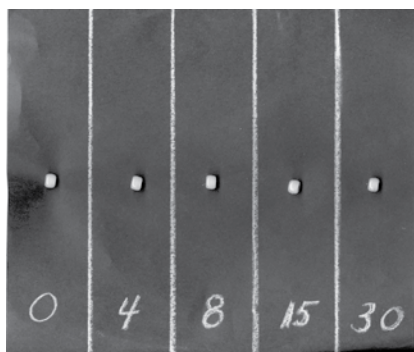


Sunscreens and SPF Ratings

Important...

Sunscreens protect people with all skin shades from UV exposure.



Overexposure to sunlight is a risk common to many sports. UV-containing sunlight can damage our skin, causing painful sunburn and an increased risk for skin cancer. Sunscreens contain chemical agents that safely absorb the UV radiation and convert the energy into heat through a chemical reaction. In this activity, you'll test the effectiveness of several sunscreen products.

Stuff You'll Use: ▶3–5 UV detection beads (all the same color)
▶black construction paper ▶scissors ▶gallon-sized plastic bag ▶glue
▶cotton swabs ▶2–4 sun protection products having a wide range of SPF ratings (include at least one with an SPF rating of 8 or below)

What to Do:

- 1 Place the UV detection beads in direct sunlight and observe what happens. Then, remove the beads from the sunlight. What happens?
- 2 Working indoors, cut black paper to fit inside a gallon-sized plastic bag. Evenly space UV detection beads on the black paper, one bead for each sun protection product you will test and one bead for the control. Glue the beads to the paper, making sure not to get glue on the tops of the beads. Let dry.
- 3 Label the paper next to each bead with the SPF rating of the sun protection product you are going to test. The control bead will get no sun protection product (0 SPF). Slide the black paper into the gallon-sized plastic bag.
- 4 Using a clean cotton swab for each sun protection product, spread a small amount of the appropriate product on the bag over each bead in a circle about 1½ inches (about 4 cm) in diameter. Apply the same amount of product evenly over each bead.
- 5 Create a data table like the example at left. Record the SPF of each product, the starting shade of each bead, and the time of day and weather conditions.
- 6 Cover the bag and bead setup with a thick cloth or another material that does not allow sunlight to penetrate. Take the setup outside in direct sunlight. Remove the cloth but not the plastic bag. Observe and record the shade of each bead (such as white, nearly white, light, medium, and dark.) If you can't see through the plastic, take the setup indoors, open the bag, and immediately observe the beads. What is the trend between the shade changes of the beads and the SPF ratings?

Sample data table

SPF of Product	UV Bead Shade	
	Start	After UV Exposure
0 (control)		

Time and Weather:

How It Works:

UV detection beads turn from pale, off-white to color when exposed to UV from direct sunlight. The SPF ratings of the products correlate with how quickly and how deeply the beads change shade. Beads covered with no sun protection product or low SPF product quickly change to a deep shade, while those covered with a maximum protection (SPF 30 or higher) product remain white or nearly white. Beads covered with intermediate levels of SPF show a change somewhere in between. You should see the general trend from low SPF (deeper bead shade) to high SPF (lighter bead shade).



More Fun?

Terrific Science Press (www.terrificscience.org/sciencestore) offers the following books that include more activities related to staying safe in the sun:

- ▶ [*Camp and Club Science Sourcebook: Activities and Planning Guide for Science Outside School*](#)
- ▶ [*More Than Skin Deep! Skin Health Activity Handbook*](#)
- ▶ [*Sun Safe: Skin Protection Presentation Guide*](#)

Want to buy UV detection beads? Visit the Terrific Science Toys, Etc. Store at www.terrificscience.org/sciencestore.

