, based on standard testing. Sunscreens that are not water resistant must include a direction instructing consumers to use a water resistant sunscreen if swimming or sweating.
- **Drug Facts.** All sunscreens must include standard “Drug Facts” information on the back and/or side of the container.

#### **Additional Resources**

*www.fda.gov/downloads/forconsumers/consumerupdates/ucm258718.pdf*

*www.fda.gov/forconsumers/consumerupdates/ucm258468.htm#Q1\_Why\_is\_FDA*

If used as directed with other sun protection measures, this product reduces the risk of skin cancer and early skin aging, as well as helps prevent sunburn. Only products labeled with both “Broad Spectrum” AND SPF 15 or higher have been shown to provide all these benefits.



<b>Drug Facts</b>	
<b>Active Ingredients</b> Avobenzone 3% Homosalate 10% Octyl methoxycinnamate 7.5%	<b>Purpose</b> Sunscreen
<b>Uses</b> <ul style="list-style-type: none"> <li>• helps prevent sunburn</li> <li>• if used as directed with other sun protection measures (see <b>Directions</b>), decreases the risk of skin cancer and early skin aging caused by the sun</li> </ul>	
<b>Warnings</b> <b>For external use only</b> <b>Do not use</b> on damaged or broken skin <b>When using this product</b> keep out of eyes. Rinse with water to remove. <b>Stop use and ask a doctor</b> if rash occurs <b>Keep out of reach of children.</b> If product is swallowed, get medical help or contact a Poison Control Center right away.	
<b>Directions</b> <ul style="list-style-type: none"> <li>• apply liberally 15 minutes before sun exposure</li> <li>• reapply:               <ul style="list-style-type: none"> <li>• after 40 minutes of swimming or sweating</li> <li>• immediately after towel drying</li> <li>• at least every 2 hours</li> </ul> </li> <li>• <b>Sun Protection Measures.</b> Spending time in the sun increases your risk of skin cancer and early skin aging. To decrease this risk, regularly use a sunscreen with a broad spectrum SPF of 15 or higher and other sun protection measures including:               <ul style="list-style-type: none"> <li>• limit time in the sun, especially from 10 a.m. – 2 p.m.</li> <li>• wear long-sleeve shirts, pants, hats, and sunglasses</li> </ul> </li> <li>• children under 6 months: Ask a doctor</li> </ul>	
<b>Inactive ingredients</b> aloe extract, barium sulfate, benzyl alcohol, carbomer, dimethicone, disodium EDTA, jojoba oil, methylparaben, octadecene/MA copolymer, polyglyceryl-3 distearate, phenethyl alcohol, propylparaben, sorbitan isostearate, sorbitol, stearic acid, tocopherol (vitamin E), triethanolamine, water	
<b>Other information</b> <ul style="list-style-type: none"> <li>• protect this product from excessive heat and direct sun</li> </ul>	
<b>Questions or comments?</b> Call toll free 1-800-XXX-XXXX	

These products have not been shown to protect against skin cancer and early skin aging. They have been shown only to help prevent sunburn.



<b>Drug Facts</b>	
<b>Active Ingredients</b> Avobenzone 3% Homosalate 10% Octyl methoxycinnamate 7.5%	<b>Purpose</b> Sunscreen
<b>Uses</b> • helps prevent sunburn	
<b>Warnings</b> <b>Skin Cancer/Skin Aging Alert:</b> Spending time in the sun increases your risk of skin cancer and early skin aging. This product has been shown only to prevent sunburn, <b>not</b> skin cancer or early skin aging. <b>For external use only</b> <b>Do not use</b> on damaged or broken skin <b>When using this product</b> keep out of eyes. Rinse with water to remove. <b>Stop use and ask a doctor</b> if rash occurs <b>Keep out of reach of children.</b> If product is swallowed, get medical help or contact a Poison Control Center right away.	
<b>Directions</b> • apply liberally 15 minutes before sun exposure • reapply: • after 40 minutes of swimming or sweating • immediately after towel drying • at least every 2 hours • children under 6 months: Ask a doctor	
<b>Inactive ingredients</b> aloe extract, barium sulfate, benzyl alcohol, carbomer, dimethicone, disodium EDTA, jojoba oil, methylparaben, octadecene/MA copolymer, polyglyceryl-3 distearate, phenethyl alcohol, propylparaben, sorbitan isostearate, sorbitol, stearic acid, tocopherol (vitamin E), triethanolamine, water	
<b>Other information</b> • protect this product from excessive heat and direct sun	
<b>Questions or comments?</b> Call toll free 1-800-XXX-XXXX	

# Health Effects of Sun Overexposure

*Since the appearance of an “ozone hole” over the Antarctic in the 1980s, Americans have become aware of the health threats posed by depletion of stratospheric ozone, which protects the Earth from the sun’s harmful ultraviolet (UV) rays. This fact sheet provides a quick overview of the major health problems linked to overexposure to UV radiation:*

- Skin cancer (melanoma and nonmelanoma)
- Premature aging of the skin and other skin problems
- Cataracts and other eye damage
- Immune system suppression

Understanding these risks and taking a few sensible precautions will help you enjoy the sun while lowering your chances of sun-related health problems later in life.

