



## **K-2 Earth Science**

### **Southern Nevada Regional Professional Development Program**

#### **Ultraviolet Detecting Beads**

##### **INTRODUCTION**

It is important for young children to begin to explore and understand that the Sun is the most important source of energy for our planet. Living in the Mojave Desert it is also important for students to understand that too much exposure to the Sun can also be harmful.

##### **WHERE'S THE SCIENCE?**

Ultraviolet (UV) light is produced by the Sun. Overexposure to ultraviolet light can cause skin cancer in humans. You can see the effects of overexposure on items left out in the Sun for long periods of time, from sunburn on you, to the faded cloth on your patio furniture.

##### **MATERIALS**

- Ultraviolet detecting beads from Educational Innovations
- Rawhide string
- A large bag of crayons
- Science notebook

## **PROCEDURES**

*Note: This lesson needs to be completed on a warm sunny day!*

1. First thing in the morning call the students to the group area and show them a picture of the Sun and ask them to share what they know about the Sun. Then pose the following questions: “Can the Sun be harmful? If so, how?” Share out responses with the whole group, discuss and chart. You may want to post a prediction chart labeled: “Can the Sun be harmful?” with the words “Yes” and “No” posted underneath. Students can draw and cut out a picture of the Sun, write their name on it and place it on the graph to represent their prediction.
2. Show the students a bag of Ultraviolet detecting beads and demonstrate for them how to make a UV detecting bracelet by placing 8-10 various beads onto a rawhide string and then securing the end with a knot.
3. Send the students to their seats and pass out materials. Allow about 5 minutes to construct their bracelets. As the students work, move from group to group checking that the students are following directions correctly and pass out science notebooks.
4. When the students are finished ask them to draw a picture of their bracelets in the science notebook and note the time and location.
5. Ask the students to line up at the door with their science notebooks and pencil. Prepare a bag of crayons to take with you for use outside. Gather the students together in a sunny location and ask the students to observe their bracelets for a few minutes. Share observations. Have the students sit down and record their observations in their science notebook. Make sure they note the time and location. Pass out crayons so students may add color.
6. Move to a shady location and repeat step 5.
7. Return to the group area in the classroom and discuss the results of this investigation. Explain that these beads are

- ultraviolet sensitive beads that can change color when exposed to the ultra-violet light from the Sun. There are also some pony beads which are not ultraviolet sensitive and therefore do not change color in the Sun. Discuss what happens to their skin when they go outside in the sun. Refer back to the prediction chart from step 1.
8. Repeat steps 5 & 6 in the middle of the day and at the end of the day and compare results. Students should notice that the beads change color much faster in the middle of the day.
  9. After the final observation instruct the students to draw a line under their observations and to record what they learned today about the Sun. Refer back to the opening question: “Can the Sun be harmful?” Allow the students to return to the chart and move their sun if they would like to do so.

**Extension:**

Try repeating the above investigation after first coating the beads with various levels of sunscreens. You could also use sunscreen that is a year old, six months, etc. to see if sunscreen loses some of its potency over time.

**Additional Resources**

*Our Sun, Our Weather* (Big book) [www.newbridgeonline.com](http://www.newbridgeonline.com)  
*Energy from the Sun* (Big book) ISBN # 0-7608-9711-5 Sundance

Ultraviolet Detecting Beads #UV-Assorted @  
[www.teacherresource.com](http://www.teacherresource.com) Phone 888-912-7474

**Nevada State Standards**

E2A1 Students know the Sun is a source of heat and light. E/S  
N2A1 Students know how to make observations and give descriptions using words, numbers and drawings. E/S  
N2A2 Students know tools can be used safely to gather data and extend the senses. I/L

N2B2 Students know that, in science, it is helpful to work in a team and share findings with others. E/L

N2B1 Students know science engages men and women of all ages and backgrounds. E/S