
SunWise®
Meteorologist
Tool Kit
a partnership
between the
U.S. Environmental
Protection Agency
National Weather
Service
and the
American Meteorological
Society

introduction

How to Use the SunWise Meteorologist Tool Kit

The SunWise Program is designed to help meteorologists 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 use all over the United States and its territories. As such, it will be used in 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 users to adapt the Tool Kit components to meet their specific needs.

Tool Kit Organization

The Tool Kit is divided into the following sections:

Introduction
On-Air Talking Points
Activities
UV Meter Activities (optional)
SunWisdom
Resources
Contact Information
Certificate of SunWisdom

The activities are designed to engage students while ensuring that a sun safety message is being transmitted in a manner suitable to their skills and abilities.

The activities are simple and fun; they range in length of time and complexity, stimulating student interest while conveying the appropriate sun safety messages.

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

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

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

Contact Information is provided to help with any questions about the SunWise Program.

In keeping with the intent of making these lessons hands-on and fun, additional SunWise materials are available, such as the UV-sensitive Frisbee®. Other EPA publications are also available. Pay special attention to the videos and PowerPoint lessons available online, as these can serve as good introductory teaching tools.

Why Sun Safety Education?

To help educators raise sun safety awareness, the U.S. Environmental Protection Agency (EPA) has developed the SunWise Program for grades K-8. SunWise Partners sponsor activities that raise children's awareness of stratospheric ozone depletion, UV radiation, and simple sun safety practices. SunWise is a collaborative effort between:

- Schools
- Communities
- Teachers
- Parents
- Health professionals
- Environmental groups
- Meteorologists
- Education organizations
- Informal educational groups

SunWise is intended to actively engage children in the learning process. Its dual focus on health and the environment will help children develop the skills necessary for sustained SunWise behavior and an appreciation for the environment around them.

The program's learning components build on a solid combination of traditional and innovative education practices already in use in many U.S. schools. Through the program, students and teachers will increase their awareness of simple steps they can take to protect themselves from overexposure to the sun. Students will:

- Demonstrate the ability to reduce health risks by practicing health-enhancing behaviors.
- Acquire scientific knowledge and develop an understanding of the environmental concepts related to sun protection and ozone depletion.
- Enhance critical thinking, data collection, reading, problem solving, decision-making, and communication skills.

The program also encourages schools to promote sun protection policies (e.g., using hats, sunscreen, sunglasses) and to provide a sun-safe infrastructure, including shade structures (e.g., canopies, trees). SunWise also supports community partnerships, such as inviting guest speakers to school assemblies.

Recognizing the many issues schools are asked to address daily, SunWise has been developed with the needs of schools and educators in mind. The program is designed to provide maximum flexibility—elements can be used as stand-alone teaching tools or to complement existing school curricula.

The time commitment necessary to implement SunWise is minimal, while the potential payoff in lower skin cancer rates—and other health benefits in the future—is high.

Through the use of classroom-, school-, and community-based components, SunWise seeks to develop sustained sun-safe behaviors. To learn more about how you can become involved, visit *www.epa.gov/sunwise*.

Becoming a SunWise School or Partner

Becoming a SunWise School or Partner is easy! Any elementary or middle school or non-profit organization that reaches children may participate.

To become a SunWise School or Partner:

1. Complete the registration form located on the SunWise Web site, *www.epa.gov/sunwise*. Look for the "Join Now" link in the "Schools" or "Communities" sections of the site. EPA knows the registration form requires a substantial amount of information and appreciates your efforts to fill it out as completely as possible.
2. A random sample of participants will be asked to complete the SunWise Student Survey before and after implementation of SunWise activities. This simple, 10-minute questionnaire, developed by Boston University's Skin Cancer Prevention Team, elicits basic information on attitudes and practices of children relating to sun exposure. This survey will provide information for evaluation purposes only. All personal information will remain confidential.
3. Adopt at least one of the following SunWise activities:
   - Cross-curricular, standards-based classroom activities.
   - UV measurement and posting on the Internet or in your school.
   - School infrastructure enhancements (school policy changes and/or sun protection structures).
   - Community outreach (inviting guest speakers and forming business partnerships).

Tools Available to SunWise Schools and Partners

Based on the activities you choose, you will receive, free of charge, materials and tools to help you implement SunWise in your school, camp, museum, club, or community organization:

- The SunWise Tool Kit containing cross-curricular activities and background information for K-8 learning levels. The kit also contains a UV-sensitive Frisbee for hands-on experiments and fun.
- The SunWise Web site, *www.epa.gov/sunwise,* with information, links, and interactive activities for educators and students.

on-air talking points

Use the following talking points when speaking to your viewers about sun safety and ozone awareness.

Talking Points on SunWise Activities:

Many of the activities in this Tool Kit can be adapted for short on-air discussions. For example:

UV Frisbee®

- Cover the SunWise UV Frisbee® with a clear shower cap, and apply some SPF 15 sunscreen to one area.
- Take the Frisbee outside. Point out how the white Frisbee gets darker in reaction to the sun, but that the area covered with sunscreen stays white.
- Relate this reaction to how our skin is affected when exposed to the sun.
- Briefly discuss the UV Index and how it can be used to plan outdoor activities to avoid overexposure to the sun.
- See Meteorologist Paul Gross' video for additional ideas on how to present the UV Frisbee activity: *www.ametsoc.org/stationscientist/Paul%20Gross%20UV%20\Damage.mov*.

SunWise in the Classroom

- Visit a local SunWise school where students are learning about being SunWise and using some of the SunWise activities in the Tool Kit.
- Record the students with a video camera.
- On a subsequent weather broadcast, show clips of the students and insert your own commentary on what they are doing and learning in the process.
- EPA's SunWise Program has B-roll footage of kids learning about being SunWise if you are unable to visit a school yourself.

Student Weather Forecast

- Invite students from a local SunWise school to visit the television station.
- Have the students present part of the weather forecast, including reporting what the UV Index is for that day.
- Have the students explain what the UV Index is and what factors influence it on any particular day (e.g., cloud cover, reflection off water or snow, time of day).
- Students should discuss appropriate SunWise Action Steps for that day, taking into account the UV Index level.