## **Skin Cancer**

One in five Americans will develop skin cancer in their lifetime. Medical research is helping us understand the causes and effects of skin cancer. Many health and education groups

are working to reduce the incidence of this disease, of which more than 3.5 million cases are diagnosed each year.

## **Melanoma**

Melanoma, the most serious form of skin cancer, is characterized by the uncontrolled growth of pigment-producing cells. One American dies of melanoma every hour. By 2015, it is estimated that one in 50 Americans will develop melanoma in their lifetime. Many dermatologists believe there may be a link between childhood sunburns and melanoma later in life. The rate of new melanoma cases in this country has nearly doubled in the past two decades, and the rise is expected to continue.

## **Nonmelanoma Skin Cancers**

Nonmelanoma skin cancers are generally less deadly than melanomas. Nevertheless, left untreated, they can spread, causing disfigurement and more serious health problems. More than 2 million Americans are diagnosed with nonmelanoma skin cancer each

year. There are two primary types of nonmelanoma skin cancers.

*Basal Cell Carcinomas* are the most common type of skin cancer tumors. They usually appear as small, fleshy bumps or nodules on the head and neck, but can occur on other skin areas. Basal cell carcinoma grows slowly, and rarely spreads to other parts of the body. It can, however, penetrate to the bone and cause considerable damage.

*Squamous Cell Carcinomas* are tumors that may appear as nodules or as red, scaly patches. This cancer can develop into large masses, and unlike basal cell carcinoma, it can spread to other parts of the body.

These two cancers have a cure rate as high as 95 percent if detected and treated early. The key is to watch for signs and seek medical treatment.

### Other Skin Damage

Other UV-related skin problems include actinic keratoses and premature aging of the skin. Actinic keratoses are skin growths that occur on body areas exposed to the sun. The face, hands, forearms, and the “V” of the neck are especially susceptible to this type of lesion.

Although premalignant, actinic keratoses are a risk factor for squamous cell carcinoma. Look for raised, reddish, rough-textured growths and seek prompt medical attention if you discover them. Chronic overexposure to the sun also causes premature aging, which over time can make the skin become wrinkled, thick, and leathery. Since it occurs gradually, often manifesting itself many years after the majority of a person’s sun exposure, premature aging is often regarded as an unavoidable, normal part of growing older. With proper protection from UV radiation, however, most premature aging of the skin can be avoided.

### 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. If left untreated, cataracts can lead to blindness. Research has shown that UV radiation increases the likelihood of certain cataracts. Although curable with modern eye surgery, cataracts diminish the eyesight of millions of Americans and cost billions of dollars in medical care each year. Other kinds of eye damage include pterygium (tissue growth that can block vision), skin cancer around the eyes, and degeneration of the macula (the part of the retina where visual perception is most acute). All of these problems can be lessened with proper eye protection.

### Immune Suppression

Scientists have found that overexposure to UV radiation may suppress proper functioning of the body’s immune system and the skin’s natural defenses. All people, regardless of skin color, may be vulnerable to effects, including impaired response to immunization and an increased sensitivity to sunlight that may result from interactions with certain medications.

### EPA’s SunWise Program

In response to the serious public health threat posed by overexposure to UV radiation, EPA is working with schools and communities across the nation through the SunWise Program. SunWise aims to teach children and their caregivers how to protect themselves from overexposure to the sun.

# Ozone: Good Up High, Bad Nearby

## What is Ozone Anyway?

Ozone ( $O_3$ ) is made naturally in the atmosphere when three oxygen atoms join together to form a colorless gas. Ozone can have good or bad effects, depending on where it's located in the atmosphere. One way to remember this is, "good up high, bad nearby."

## Good Up High

### The "Good" Ozone Layer: Earth's Sunscreen

The earth is wrapped in layers of air called the atmosphere. "Good" ozone is in the earth's upper atmosphere, 10 to 30 miles above the surface. Life couldn't exist without this protective ozone, which is also called the "ozone layer."

The sun gives off light, heat, and other types of radiation. Too much UV (ultraviolet) radiation can cause skin cancer, cataracts, and harm plants and animals. Ozone high in the atmosphere absorbs, or takes in, some of the sun's harmful UV rays before they reach the ground. Just as sunscreen helps protect your skin from getting burned, ozone up high works like Earth's sunscreen.

## The Ozone Hole is Not a Hole

Although we say "hole in the ozone layer" or "ozone hole," there's no actual hole. Instead, the protective layer contains less good ozone than it used to. This thinning is found all over the earth, but the biggest losses are over the North and South Poles. That's because ozone destruction is worse when it's very cold.

