



### Challenge Checklist

#### Prior to Activity:

- \_\_\_\_\_ Go to the NASA Exploration Design Challenge 5-8 web site, <http://www.nasa.gov/audience/foreducators/spacelife/explorationdesign/5-8/index.html> to register your group
- \_\_\_\_\_ Collect materials on the materials list
- \_\_\_\_\_ Organize materials into zippered bags, one for each team

#### During the Activity:

- \_\_\_\_\_ Use the NASA EDC presentation PDF and script to guide instruction
- \_\_\_\_\_ Group students into teams of 4-6
- \_\_\_\_\_ Watch introductory video
- \_\_\_\_\_ Pass out materials to each group
- \_\_\_\_\_ Conduct investigation
- \_\_\_\_\_ Record observations on *Ray Shielding* data sheets
- \_\_\_\_\_ Pass out *Design Packet* to each group/student
- \_\_\_\_\_ Use the *Design Packet* to guide radiation shielding designs
- \_\_\_\_\_ (Optional) Using the materials tested, create a radiation shield that blocks visible light and Ultra Violet (UV) light (sun), if using UV beads
- \_\_\_\_\_ (Optional) Insert UV beads into the design to serve as sensors for UV light
- \_\_\_\_\_ Test model indoors with flashlight in a darkened area (Shield should block all visible light so no glow can be seen.)
- \_\_\_\_\_ (Optional) Take the model outdoors to test effectiveness of radiation shield (If UV beads do not turn color, shield was effective.)
- \_\_\_\_\_ Record results

\_\_\_\_\_ Modify and improve design

**Following the Activity:**

\_\_\_\_\_ Return to NASA EDC 5-8 web site

(<http://www.nasa.gov/audience/foreducators/spacelife/explorationdesign/5-8/index.html>) to document teams' completion of activity (Scroll down page to Step 4: Submit Names for Virtual Flight or use this direct link:

[https://www.nationalinstituteofaerospace.org/nianet/form39/secure\\_index.html](https://www.nationalinstituteofaerospace.org/nianet/form39/secure_index.html) )

\_\_\_\_\_ Add children's first names into the form to add them to the virtual crew for the first Orion flight test (EFT-1)

\_\_\_\_\_ Download participation certificates for each child and for the group leader

\_\_\_\_\_ Additional Activities/Videos may be used to extend children's understanding about radiation and shielding (See suggestions below.)

- NASA eClips Rose Colored Glasses (Guide Lite)  
[http://www.nasa.gov/pdf/438165main\\_GLRoseColoredGlasses.pdf](http://www.nasa.gov/pdf/438165main_GLRoseColoredGlasses.pdf)
- Watch NASA eClips videos [www.nasa.gov/nasaclips](http://www.nasa.gov/nasaclips) about wavelength and radiation:
  - Our World: Arecibo - The Largest Radio Telescope on Earth  
<http://www.nasa.gov/audience/foreducators/nasaclips/search.html?terms=wavelength&category=1000&disp=grid>
  - Our World: The Sun, a Real Star  
<http://www.nasa.gov/audience/foreducators/nasaclips/search.html?terms=magnetosphere&category=1000&disp=grid>
  - Real World: Space Weather  
<http://www.nasa.gov/audience/foreducators/nasaclips/search.html?terms=%22space%20weather%22&category=0100&disp=grid>
  - Real World: Hubble: Wide Field Camera 3  
<http://www.nasa.gov/audience/foreducators/nasaclips/search.html?terms=%22Wide%20Field%20Camera%22&category=0100&disp=grid>