Alternate Version:

- Have a local school hold a contest between student groups/classes for presenting the best weather forecast to the rest of the school (perhaps over the morning PA system or in conjunction with an assembly).
- The winning group visits the local television station and presents the weather forecast with the meteorologist.

SunWise Riddles

- To infuse a bit of humor into your weather forecast, follow up a report and discussion of the UV Index with some of the SunWise riddles presented in the Activities section of the Tool Kit.
- The riddles could be posed to the viewing audience, fellow news-casters on the set, or people out on the street.

Sun Safety Talking Points:

There are a number of action steps you can take to protect yourself from the sun:

- **Avoid burning.** Five or more sunburns double your risk of developing skin cancer. And

remember, you can get a burn even on mostly cloudy or overcast days.

- **Avoid sun tanning and tanning beds.** Ultraviolet (UV) light from tanning beds and the sun causes skin cancer and wrinkling.
- **Generously apply sunscreen** to all exposed skin using an SPF of at least 15. Make sure the sunscreen provides broad-spectrum protection from both UVA and 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.
- **Seek shade.** Remember that the sun's 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 sun's rays and can increase your chance of sunburn.
- **Watch for the UV Index.** The UV Index provides a daily forecast of the expected risk of overexposure to the sun. It uses a scale of 1 to 11+, where 1 indicates a low risk of overexposure and 11+ means an extreme risk. Use the UV Index to help you plan your outdoor activities accordingly.
- **Get Vitamin D safely** through a diet that includes vitamin supplements and foods fortified with Vitamin D. Don't seek the sun for your Vitamin D needs.

In addition, consider using EPA's UV Alert to find out if the level of UV radiation reaching your local area is going to be unusually intense for the time of year. The UV Alert offers simple steps you can take to protect you and your family. It is posted by ZIP Code at *www.epa.gov/sunwise/uvindex.html*, and you can sign up to receive UV Alerts by e-mail.

Many high UV days are also high ozone days, so take proper precautions when planning outdoor activities such as exercising.

Ozone Talking Points:

Since high levels of ground-level ozone are frequently an issue when the UV Index is high, it may be helpful to talk about ozone with the viewing audience.

- Ozone is a gas that occurs both in the Earth's upper atmosphere and at ground level. Ozone can be good or bad for your health and the environment, depending on its location in the atmosphere.
- What is "good" ozone?
  - "Good" ozone is located in the stratosphere, which extends upward from the Earth from about 6 to 30 miles and protects us from the sun's harmful rays.
  - Ozone consists of three oxygen atoms and is produced naturally in the stratosphere. However, much of this "good" ozone has been destroyed by man-made chemicals referred to as ozone-depleting substances (ODS), including chlorofluorocarbons (CFCs). Thinning of the protective ozone layer can be observed using satellite measurements, particularly over the Polar regions.
  - Even though we have reduced or eliminated the use of many ODSs, their past use can still affect the protective ozone layer.
  - Ozone depletion can cause increased amounts of UV radiation to reach the Earth which can lead to more cases of skin cancer, cataracts, and impaired immune systems.

- UV can also damage sensitive crops, such as soybeans, and reduce crop yields.

- What is "bad" ozone?
  - Ozone that occurs at ground level is an air pollutant that is harmful to breathe. It damages crops, trees, and other vegetation and is a main ingredient of urban smog.
  - This "bad" ozone forms when emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents react with sunlight.
  - Ground-level ozone is a concern during the summer months because strong sunlight and hot weather result in harmful ozone concentrations in the air we breathe. Many urban and suburban areas throughout the United States have high levels of bad ozone. Many rural areas of the country are also subject to high ozone levels as winds carry emissions hundreds of miles away from their original sources.
  - Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion. It can also worsen bronchitis, emphysema, and asthma.
  - Healthy people also experience difficulty breathing when exposed to ozone pollution. Because ozone forms in hot weather, anyone who spends time outdoors in the summer may be affected, particularly children, outdoor workers, and people exercising.
  - You can help prevent bad ozone from forming by carpooling or using public transportation to reduce harmful emissions!

Air Quality Index (AQI) Talking Points:

The AQI can also be discussed in conjunction with the UV Index and ozone.

- The AQI is an index for reporting daily air quality, focusing on health effects you may experience within a few hours or days after breathing polluted air.
- The AQI is reported on a scale of 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health concern.
- EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act: ground-level ozone, particle pollution (also known as particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. For each of these pollutants, EPA has established national air quality standards to protect public health.
- Ground-level ozone and airborne particles are the two pollutants that pose the greatest threat to human health in the United States.
- For more information on the AQI, visit *http://airnow.gov/*.

activities

Engagement Activity

Estimated time
15-25 minutes (can be used as an introduction or as the entire SunWise presentation)

Suggested Audience Size
Flexible

Supplies
- Transparency of Student Response Sheet
- Action Steps for Sun Protection
- Individual or group copies of worksheets
- Student Response Sheet for Students

Learning Objective
The goal of this activity is to have students begin to think about their actions as they relate to sun safety and to learn the action steps for sun-safe/SunWise behavior.

Directions
Ask students to think about their outside time (use an appropriate timeframe that has sunny conditions: yesterday, this past weekend). What did you notice about the weather conditions? What influence, if any, did it have on your actions? Have students (individually or in groups of 2 to 3) spend 3 to 5 minutes filling in the Student Response Sheet. Alternatively, you can ask them these questions and fill in the sheet yourself to save time or if your audience is large.

Ask students to share their responses. Use the transparency to fill in a sample of student responses.

Talk about the weather (and more specifically the sun, which is the "engine" that makes it all work) and what the students did, or could do, to make outside time more SunWise. Select a sample of the student responses. Discuss what influence the sun had on their bodies. Explain sun-safe behaviors to make students become more aware and SunWise. Refer to the SunWise Web site, *www.epa.gov/sunwise*, for more information.

