

Sun-Earth Day

Celebrate the Connection!

www.sunearthday.nasa.gov

Public Outreach: Make and Take Activities

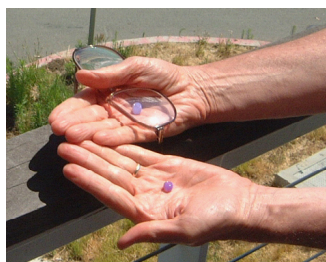
What You'll Need

- copies of UV Worksheets (see next page)
- “UV detectors” a.k.a. UV beads. These can be ordered inexpensively from <http://www.teachersource.com>
- container or covering to prevent the Sun from hitting the detectors prior to the activity. (Black film canisters work very well, so does a closed fist or a pocket!)
- a cup with water
- sunscreen and a zip-lock bag
- sunglasses
- Sun and shade (When doing this activity indoor, you can use a UV lightbulb / blacklight or an opened sunny window – the glass in the window might block out most of the UV rays!)
- (optional) pipecleaners or strings to hold the “UV detectors” if distributing beads to participants to take away.

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Exploring Ultraviolet (UV) light from the Sun

About this Activity



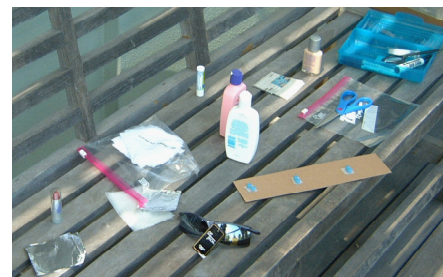
The Sun gives off different kinds of energy: including heat, visible light, and invisible light in the form of ultraviolet (UV) rays. While the Earth's atmosphere protects us from most of the Sun's harmful UV rays, there is still an abundance of UV rays around us. This activity explores UV rays from the Sun and ways we can protect ourselves from these potentially harmful UV rays.

Left: Comparing UV detectors with and without the covering of a pair of eye-glasses.

Below Right: Examples of materials that can be used for this activity.

Preparation

Set up five stations: a sunny spot, a shady spot, sunglasses, a cup with water, and sunscreen. For the sunscreen station, squeeze a little sunscreen into the zip-lock bag and drop in a bead (this keeps sunscreen from getting all over.) If doing this activity indoors, use an open sunny window (the glass in the window might block out most of the UV) or use a UV lightbulb / blacklight to imitate the Sun.



To Do and Notice

- 1) Explain that you have “detectors” (UV beads) which turn color when they are exposed to UV rays. The beads detect the ultraviolet coming from the Sun and the more UV there is, the darker the beads become. We prefer using beads in only one color and in a deeper color, like purple, to make the color changes and comparisons more obvious.
- 2) Ask participants to make predictions and write it down on their worksheet. Some questions to consider:
 - Where do you think the bead will turn the darkest?
 - What happens in the water?
 - Do sun glasses protect eyes from UV? What about regular glasses?
 - What do you think happens to UV on a cloudy day?
 - Is the shade really free of UV?
- 3) Demonstrate or ask the participants to try out the UV detectors at different stations.
- 4) Ask your participants if there are other conditions that they think will block UV. They may want to test out other materials that they have on hand, such as clothing and regular glasses.
- 5) The beads will turn back to the original color when no longer exposed to UV. Give away “UV detectors” so participants can attach them to their jackets or purses to continue detecting UV!

Activity Notes

This activity demonstrates that different materials will block UV rays to different extents. When proper Sun protection is not used, UV can damage our skin and eyes.

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To learn more about UV, other forms of energy emitted by the Sun, or how UV affects our skin, follow the links under Related Websites below/next page.

Related Websites

NASA's Imagine the Universe: Electromagnetic Spectrum

http://imagine.gsfc.nasa.gov/docs/science/known_11/emspectrum.html

American Academy of Dermatology: UV Index

<http://www.aad.org/public/Publications/pamphlets/UltravioletIndex.htm>

UV Sensitive Beads

by _____

1. What will best protect your beads from changing color?

Black Paper Water Sunscreen 15 Sunscreen 50 Sun Glasses Shade

2. What did you find protected your beads the best from changing color?

Black Paper Water Sunscreen 15 Sunscreen 50 Sun Glasses Shade

3. Why do you think this worked the best?

4. What else can you think of that will protect your beads from changing color?

5. What is the best way to protect your skin when you have to be out in the Sun for a long period of time?