To see current levels of ozone over the South Pole, go to:  
[ozonewatch.gsfc.nasa.gov](http://ozonewatch.gsfc.nasa.gov).

The trouble with ozone destruction starts when certain chemicals used in air conditioners, fire extinguishers, insulating foams, and solvents are let out during use. These chemicals eventually reach the upper atmosphere and are broken down by the sun's radiation, releasing chlorine and bromine atoms. These atoms take away one of the oxygen atoms from ozone and use them to make other substances. Chlorine and bromine atoms are catalysts, meaning they can speed up a chemical reaction without changing, and can repeat the destructive cycle again with another ozone molecule. So one chlorine or

bromine atom can destroy thousands and thousands of ozone molecules, causing ozone to disappear much faster than nature can replace it.

People often confuse the ozone hole with global warming, but they are two different problems.

## Is Anyone Doing Anything About the Ozone Hole (That's Not a Hole)?

The Montreal Protocol is an international treaty that protects the ozone layer by phasing out the manufacture and use of ozone-depleting chemicals. It was enacted in 1989, and all of the countries in the world have signed it. Many ozone-depleting chemicals are now illegal to use, or are only used in small quantities. If all countries meet the terms of the Montreal Protocol, scientists expect the ozone layer to heal by around 2050.

Because of the Montreal Protocol, levels of most ozone-depleting chemicals in the atmosphere have slowly gone down. As a result, the size of the ozone "hole" has remained pretty much the same in recent years.

Today, any products in the U.S. containing CFCs and other ozone-depleting chemicals must have warning labels. The U.S. also prohibits the release of refrigerants used in car and home air conditioners into the air, because they still use ozone-depleting chemicals.

#### **Why Can't We Just Make More Ozone?**

Ozone molecules are constantly being made and destroyed by the sun's ultraviolet light in natural processes. Normally, the amount made and the amount destroyed is about the same, so nothing changes. Think of the amount of ozone as the water level in a bathtub with the faucet running and the drain open. If you turn on the water just right, you can make the amount of water leaving the bathtub equal to the amount coming in, so that the water level never changes. But right now, the drain has gotten faster, and the amount of ozone destroyed is more than the ozone being made.

A big reason we can't make more ozone to send into the upper atmosphere is because it would take a LOT of energy. In fact, to make the amount of ozone normally found in

the upper atmosphere, you'd need about double the electricity that we use in the U.S. every year. In the atmosphere, this huge amount of energy comes from the sun. We also don't have a way to transport the ozone to the right places in the atmosphere.

Since we can't make more ozone, the solution is to slow the flow down the drain back to its normal rate. And the only way to do *that* is to stop using ozone-depleting chemicals.

#### **Bad Nearby**

##### **What Causes "Bad" Ozone?**

"Bad" ozone is found at ground level. In cities, it's made when emissions from vehicles, power plants, chemical plants, and other sources react with heat and sunlight. The hotter the day and the stronger the sun, the more ozone is formed. That's why ozone is usually worst on windless, hot summer afternoons. High levels of ozone are mainly a concern for people from April 1–September 30.

You're most likely to find high levels of "bad" ozone in urban areas. You might hear it called "smog." However, other areas can also have high ozone

levels when winds blow pollution hundreds of miles from their original sources.

#### **How Does "Bad" Ozone Affect Me?**

Even at low levels, breathing ozone can cause chest pains, coughing, nausea, throat irritation, and congestion. It can also worsen heart and lung diseases, like emphysema, bronchitis, and asthma. The more ozone pollution a person breathes, the more permanent damage it can do to her lungs.

Healthy people can also find it harder to breathe when exposed to ozone pollution. Because it usually forms in hot weather, anyone who spends time outdoors in the summer may be affected, particularly children, older people, outdoor workers, and people exercising. Millions of Americans live in areas where ozone levels are higher than the national health standards, and should pay attention to ozone levels when the weather is hot and sunny.

### Ways to Protect Your Health on Bad Ozone Days:

- Use the Air Quality Index (AQI). The AQI uses colors and numbers to tell you how much pollution is in the air: [www.airnow.gov](http://www.airnow.gov).
- Use the EPA's Activity Guidelines at your school and sports practices to keep your kids healthy: [www.epa.gov/airnow/school\\_flag/school-chart-2013.pdf](http://www.epa.gov/airnow/school_flag/school-chart-2013.pdf).
- Do outdoor activities early in the morning and after 6 p.m.
- Pay attention to any breathing or lung problems you might have.

### How Are We Dealing With Ozone Pollution?

The Clean Air Act Amendments of 1990 require the US Environmental Protection Agency, the States, and cities to carry out programs that reduce emissions of ozone-forming chemicals from sources like cars, industry, power plants, and consumer products. Power plants are reducing emissions, companies are developing cleaner cars and fuels, many gas stations are using special nozzles at the pumps to recapture gasoline vapors, and vehicle inspection programs are being improved to reduce emissions.