Explanation/Discussion Hints
It's fun to play in the sun, but did you know that too much sun can be dangerous? If you've ever had a painful sunburn, you've experienced one of the harmful effects of overexposure to the sun's ultraviolet (UV) radiation. Overexposure to UV radiation can cause more serious health effects too, such as skin cancer; premature aging of the skin and other skin disorders; cataracts and other eye damage; and weakening of the immune system. (The immune system is what keeps us from getting sick.) Unprotected exposure to the sun during youth puts children at an increased lifetime risk for skin cancer.

The good news is that UV-related health effects are largely preventable by establishing sun protection habits while you're young and staying sun-safe throughout your life. (Use Action Steps Transparency.)

SunWise

STUDENT RESPONSE SHEET

www.epa.gov/sunwise

Time of Day:				
Temperature: Cold? Warm? Hot?				
Conditions: Sunny? Rainy? Overcast/cloudy?				
Cloud cover: Most of the sky? Part of the sky?				
Where were you? Yard? Ball field? Blacktop?				
What were you doing? Playing? Bike riding? Walking?				
What clothes were you wearing? Jacket? Shorts? Long sleeves?				
Action Steps for Sun protection: Were you wearing: Sunscreen? Hat? Sunglasses? Long sleeve top?				

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A Partnership Program of the U.S. Environmental Protection Agency
www.epa.gov/sunwise

Action Steps for Sun Protection

www.epa.gov/sunwise

Do Not Burn

Avoid Sun Tanning and Tanning Beds

Generously Apply Sunscreen

Wear Protective Clothing

Seek Shade

Use Extra Caution Near Water, Snow, and Sand

Watch for the UV Index

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

Get Vitamin D Safely

Early detection of melanoma can save your life

SunWise
a program that radiates good ideas
A Partnership Program of the U.S. Environmental Protection Agency

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

Scavenger Hunt

Estimated time
15-30 minutes

Suggested Audience Size
Flexible

Supplies
Transparency: SunWise or SunFoolish

Explanation/Discussion Hints
Use the transparency of SunWise and SunFoolish behaviors. The transparency will provide talking points for presenters. As you point out a situation, ask students if the behavior is SunWise or SunFoolish. Have students explain what actions they could take to correct any SunFoolish behavior. After the discussion, use the transparency: Action Steps for Sun Protection.

Possible Solutions

SUNFOOLISH

- Child with tank top and no hat
- SPF 10 sunscreen
- No sunglasses
- Boy in shorts and tank top
- Boy with sunglasses hanging around neck

SUNWISE

- Wide-brimmed hat
- Long-sleeved shirt
- Long pants
- Sunglasses
- Applying SPF 15 sunscreen
- Child in shade

SunWise or SunFoolish?

www.epa.gov/sunwise

Watch Your Shadow

Estimated Time:
10-15 minutes

Estimated Audience Size:
15-30

Supplies:
Transparency: Watch the Shadow

Directions
Discuss with students how shadows are formed. Use the transparency provided and explain to students that the shadows pictured represent SEVERAL different times of day. Ask students to estimate the time of day represented for each shadow.

Discussion
Discuss how shadows are formed. A shadow is a dark figure or image cast onto the ground by our bodies intercepting 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 to 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!"

