



Sun: Friend and Foe

Life on earth could not exist without the sun. Living things need the light and heat energy that the sun provides. The sun also helps plants grow which gives us food to eat and oxygen to breath (photosynthesis). Sun emits light rays we see by and rays invisible to the naked eye. These invisible rays are ultraviolet radiation (UVR). The sun keeps us warm and helps us make vitamin D, but it can also harm humans. Skin damage from overexposure to UV rays includes: sunburns, wrinkles, and skin cancer. UV radiation can also suppress the immune system and damage eyes (cataracts).

Good and Bad Effects of the Sun	
GOOD	BAD
Warmth	Sunburn
Vision	Cataracts
Photosynthesis	Skin Cancer
Vitamin D synthesis	Suppress immunity
Kills germs	Sunburn

Estimated Time

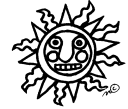
20 minutes initially and 2 minutes every thirty minutes for three hours

Learning Objective

Students will understand why the sun is important to life on Earth and what colors absorb or reflect ultraviolet rays.

Supplies

- Four 15 oz. cans of same size per group
- Four mercury-free thermometers per group
- Clear plastic wrap
- Flat (not shiny) white, blue, yellow and black paint
- Paintbrushes
- Water



- 7) Every thirty minutes for three hours take the temperature of the water.
- 8) Record the temperature on the worksheet.

Introductory Discussion

One of the good qualities is that the sun keeps us warm. Some colors reflect the sun's rays and other colors absorb the sun's rays. UVR, like visible light rays, bends and is reflected off surfaces. Some colors reflect UVR and other colors absorb the sun's rays. When UVR is absorbed the object becomes warmer. Ask the students what colors they think absorb more of the sun's rays and will be warmer.

Questions and Answers

- What is the type of rays from the sun that we can see?
Visible light –rainbow
- What are the types we can't see? *Ultraviolet rays, UVA and UVB.*
- What are some of the benefits from the sun? *warmth, photosynthesis, colors*
- What are some of the harmful effects of the sun's rays. *sunburns, skin cancer*

Activity

- 1) Divide glass into small groups of 4-6 students.
- 2) Have students paint each can a different color.
- 3) Fill each can with 1 cup of water.
- 4) Tape thermometers onto side of can with end in water.
- 5) Put plastic wrap on each can.
- 6) Put cans in direct sunlight.

Ask the following questions:

- Which can kept the water cool?
- What do you think the relationship is between the color and heat?
- Can you relate what you know about the colors and temperature to protecting yourself from the sun's rays?

Activity Extender

Math

Graph the changes in water temperature vs. color of can.