### What Can I Do?

We can control some things, and some things we can't. Here are some things you can do. And remember, lots of small steps add up to big differences!

#### To Limit "Bad," Nearby Ozone

- Keep your car tuned-up and running well.
- Carpool, use mass transit, walk, bicycle, and plan trips efficiently to reduce driving, especially on hot summer days.
- Be careful not to spill gas when filling up your car or gas-powered lawn equipment. During the summer, fill your gas tank during cooler evening hours.
- Make sure your car's tires are properly inflated and your wheels are aligned.
- Participate in your local utility's energy conservation programs.
- Seal containers of household cleaners, workshop solvents, and garden chemicals to prevent chemicals from evaporating into the air. Dispose of them properly.

### To Protect "Good" Ozone Up High

- Have your car, home air conditioning, and refrigerator checked for leaks.
- Make sure that the technicians working on your air conditioners and refrigerator are certified to recover the refrigerant, as required by law.
- Find out from your local government the best way to get rid of old refrigerators and air conditioners.

### How Can I Protect Myself from UV Rays?

- Use the UV (ultraviolet) Index: The UV Index tells you how strong the sun's rays will be for the day: [www2.epa.gov/sunwise/uv-index](http://www2.epa.gov/sunwise/uv-index).
- Don't Get Burned: Sunburns, especially for children, significantly increase the risk of getting skin cancer over your lifetime.
- Avoid Sun Tanning and Tanning Beds: The UV radiation causes skin cancer and wrinkling.



**Use Enough Sunscreen:** At least 15 minutes before going outside, put on about one ounce of sunscreen over all exposed skin. Sunscreen should have a Sun Protection Factor (SPF) of at least 30 and provide protection from both ultraviolet A (UVA) and ultraviolet B (UVB) rays. Reapply every two hours, even on cloudy days, and after swimming or sweating.

**Wear Protective Clothing,** such as a long-sleeved shirt, pants, a wide-brimmed hat, and sunglasses, when possible.

**Seek Shade** when you can. Remember, the sun's rays are strongest from 10 a.m. to 4 p.m.

**Use Extra Caution Near Water and Sand:** They reflect the sun's rays, which can increase your chance of sunburn.

**Get Vitamin D Safely:** Choose foods fortified with Vitamin D or take vitamin supplements. Don't seek the sun.

### **The Shadow Rule**

Look for your shadow to estimate your UV exposure:

- If your shadow is taller than you are (in the early morning and late afternoon), you're probably getting less UV exposure.
- If your shadow is shorter than you are (around midday), you are getting higher levels of UV radiation. Seek shade and protect your skin and eyes.

# UV Radiation

The sun radiates energy over a broad spectrum of wavelengths. Ultraviolet (UV) radiation, which has a shorter wavelength than either visible blue or violet light and is not visible to the human eye, is responsible for sunburns and other adverse health effects (Diagram A). Fortunately for life on Earth, our atmosphere's stratospheric ozone layer shields us from most UV radiation. What gets through the ozone layer, however, can cause the following problems, particularly for people who spend time outdoors without sun protection:

- Skin cancer
- Premature aging of the skin
- Suppression of the immune system
- Cataracts and other eye damage

Because of these serious health effects, you should limit your exposure to UV radiation and protect yourself when outdoors.

## Types of UV Radiation

Scientists classify UV radiation into three types or bands—UVA, UVB, and UVC.

**UVA:** Not absorbed by the ozone layer.

**UVB:** Mostly absorbed by the ozone layer, but some does reach the Earth's surface.

**UVC:** Completely absorbed by the ozone layer and oxygen in the atmosphere.

UVA and UVB that reach the Earth's surface contribute to the serious health effects listed above.

## UV Levels Depend on a Number of Factors

The level of UV radiation that reaches the Earth's surface can vary, depending on many factors. Each of the following factors can increase your risk of UV radiation overexposure and its consequent health effects.

## Stratospheric Ozone

The ozone layer absorbs most of the sun's UV rays, but the amount of absorption varies depending on the time of year and other natural phenomena. This absorption has also decreased as the ozone layer has thinned, due to the release of ozone-depleting substances that have been widely used in industry.

## Time of Day

The sun is at its highest in the sky around noon. At this time, the sun's rays have the least distance to travel through the atmosphere and UVB levels are at their highest. In the early morning and late afternoon, the sun's rays pass through the atmosphere at an angle and their intensity is greatly reduced.

## Time of Year

The sun's angle varies with the seasons, causing the intensity of UVB rays to change. UVB intensity tends to be highest during the summer months. The intensity of UVA rays is relatively constant throughout the year.