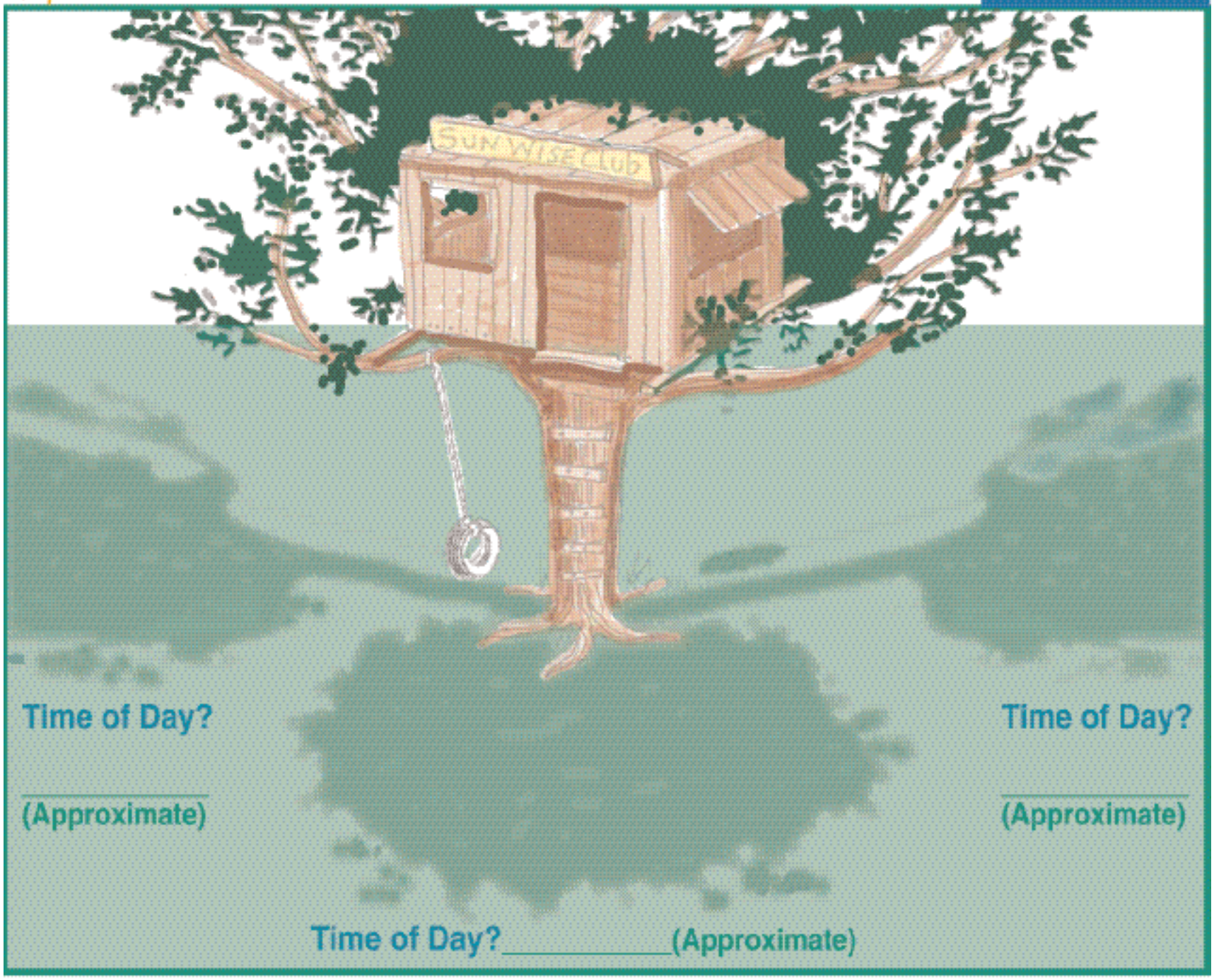
Question and Answers

1. What makes your shadow? *The rays of the sun shining on one side of your body generate a shadow that is projected away from your body.*
2. Do you always have a noticeable shadow? *Yes, but when the sun is directly above at noon, the projection of the shadow is much shorter than it is during the rest of the day.*
3. Can the moon make shadows? *Yes. When there is a full moon, the light can create a shadow, but the moon does not emit UV rays.*
4. Is your shadow always the same size? *No. Your shadow is long in early morning and late afternoon, and your shadow is short during midday.*
5. Ask students to explain what action steps for sun protection they would follow during the day. Action steps should include seeking shade, wearing a hat (wide-brimmed), using SPF 15 sunblock, wearing sunglasses, and wearing clothes to cover arms/legs.

SunWise

Watch the Shadow

www.epa.gov/sunwise



UV Index (Tools of a Meteorologist)

Estimated time
10-15 minutes

Suggested Audience Size
15-30

Supplies
- Transparency: UV Index Chart
- SunWisdom Sheets:
  - UV Radiation
  - What is the UV Index?

Directions
This activity should be used before the SunWise WeatherCast. Explain that a meteorologist uses many tools in making a weather forecast (thermometer, computer, etc.). Explain what information is gathered with each tool. (Use as many examples as needed for the audience.) The UV Index is another useful tool. Pose some questions to students:

- Have you heard of the UV Index? Where? *(Answers will vary)*
- Where might you look to find the UV Index? *(Newspapers, Internet, weather reports)*
- Why would someone need the UV Index? *(To plan outdoor activities)*

UV Index (explanation)
The ozone layer shields the Earth from harmful UV radiation. Ozone depletion, as well as seasonal and weather variations, cause different amounts of UV radiation to reach the Earth at any given time. Developed by the National Weather Service (NWS) and EPA, the UV Index predicts the next day's ultraviolet radiation levels on a 1 to 11+ scale, helping people determine appropriate sun-protective behaviors. On the Index, 1 indicates a minimal risk of overexposure and 11+ means a very high risk.

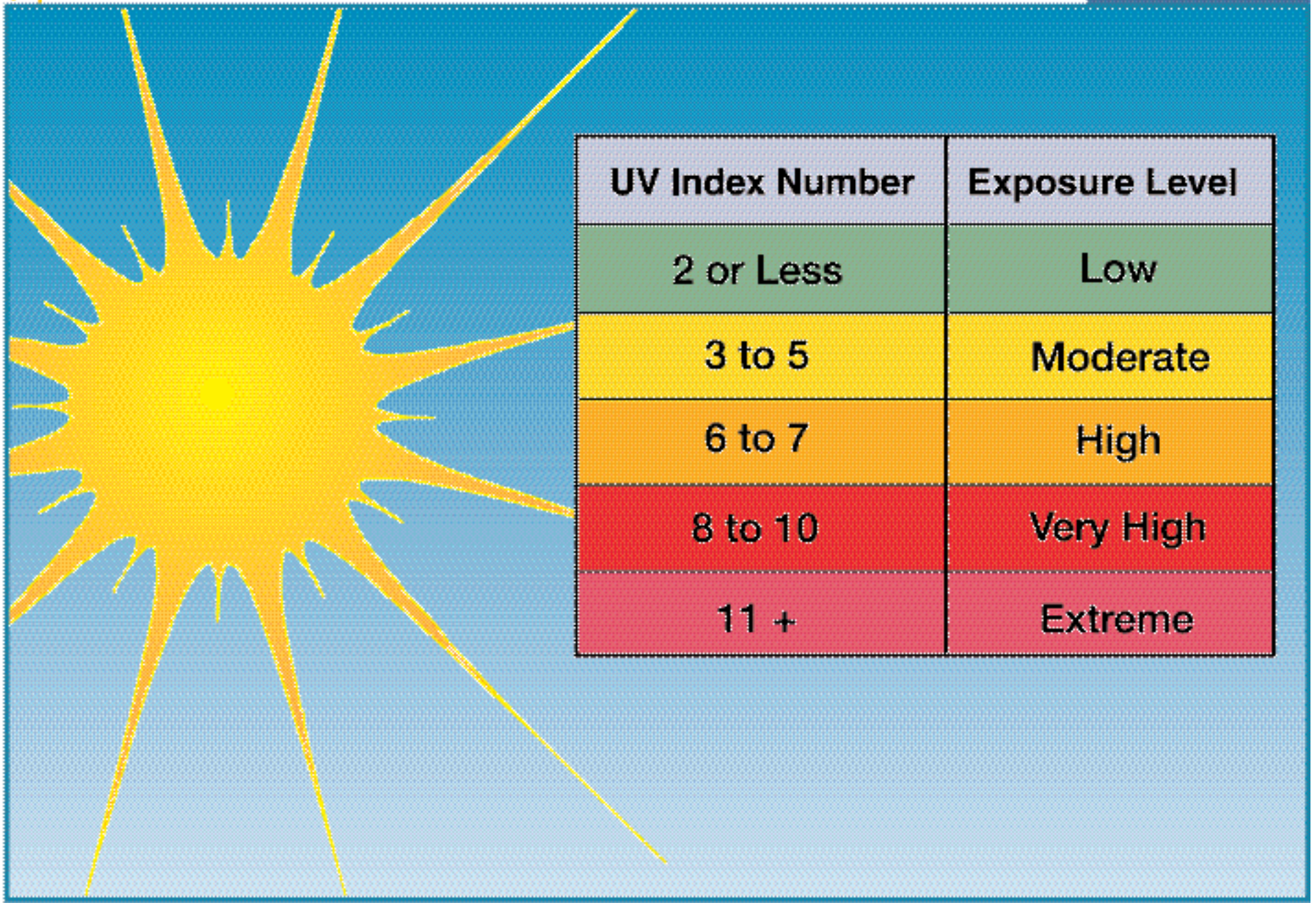
Calculated on a next-day basis for every ZIP Code across the United States, the UV Index takes into account clouds and other local conditions that affect the amount of UV radiation reaching the ground in different parts of the country. The UV Index can be found by looking in the weather section of the newspaper, on TV and radio weather stations, and on the Internet at *www.epa.gov/sunwise/uvindex.html*.

