

In The Spotlight

Provided by Rhinocort Aqua

On <http://www.weather.com/activities/health/skin/raysawareness.html>

Sun Safety Facts

Introduction

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Before you and your family head outdoors, learn more about the types and effects of UV radiation and how the UV Outlook Index is calculated. Also, find out how the sun's rays may affect you and what you can do to protect yourself.

UV Radiation

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Exposure to UV rays appears to be the most important environmental factor in the development of skin cancer and has also been associated with various forms of eye damage, such as cataracts.

There are three types of UV rays: ultraviolet A (UVA), ultraviolet B (UVB), and ultraviolet C (UVC).

* UVA is the most abundant source of solar radiation at the earth's surface, and penetrates beyond the top layer of human skin. Scientists now believe that UVA radiation can cause damage to connective tissue and increase a person's risk of developing skin cancer.

* UVB is less abundant at the earth's surface than UVA because a significant portion of UVB is absorbed by the ozone layer. UVB does not penetrate as deep into the skin as UVA does, but, nonetheless, can also be damaging and has been associated with the development of skin cancer.

* UVC radiation is extremely hazardous to skin, but it is completely absorbed by the stratospheric ozone layer and does not reach the surface of the earth.

Source: American Cancer Society

UV Outlook Index

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0-2	Minimal
3-4	Low
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The UV index depends directly on the solar elevation above the horizon. On a daily basis the UV index will be higher around local solar noon (11:00 AM to 1:00 PM) depending on the time zone. Clear sky days in the winter will have lower UV index values than clear sky days in the summer due to the higher solar angles in the summer.

Hourly UV Index

The hourly index monitors how observed hourly changes in the sky conditions impact the skin-damaging solar UV radiation. The hourly UV index factors in cloud cover, visibility, and present weather conditions in addition to atmospheric ozone concentration, solar elevation and altitude above sea level.

Forecast UV Outlook Index

The forecast UV index provides a UV forecast for the next ten days, based on the daily maximum UV index that is expected in a given location. The forecast UV index depends on the following meteorological parameters as predicted by atmospheric models: forecast cloud cover and visibility, atmospheric ozone concentration, solar elevation and altitude above sea level.

Sun Protection

The effect of the UV radiation on each individual depends on a number of factors, including skin type, the time of year, and the amount of sun exposure the person has recently received. Your skin tone and susceptibility to burning is classified as follows:

Skin Type Sunburn and tanning history

- I Always burns, never tans, sensitive to exposure
- II Burns easily, tans minimally
- III Burns moderately, tans gradually to light brown
- IV Burns minimally, always tans well to moderately brown
- V Rarely burns, tans profusely to dark
- VI Never burns, deeply pigmented, least sensitive

Even if you have tanned or been burned before, it's never too late to protect your skin. Sunscreens protect your skin from UV rays and are classified according to the Sun Protection Factor (SPF). An SPF 4 blocks out 75% of the burning UV rays, while an SPF 15 blocks out 93% of the burning UV rays; an SPF 30 blocks out 97% of the burning UV rays.

Always use sunscreen with a Sun Protection Factor (SPF) of 15 or greater. For best results, apply sunscreen about 30 minutes before going outside to allow it time to bond with your skin. In addition to protecting you from overexposure to sunlight, sunscreens also help to prevent other problems related to sun exposure including aging skin and precancerous growths.

Source: American Cancer Society

Sun Safety Tips

- * When possible, avoid outdoor activities during the hours between 10 AM and 4 PM, when the sun's rays are the strongest.
- * Always wear a broad-spectrum (protection against both UVA and UVB) sunscreen with a Sun Protection Factor (SPF) of 15 or higher.
- * Be sure to reapply sunscreen frequently, especially after swimming, perspiring heavily or drying off with a towel.
- * Wear a hat with a 4-inch brim all around because it protects areas often exposed to the sun, such as the neck, ears, eyes, forehead, nose and scalp.
- * Wear clothing to protect as much skin as possible. Long-sleeved shirts, long pants, or long skirts are the most protective. Dark colors provide more protection than light colors by preventing more UV rays from reaching your skin. A tightly woven fabric provides greater protection than loosely woven fabric.
- * To protect your eyes from sun damage, wear sunglasses that block 99 to 100 percent of UVA and UVB radiation.
- * Consider wearing cosmetics and lip protectors with an SPF of at least 15 to protect your skin year-round.
- * Swimmers should remember to regularly reapply sunscreen. UV rays reflect off water and sand, increasing the intensity of UV radiation and making sun protection especially important.
- * Some medications, such as antibiotics, can increase your skin's sensitivity to the sun. Ask your doctor or pharmacist about the medicines you take and learn more about extra precautions.
- * Children need extra protection from the sun. One or two blistering sunburns before the age of 18 dramatically increases the risk of skin cancer. Encourage children to play in the shade, wear protective clothing and apply sunscreen regularly.