### Latitude

The sun's rays are strongest at the equator, where the sun is most directly overhead and UV rays must travel the least distance through the atmosphere (Diagram B).

Ozone also is naturally thinner in the tropics compared to the mid and high latitudes, so there is less ozone to absorb the UV radiation as it passes through the atmosphere. At higher latitudes the sun is lower in the sky, so UV rays must travel a greater distance through ozone-rich portions of the atmosphere and, in turn, expose those latitudes to less UV radiation.

### Altitude

UV intensity increases with altitude because there is less atmosphere to absorb the damaging rays. Thus, when you go to higher altitudes, your risk of overexposure increases.

### Weather Conditions

Cloud cover reduces UVB levels, but not completely. Depending on the type and thickness of the cloud cover, it is possible to burn—and increase your risk for long-term skin and eye damage—on a cloudy day.

### Reflection

Some surfaces, such as snow, sand, concrete, or water, can reflect much of the UV radiation that reaches them. Because of this reflection, UV intensity can be deceptively high even in shaded areas.

Diagram A

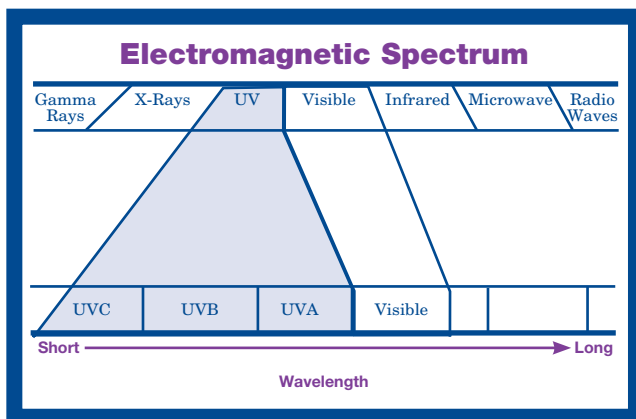
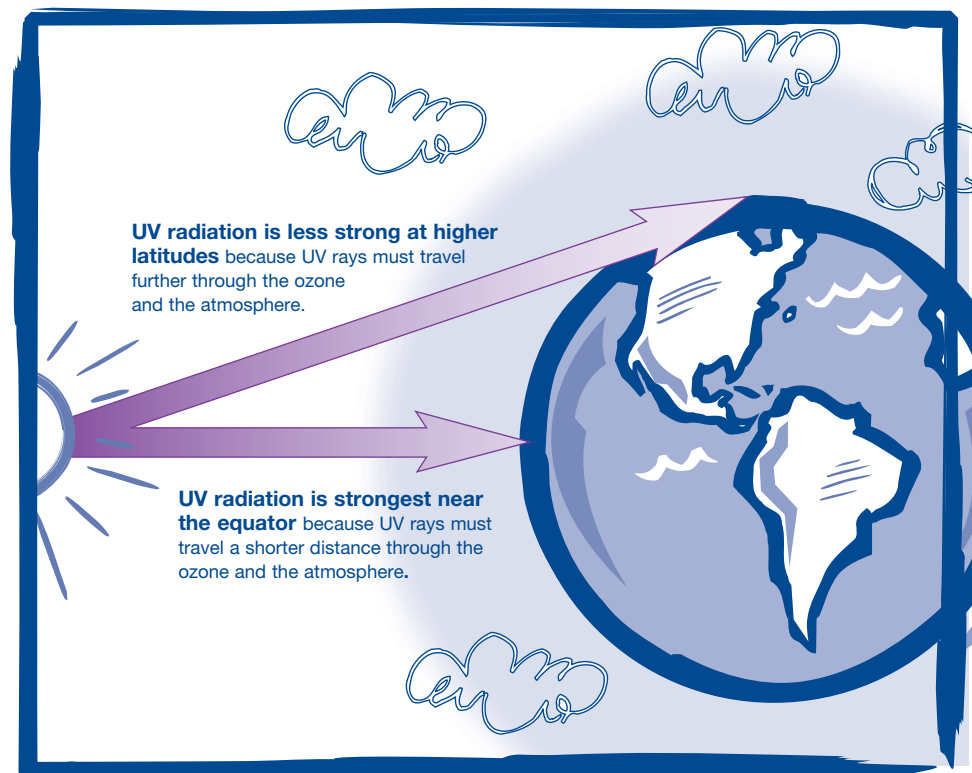


Diagram B



## What Is the UV Index?

Some exposure to sunlight can be enjoyable; however, too much could be dangerous. Overexposure to the sun’s ultraviolet (UV) radiation can cause immediate effects, such as sunburn, and long-term problems, such as skin cancer and cataracts. The UV Index, which was developed by the National Weather Service and EPA, provides important information to help you plan your outdoor activities to prevent overexposure to the sun’s rays.