SunWise has also developed a tool called EnviroFlash UV, which sends subscribers an e-mail containing the daily UV Index forecast for their city or ZIP Code. You can also subscribe to receive e-mails only on days when there is a UV Alert for your area. The UV Alert lets you know when UV intensity in your city or town will be unseasonably high, and consequently the risk of overexposure will be greater. The UV Alert will also provide SunWise action steps that you should take to reduce risk of overexposure. To sign up for EnviroFlash, please visit *https://enviroflash.epa.gov/uv*.

SunWise

UV INDEX CHART

www.epa.gov/sunwise



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

A SunWise Weathercast (Role Play for Students)

Estimated time
15-20 minutes

Suggested Audience Size
Flexible

Directions
This activity can be a wrap-up activity or one to leave with the teacher as a follow-up to your visit. A sunny day forecast is the basis for this activity. Have small groups of students role play what they would include in a sunny day weather forecast if they were an on-camera weather forecaster. Question students about what they have chosen to include in the talk and why they included it.

Items to be included in the weathercast may include:

- Temperature
- Relative humidity
- Cloud cover
- UV Index
- The UV Alert
- Action Steps for Sun Safety

Have students present the "broadcast" for the class.

Why Worry About Too Much Sun? (UV Frisbee® Fun)

Estimated time
15-20 minutes. Please consult with the teacher before taking students outside.

Suggested Audience Size
15-30

Supplies
- UV-Sensitive Frisbee
- Sunblock with various SPFs (4, 8, 15, 30)
- Plastic shower cap
- Sunglasses
- Masking tape
- Marker
- Newspaper
- SunWisdom Sheet: Action Steps for Sun Safety (provided)

Talking Points
UV radiation from the sun can seriously threaten human health. Sunburn, premature wrinkling, and skin cancer are some examples of what too much sun can do to people. In order to protect yourself from too much sun, wear a hat, sunglasses, and other protective clothing. Apply a broad-spectrum sunscreen with an SPF of at least 15 or higher liberally to exposed skin, and reapply every two hours when working or playing outdoors. Let's prove that SPF 15 sunscreen can protect you from the sun.

Directions
- Cover the Frisbee with the clear plastic shower cap (DO NOT APPLY THE SUNSCREEN DIRECTLY TO THE FRISBEE).
- Apply small circles of sunscreen (different SPF levels: 4/8/15/30).
- Use masking tape and marker to identify each SPF level.
- Ask students to predict what they think will happen where each SPF sunscreen was applied when the Frisbee is exposed to the sunlight.
- Cover the Frisbee with newspaper and take it outside.
- Uncover the Frisbee and have students observe.
- The unprotected area of the UV Frisbee will change color.
- The circles with SPF 4 will change color quickly.
- The circles with SPF 15 and greater will not change color.
- Have students explain what occurred.

If time permits, return inside, remove the plastic covering and set up a test of different sunglasses to see if they block UV rays. Follow procedure of placing the sunglasses on the Frisbee, cover the Frisbee and go outdoors. Uncover the Frisbee and observe. Have students explain what occurred. If you have a UV light, this activity may be done using the light indoors; however, it is more effective and dramatic to do it outside. You may follow up this activity with the SunWisdom Sheet: Action Steps for Sun Safety.

Speedy Sun Relay Race

Estimated Time
30 minutes

Suggested Audience Size
Flexible

Supplies
- A field or other open space with 20 yards of room
- One set of the following SunWise and SunFoolish clothes and items for each team:
    - Long-sleeved shirt (preferably with collar)
    - Long pants (optional)
    - Hats (wide-brimmed)
    - Sunglasses
    - Empty bottles of sunscreen, some with SPFs of 15 and higher, some with lower SPFs
    - Umbrella (optional)
    - Various other articles of clothing that are not sun safe, like tank tops, 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 in a competitive environment. Students will learn that wearing SunWise clothes is another way to be safe in the sun, and they'll get some exercise, too! As an assessment, have the class examine the non-winning teams' clothes after the race and suggest corrections.

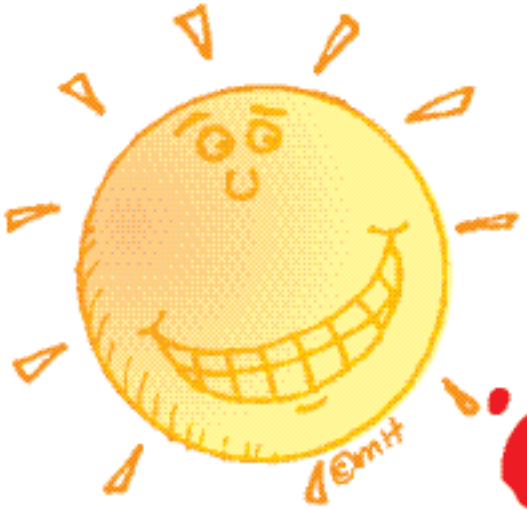
Directions
Organize the class into teams. The number of team members is dependent on the size of the audience. The recommended team size is five members. Line teams up at the start of the race course. Place the piles of clothes at the other end of the race course.