Source: American Cancer Society

Regents Earth Science
Energy: Electromagnetic Spectrum

Name: _____

Title: UV & ME

Part I: Utilize the computer lab to make some observations about skin types and exposure to UV radiation.

Part II: Utilize SafeSun UV meters, and experiment with SPF factors of sunscreens.

Part III: As a reminder of the dangers of UN energy, make a leather UV bead sensor for your back pack.

Part I

1.) Type in the following website address and answer the related questions.

<http://www.weather.com/activities/health/skin/raysawareness.html>

Enter your Zip Code: _____ (Lincolndale:10540)

2.) Provide information to develop a personalized sun recommendation for late July.
Estimate a full day in the sun, morning to evening.

If time allows, do another profile for an outdoor adventure this weekend.
Compare the results.

Fill out your type of skin and write it down, my skin type is: _____

Select an outdoor activity that you enjoy, my activity is: _____

Select your age and click on the continue button.

3.) How much erythemal UV radiation would you be exposed to? _____ mJ/m²

How many times are you over the amount of radiation that could cause skin cancer? _____ times

What are some precautions you should take?

How often does sunscreen need to be applied during a routine day in the sun? ____

(T/F) People with freckles are more likely to develop skin cancer? _____

(T/F) One or two blistering sunburns before the age of 18 dramatically increases the risk of skin cancer. _____

4.) For the second part of this lab you will need to visit the following website:

www.safesun.com/skin.html

Determine your **S**kin **S**ensitivity **V**alue and write it here _____ (**SSV**)

At the bottom of the website read “Basic UV Facts”.

5.) If you finish early, check out this website and do a Melanoma cancer survey:

<http://www.yourcancerrisk.harvard.edu>

Note: Values in the survey are intended for the age group +40, enter an estimate when you will be 45 years old.

Parts II & III, (In our classroom)

You will break into six teams, **teams 1, 2, 3 (Part II)** will use the SafeSun meters while **teams 4, 5, and 6 (Part III)** will be making leather UV bead sensors for your back packs. Teams 1, 2, and 3 will need to be available to natural sun light, and subsequently rotate these stations to teams 4, 5, and 6.

Part II

1.) Obtain a UV Meter from Mr. Hugick. Turn on the UV Meter. Press the ADV. button on the lower left of the UV meter. The bottom half of the LCD will display “Intensity and Dose”. The Intensity value is the UV index.

UV Index: The unit of the human skin burning to UV intensity. Equal to the integral of the Diffey Erythema Sensitivity Spectrum. It is the Sun’s radiation intensity spectrum, wavelengths divided by 25 watts per square meter.

2.) Obtain a value for the UV index in direct sunlight, this value is:_____.

Next place a transparency that is thinly coated with a sunscreen over the UV meter.

What is the UV index now?: _____

3.) Next press the ADV. button on the lower left of the UV meter until the upper right section of the LCD is displayed showing your SPF Cream and Skin Factor.

4.) Set your skin factor:

Press the **SET SKIN** button, next use your SSV value from Part I, question #4. Once again you will use the “+” or “-” keys to set your value. You must press the **SET SKIN** button one more time to store your value.

5.) Safe Exposure Time Calculation: For this section you will need the UV meter in direct sun light. Next hold the **SET SKIN** key down for 4 seconds. Then:

- A blinking “SUGGESTED” inscription will appear below the SPF and Skiing Factor indicators.
- The SPF indicator will start to blink. The lowest possible SPF value is 1 (no sunscreen used).
- A digital indicator, showing the safe exposure time will replace the Scaled Dose indicator. Hour and minute digits will be separated by a dot. The blinking “APPROX. TIME LEFT” inscription will appear below.

Next press the “+” or “-” keys to decrease or increase the SPF value. The highest possible SPF value is 30. The indicator for safe exposure time displays an interactively estimated safe duration of exposure. Notice what happens to the safe hours you can be in the sun as you increase the SPF values.

Press the SET SKIN key to return to advance mode.

Part III

As a reminder of the dangers of UV energy, you will make and be able to keep a leather UV bead sensor for your back pack.

Materials:

scissors
20 cm leather strip
5 UV beads

Directions: Cut a 20 cm strip of leather. Tie a knot at the end of the strip, next select 5 UV beads. String the beads and tie off the end of the leather strip to the eyelet of backpack zipper.

Conclusion: The majority of skin cancer is caused during teenage years from over exposure to UV radiation. Be Smart and Be Wise, use your UV beads as a reminder of the protection required to prevent skin cancer.

Parting Thought: As the ozone hole in the Earth’s atmosphere is getting larger due to pollution. The net result is that there is less ozone to filter out the UV radiant energy from the Sun. How will this influx of UV energy effect us ?

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