The UV Index provides a daily forecast of the expected risk of overexposure to the sun. The Index predicts UV intensity levels on a scale of 0 to 11+, where  $\leq 2$  indicates a low risk of overexposure and 11+ signifies an extreme risk. Calculated on a next-day basis for every ZIP Code across the United States, the UV Index takes into account clouds and other local conditions that affect the amount of UV radiation reaching the ground in different parts of the country.

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

### SunWise Action Steps

By taking a few simple precautions daily, you can greatly reduce your risk of sun-related illnesses. To be SunWise, consider taking the following action steps daily:

- Do Not Burn
- Avoid Sun Tanning and Tanning Beds
- Generously Apply Sunscreen

- Wear Protective Clothing, Including a Hat, Sunglasses, and Full-Length Clothing
- Seek Shade
- Use Extra Caution Near Water, Snow, and Sand
- Check the UV Index
- Get Vitamin D Safely

Early detection of melanoma can save your life. Carefully examine all of your skin once a month. A new or changing spot should be evaluated.

### What is the UV Alert?

EPA issues a UV Alert when the level of solar UV radiation reaching your local area is predicted to be unusually intense for the time of year. The UV Alert is a warning, and it offers simple steps you can take to protect yourself and your family. The UV Alert consists of the SunWise action steps and is posted by ZIP Code and City, State at [www.epa.gov/sunwise/uvindex.html](http://www.epa.gov/sunwise/uvindex.html).

**What does the UV Alert mean?**

The UV Alert is based on the UV Index, which EPA provides with the support of the National Weather Service. EPA only issues a UV Alert when the UV Index is predicted to be 6 or higher and unusually intense for the time of year. In some parts of the United States, the UV Index rarely or never reaches this level, so your local area may never receive a UV Alert.

UV Alert days are not the only days you need to protect yourself. EPA recommends that you take the SunWise action steps every day, regardless of the season. Because

children typically spend more time outdoors than adults, it is especially important that children take these steps. Even if you have darker skin, EPA recommends that you act SunWise to reduce your risk of skin cancer, cataracts, and other UV-related health problems.