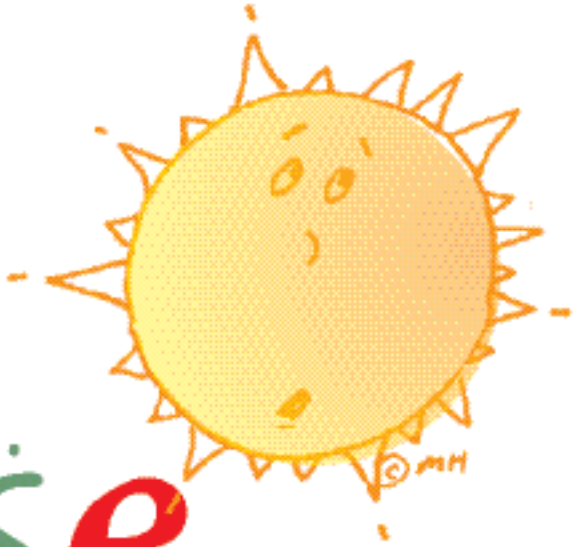
Have each team select one student to be the SunWise model. This student will stay at the starting point of the race. The other team members should each take turns running to the pile of clothes, selecting one item, and running it back to the model to wear.

The first team to have a completely and appropriately dressed SunWise model is the winner. The SunWise models should be wearing a protective hat, long-sleeved shirt, long pants (optional), and sunglasses, and be carrying a bottle of sunscreen of SPF 15 or higher.

Modified Directions
If time and space are limited, modify the activity using the directions below. In either case, communication with the teacher is vital before this activity can take place.

- Use "hula-hoops" or rope to mark off two sections on the floor labeled "SunWise" and "SunFoolish."
- Have the clothing and materials in one large pile between the two marked-off areas.
- Have teams of students take turns to select and place the appropriate SunWise articles in the hoop/square/marked-off area.
- Have teams of students compete to complete the activity the most accurately and in the least amount of time.
- Students must explain why each article was placed in the SunWise or SunFoolish area.





SunWise RIDDLES

www.epa.gov/sunwise

SunWise Riddles

Use the riddles as an icebreaker or wrap-up activity for students. Approximate grade levels are suggested. The riddles can be used with all audiences.

Grades K-2:

- Knock, Knock. *Who's there?*
  Ira. *Ira who?*
  Ira… "gret" that I didn't put on my hat when I went out to play!

- Knock, Knock. *Who's there?*
  Anita. *Anita who?*
  I "nita" another bottle of SPF 15 sunscreen!

- Knock, Knock. *Who's there?*
  Shirley. *Shirley who?*
  Shirley you're not going outside without your sunglasses!

Grades 3-5:

- What do you get when you cross a sheep with a bee?
  A bah-humbug! (Explain that bees can see UV light.)

- What's the biggest problem with snow boots?
  They melt! (Remind students that UV is still a problem in the winter/reflects off snow and increases with higher elevation.)

- Where did the dermatologist start his business?
  From scratch! (Remind students that instances of melanoma can be decreased by following sun-safe behaviors.)

Grades 6-8:

- The sign on the door leading to the school's outdoor cafe says: "Hats and sunglasses required to eat in the outdoor cafe."
  A student then wrote below: "Shirts can eat wherever they want."

- Where can someone ALWAYS find sunscreen when they look for it?
  In the dictionary.

- Bob: First I had ultraviolet radiation, followed by immune suppression and squamous cell carcinoma. After that I got basal cell carcinomas with actinic keratoses. Following that I got cataracts and finally ended up with melanoma.
  Martha: Boy, you had a rough time!
  Bob: *I'll say! I thought I'd never pull through that spelling test.*

Sun Scoop

Directions

Use a video camera, tape recorder, or pencil and paper to develop a news story. Story angles could include the health effects of overexposure to the sun, sun protection, or how the UV Index works.

First, gather the facts (who, what, when, where, why, and how) using resources, such as the Internet, encyclopedias, or your local newspaper. Interview an expert. This could be a science teacher, nurse, or local weather forecaster. Write your story's first paragraph, called the lead, then write the rest of the story. As a guide, answer the three questions below. Be prepared to share your news story with your class.

Talk with the editor of your school or local paper about printing the news story. Ask your teacher or principal if you can read it over the PA system during morning announcements.

Vocabulary Words

Story Angle – The topic or approach to a news story.

Who, What, When, Where, Why, and How – Questions that form the basic building blocks of any news story. A story might answer some or all of these questions.

Lead – The most important part of the story. The lead is always the first paragraph and it explains some of the Who, What, When, Where, Why, and How questions.

Questions

1 What questions will you ask the expert?

2 What is the most important part, or lead, of your story?

3 Of the facts gathered, which ones should be included in your story?

uv meter (optional)

Daily reporting of UV intensity data by school children will enable students to understand the scientific concepts related to ozone 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. 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 1 to 11+ (low to extreme).

UV Index Values

UV Index values depict intensity levels on a 1 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 15+ 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 onto the SunWise Web site at *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 it with care.

Your UV meter should not replace your common sense or current method of avoiding skin and eye damage by 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 1 to 11+ scale, where 1 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 factsheets that can be found in the SunWisdom section of this Tool Kit or log onto the SunWise Web site, *www.epa.gov/sunwise*.

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 15 or higher, UV blocking sunglasses, and tightly-woven clothing.*

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 Web site, *www.epa.gov/sunwise/uvindex.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.*

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.*

SunWisdom

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 disorders; 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 one million cases reported annually. 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

Five or more sunburns double your risk of developing skin cancer.

Avoid Sun Tanning and Tanning Beds

UV light from tanning beds and the sun causes 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 15 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.

Watch for 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 mole in an adult should be evaluated by a dermatologist.

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, and one American dies every hour from this devastating disease. 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 1 million cases have been predicted for next year alone, according to The American Cancer Society.

Melanoma

Melanoma, the most serious form of skin cancer, is also one of the fastest growing types of cancer in the United States. Many dermatologists believe there may be a link between childhood sunburns and melanoma later in life. Melanoma cases in this country have more than 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 1 million Americans will develop nonmelanoma skin cancer next year, while more than 1,900 will die from the disease compared to more than 7,800 people who will die from melanomas of the skin. 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 disorders 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. Up to 90 percent of visible changes to the skin commonly thought to be caused by aging are actually caused by sun exposure. 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 Depletion

The ozone layer forms a thin shield in the upper atmosphere, protecting life on Earth from the sun's ultraviolet (UV) rays. In the 1970s and 1980s, scientists began accumulating evidence that the ozone layer was being depleted. Depletion of the ozone layer results in increased UV radiation reaching the Earth's surface, which can lead to a greater chance of overexposure to UV radiation and the related health effects of skin cancer, cataracts, and immune system suppression.

