

UV Kid!

Brief Facilitation Outline

1. Share ideas and knowledge.

- Introduce yourself. Help the children learn each other's names (if they don't already).
- Frame the activity with the main message: Engineers work to keep astronauts safe from UV radiation in space — just like we must protect ourselves from harmful UV radiation here on Earth!
- Invite the children to talk about what they already know about UV radiation, what they've experienced at home and how they protect themselves in their daily lives. Use open-ended questions and invite the children to talk with you and each other.

- #### 2. Guide the children in each creating a person or creature with a built-in UV-radiation “detector.”
- Explain that they will incorporate UV beads, which are made from a special pigment that is very sensitive and turns colors when exposed to the UV rays. With the help of UV Kid, they will investigate the source of UV radiation and how we can best protect UV Kid — and ourselves! — from it. Have the children follow these steps to create a UV Kid (and make their own variations, if they'd like!):

- a. Cut two pipe cleaners in half.
- b. Fold one piece in half; these will be his/her legs.
- c. Connect a second piece to the legs to make his/her torso.
- d. Thread the beads onto his/her torso, alternating UV with non-UV beads. Slide all the beads toward UV Kid's legs.
- e. Twist the third piece around the torso above the beads to make his/her arms.
- f. Form a circle with the last piece and use it for his/her head.



- #### 3. Observe UV Kid's UV radiation detectors (i.e., the UV beads) indoors, in shade, and finally, in full sunlight.
- Encourage the participants to discuss their predictions first, then their observations, with each other and with you. Be thoughtful about your approach and keep the UV beads covered when walking outside to a shady spot. After making observations, “reset” the beads by covering them for about one minute and have a discussion to predict what will happen in full sunlight. After moving to full sunlight, continue making observations and discussing possible explanations for those observations.

- #### 4. Test two materials to see if they protect UV Kid from UV radiation.
- Once indoors, continue making observations about the beads' appearance and discussing possible explanations for those observations. Generate ideas for how the children might prevent the beads from changing again in full sunlight. Use everyday experiences, such as wearing clothing, using sunscreen, using umbrellas, or staying inside, to consider how UV Kid — and astronauts in space — can similarly protect themselves. Invite the children to thoughtfully test different materials:

- a. Make a construction paper poncho or shirt to cover the top UV bead.



- b. Select two additional materials and use them to cover other UV beads.
- c. Take UV Kid into full sunlight and observe how the UV beads do or do not change.
- d. In pairs or small groups, discuss ideas for why some materials protect UV Kid better than others and share those ideas with the whole group.

5. Conclude. Summarize that we encounter UV radiation every day from sunlight. While some UV radiation is necessary for our health, too much can harm humans (and other living organisms). Overexposure to UV radiation causes the skin to burn, sometimes badly (ouch!!). Extreme or excessive burning of the skin can lead to skin cancer. UV radiation can harm our eyes, as well. Engineers and scientists test materials — just like the children did — to find ways to keep astronauts safe from UV radiation in space. On Earth, we can protect ourselves from harmful UV radiation by wearing protective clothing, using sunscreen, wearing sunglasses, not staying out in the Sun for extended periods, and not expecting the shade to protect us. Challenge the group to continue testing UV Kid's protective materials in other settings, such as inside a car or outdoors on cloudy days.