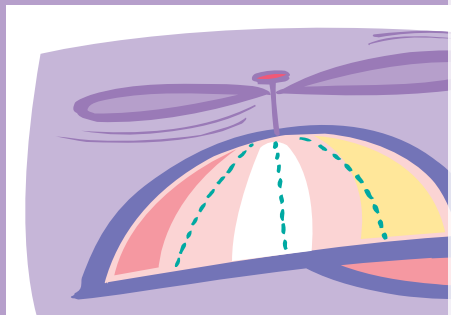
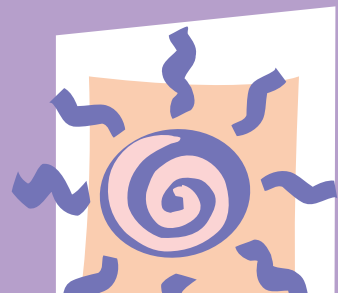
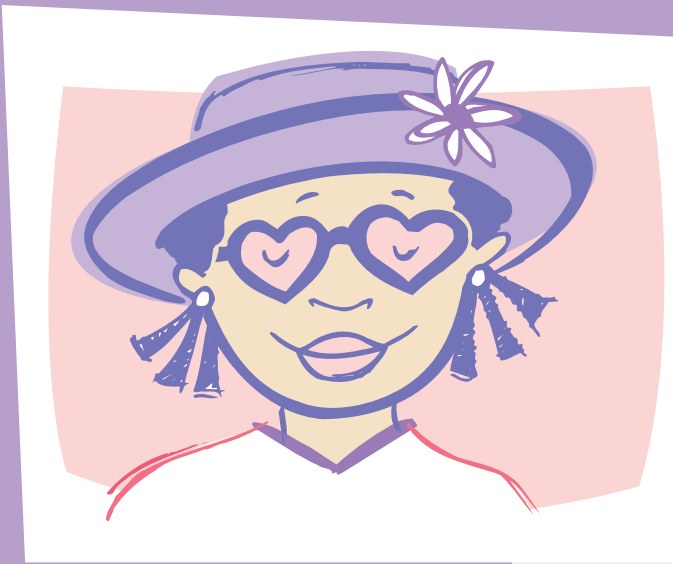
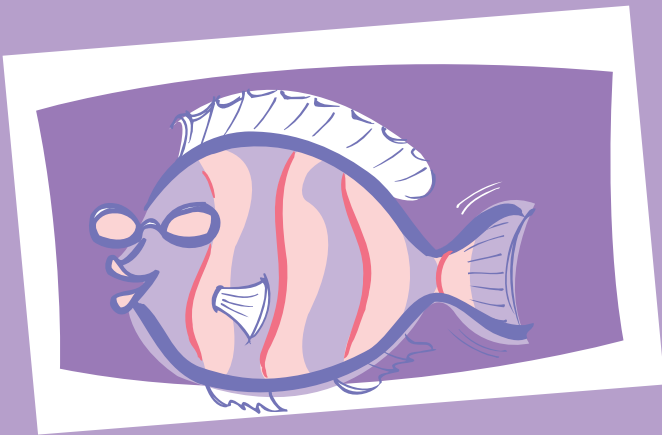
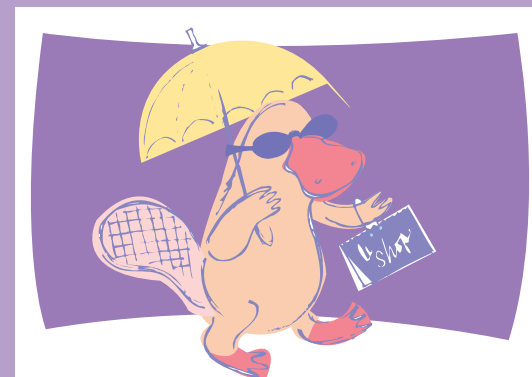
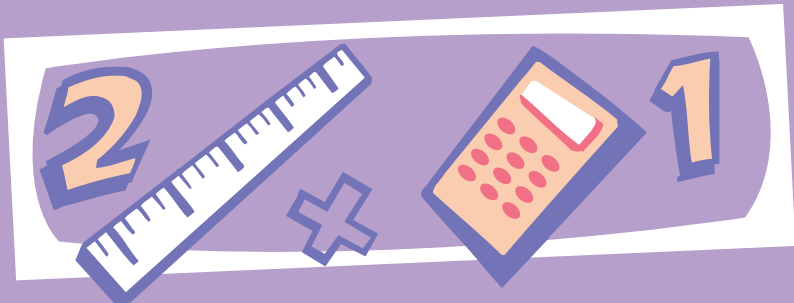
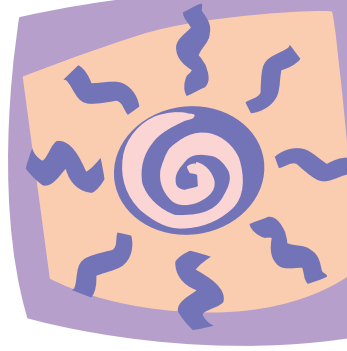
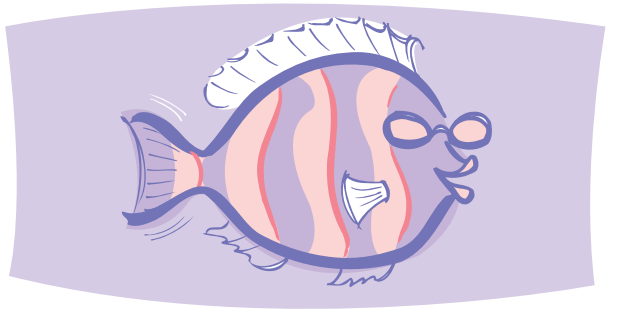
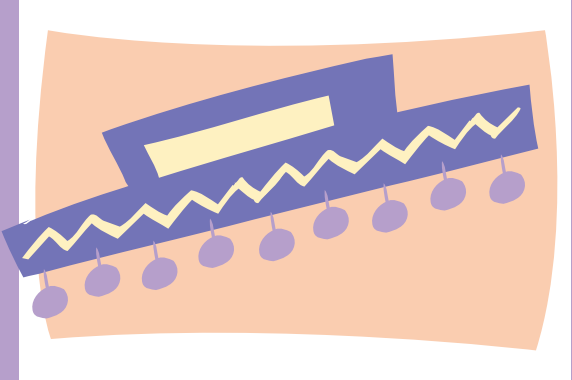
**Where can I find the UV Index and UV Alert forecasts for my area?**

You can find the UV Index and UV Alert forecasts for your area in your local newspaper, on television, and by visiting EPA's SunWise website at [www.epa.gov/sunwise](http://www.epa.gov/sunwise). Enter your ZIP Code. The resulting UV forecast will indicate if there is a UV Alert.

The SunWise website will direct you to EPA's EnviroFlash website, where you can sign up to receive the daily UV Index and occasional UV Alerts directly by email.

The National Weather Service is currently offering a national UV Alert map as an experimental product. The map indicates which parts of the country have a UV Alert forecast for the coming day. Follow the link from the SunWise website to the map.