What Is Stratospheric Ozone?

Ozone is a naturally occurring gas that is found in two layers of the atmosphere. In the layer surrounding the Earth's surface—the troposphere—ground-level or "bad" ozone is an air pollutant that is a key ingredient of urban smog. The troposphere extends up to the stratosphere, where "good" ozone protects life on Earth by absorbing most of the sun's UV rays. Stratospheric ozone is most concentrated between 6 and 30 miles above the Earth's surface.

Ozone Depletion

Until recently, chlorofluorocarbons (CFCs) were used widely in industry and elsewhere as refrigerants, insulating foams, and solvents. Strong winds carry CFCs into the stratosphere in a process that can take as long as 2 to 5 years. When CFCs break down in the stratosphere, they release chlorine, which attacks ozone. Each chlorine atom acts as a catalyst, repeatedly combining with and breaking apart as many as 100,000 ozone molecules during its stratospheric life.

Other ozone-depleting substances include the pesticide methyl bromide, halons used in fire extinguishers, and methyl chloroform used in industrial processes.

What Is Being Done?

Countries around the world, including the United States, have recognized the threats posed by ozone depletion and adopted a treaty called the Montreal Protocol to phase out the production and use of ozone-depleting substances.

How Ozone Depletion Affects UV Levels

Scientists predict that ozone depletion should peak between 2000 and 2010. As international control measures reduce the release of CFCs and other ozone-depleting substances, natural atmospheric processes should repair the ozone layer to 1980 levels by the latter half of the 21st century. Until that time, we can expect increased levels of UV radiation at the Earth's surface. These increased UV levels can lead to a greater risk of overexposure to UV radiation and related health effects.

EPA's SunWise Program

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

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, is responsible for sunburn 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 substantial 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

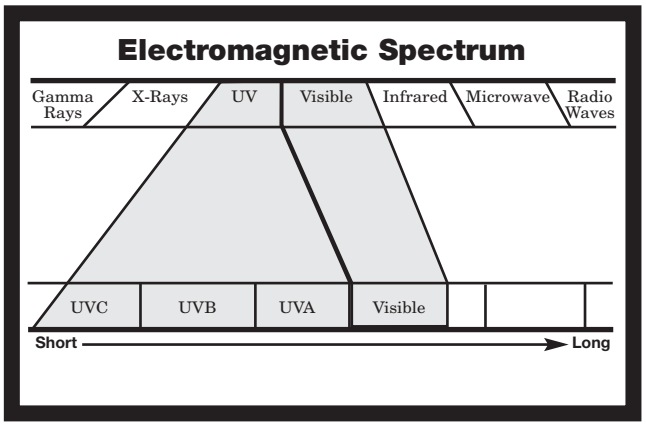
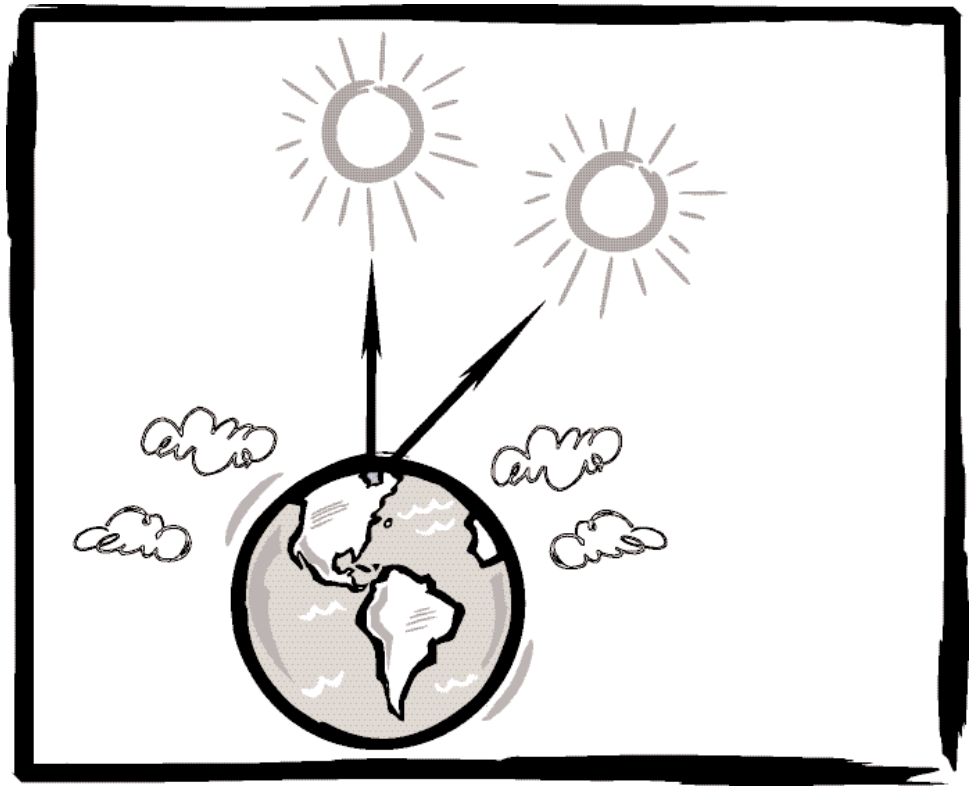


Diagram B



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 1 to 11+, where 1 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
- Watch for 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 mole in an adult should be evaluated by a dermatologist.

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*.

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 Web site at *www.epa.gov/sunwise.* Enter your ZIP Code. The resulting UV forecast will indicate if there is a UV Alert.

The SunWise Web site will direct you to EPA's EnviroFlash Web site, where you can sign up to receive the daily UV Index and occasional UV Alerts directly by e-mail.