# materials



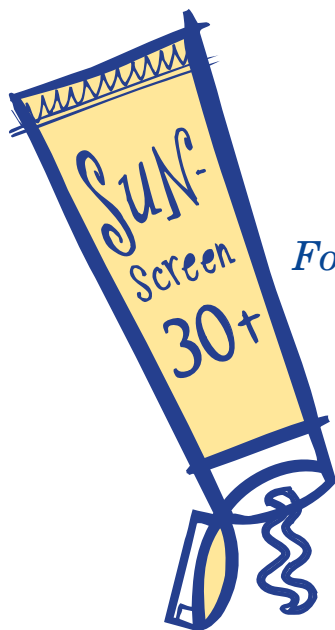
**SunWise**<sup>®</sup>   
a program that **radiates** good ideas  
A Partnership Program of the U.S. Environmental Protection Agency  
[www.epa.gov/sunwise](http://www.epa.gov/sunwise)

# Certificate of SunWisdom

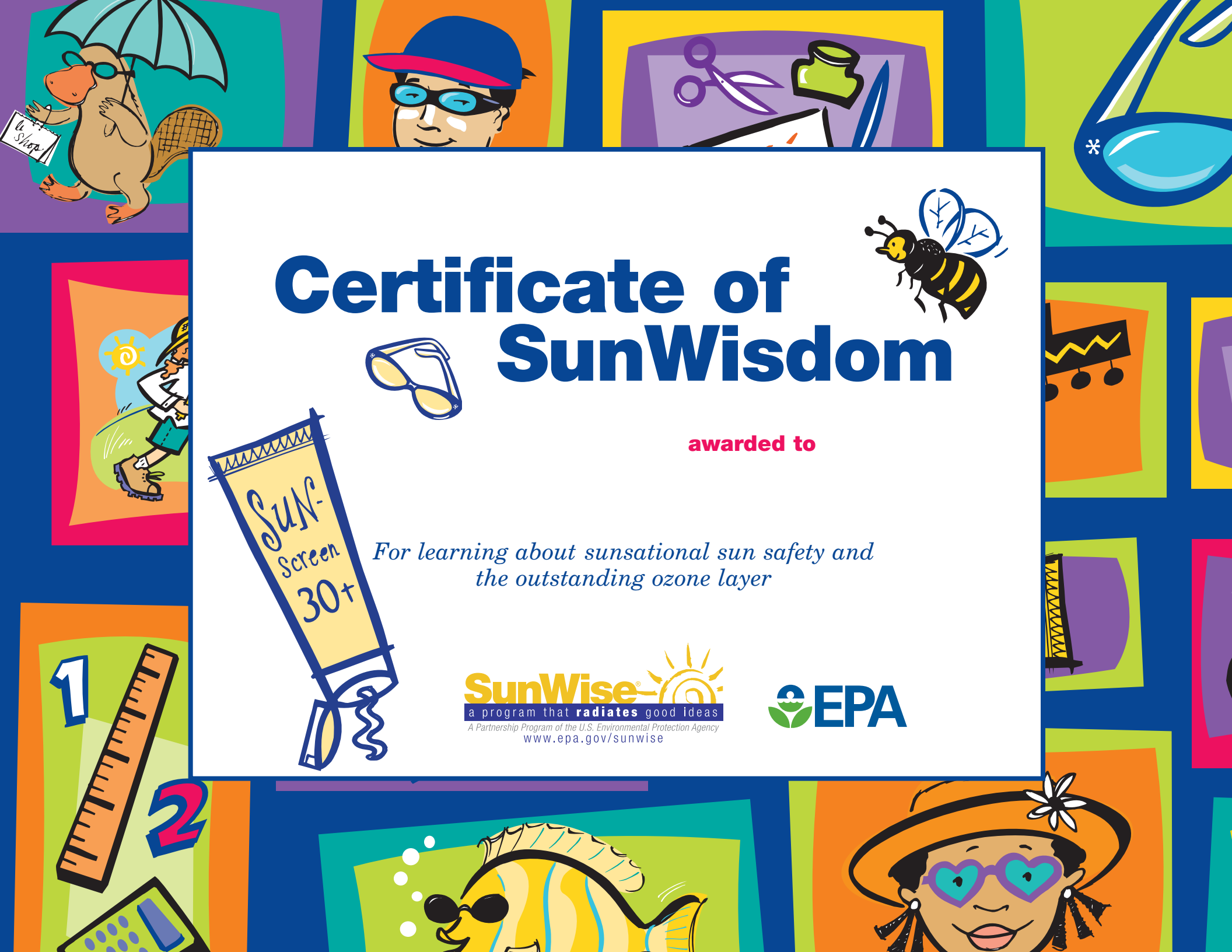


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*For learning about sunsational sun safety and  
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a program that radiates good ideas  
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## UV INDEX CHART

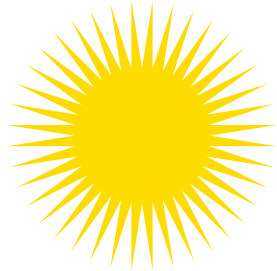


UV Index Number	Exposure Level
2 or Less	Low
3 to 5	Moderate
6 to 7	High
8 to 10	Very High
11 +	Extreme



# Action Steps for Sun Protection

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

Check 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