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 Web site to the map.

resources

AMC Cancer Research Center
1600 Pierce Street
Denver, CO 80124
(800) 321-1557
www.amc.org

American Academy of Dermatology
930 North Meacham Road
P.O. Box 4014
Schaumberg, IL 60173-4965
(888) 462-DERM (462-3376)
www.aad.org

American Academy of Pediatrics
141 Northwest Point Blvd.
P.O. Box 927
Elk Grove Village, IL 60009-0927
www.aap.org

American Alliance for Health, Physical Education, Recreation and Dance
1900 Association Drive
Reston, VA 20191
(703) 476-3437
www.aahperd.org

American Cancer Society
1599 Clifton Road, NE
Atlanta, GA 30329-4251
(800) 227-2345
www.cancer.org

American Meteorological Society
Station Scientist
1120 G Street, NW Suite 800
Washington, DC 20005-3826
(202) 737-9006
www.ametsoc.org/stationscientist/

American School Health Association
7263 State Route 43
P.O. Box 708
Kent, OH 44240
(330) 678-1601
www.ashaweb.org

Arizona Department of Health Services
Office of Environmental Health
150 N. 18th Avenue, Suite 430
Phoenix, AZ 85007
(602) 364-3143
www.azdhs.gov/phs/sunwise/

Canada's UV Index/Children's Sun Awareness Program
Meteorological Service of Canada
4905 Dufferin Street
Downsview, Ontario M3H 5T4
www.msc-smc.ec.gc.ca/education/uvindex

Cancer Research and Prevention Foundation
1600 Duke Street, Suite 500
Alexandria, VA 22314
(800) 227-2732
(703) 836-4412
www.preventcancer.org

Cancer Research UK
SunSmart
61 Lincoln's Inn Fields
London WC2A 3PX
England
sunsmart@cancer.org.uk
www.cancerresearchuk.org/sunsmart/

Centers for Disease Control and Prevention
Division of Cancer Prevention and Control
4770 Buford Highway
Chamblee, GA 30341
(770) 488-4751
www.cdc.gov/cancer

Children's Melanoma Prevention Foundation
10 Tupelo Drive
Hingham, MA 02045
(508) 960-9633
www.melanomaprevention.org

Coalition for Skin Cancer Prevention in Maryland
1211 Cathedral Street
Baltimore, MD 21201
(401) 539-0872
www.sunguardman.org/core.html

Colette Coyne Melanoma Awareness Campaign (CCMAC)
P.O. Box 1179
New Hyde Park, NY 11040
(516) 352-4227
www.ccmac.org

Melanoma Foundation New England
66 Commonwealth Ave.
Concord, MA 01746
(617) 232-1424
www.massmelanoma.org

National Aeronautics and Space Administration (NASA)
Upper Atmosphere Research Program
300 E Street, SW
Washington, DC 20546
www.nasa.gov

National Cancer Institute
Building 31, Room 10A03
31 Center Drive, MSC 2580
Bethesda, MD 20892-2580
(800) 4CANCER (422-6237)
www.cancernet.nci.nih.gov

National Council on Skin Cancer Prevention
www.skincancerprevention.org

National Oceanic and Atmospheric Administration (NOAA)
14th and Constitution Avenue, NW
Washington, DC 20230
(202) 482-3436
www.noaa.org

National Safety Council Environmental Health Center
1025 Connecticut Avenue, NW
Suite 1200
Washington, DC 20036
(800) 557-2366, #2
www.nsc.org/ehc.htm

National Science Foundation
4201 Wilson Boulevard
Arlington, VA 22230
(703) 292-5111
www.nsf.gov

National Weather Service
Climate Prediction Center
World Weather Building
5200 Auth Road
Camp Springs, MD 20746
(301) 763-8000
www.cpc.ncep.noaa.gov

National Wildlife Federation
8925 Leesburg Pike
Vienna, VA 22184
(703) 790-4000
www.nwf.org

New York State Department of Health
Comprehensive Cancer Control
Corning Tower
Empire State Plaza
Albany, NY 12237
"Growing Up Healthy" hotline: (800) 522-5006
www.health.state.ny.us/nysdoh/cancer/center/cancerhome.htm

Richard David Kann Melanoma Foundation
621 Clearwater Park Road
West Palm Beach, FL 33401
(561) 655-9655
www.melanomafoundation.com

Sécurité Solaire
25, rue Manin - 75019 Paris
France
www.securite-solaire.org

SHADE Foundation of America
Curt and Shonda Schilling
Melanoma Foundation of America
Virginia G. Piper Center
10510 N. 92nd Street
Scottsdale, AZ 85258
(602) 595-4858
www.shadefoundation.org

Sun Safety Alliance
413 North Lee Street
Alexandria, VA 22314
(703) 837-4202
www.sunsafetyalliance.org

World Health Organization INTERSUN Programme
Department for the Protection of the Human Environment
World Health Organization
1211 Geneva 27
Switzerland
www.who.int/uv/en

Sierra Club
408 C Street, NE
Washington, DC 20002
(202) 547-1141
www.sierraclub.org

The Skin Cancer Foundation
245 Fifth Avenue
Suite 1403
New York, NY 10016
(800) SKIN-490
www.skincancer.org

SunSmart Programme
Anti-Cancer Council of Victoria
1 Rathdowne Street
Carlton, Victoria
Australia 3053
www.sunsmart.com.au

Ulman Cancer Fund for Young Adults
4725 Dorsey Hall Drive, Suite A
Ellicott City, MD 21042
(888) 393-FUND
www.ulmanfund.org

The U.S. Department of Health and Human Services
Office of Health Promotion and Disease Prevention
Healthy People 2010
200 Independence Avenue, SW
Washington, DC 20201
(877) 696-6775
www.hhs.gov

University of Colorado at Boulder
Science Discovery
Campus Box 408
Boulder, CO 80309
(303) 492-3748
www.colorado.edu/ScienceDiscovery/

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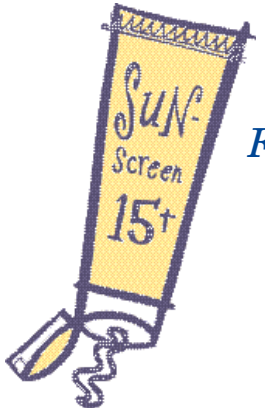

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