SCIENCE FESTIVAL FACILITATOR'S GUIDE

Sticky Icky!

1. Make sure you have the materials you need.

- White school glue
- Food coloring (various colors)
- Borax (found in the laundry aisle)
- Two pitchers: One labeled "Borax Solution," one labeled "Water Only"
- Warm tap water
- Plastic Tablespoons (some for water, some for glue)
- Plastic Teaspoons (for Borax solution)
- Six-ounce plastic cups (one for each student-adult pair)
- Popsicle sticks (one for each student-adult pair)
- Safety glasses

2. Watch this video on your smartphone:

https://youtu.be/RQDlW_1IFkT0

3. Prepare your station.

- In the pitcher labeled "Borax Solution" mix one pint of warm tap water and two tablespoons of Borax. Stir well.
- Fill the "Water Only" pitcher with plain warm water.
- Distribute plastic cups and popsicle sticks, one each per student-adult pair. Have food coloring, pitchers, and measuring spoons available to share.
- If you have time, look around the room for examples of polymers to show students: plastic pens, calculators, cell phone cases, synthetic fabrics and rubber-soled shoes are all options.

Questions to ask participants before they start:

- What do rubber, silk, concrete and plastic have in common? Let's find out!
- Bonus: Pass around examples of different materials made of polymers: a plastic cell phone case, a rubber-soled shoe, a toothbrush or a shirt made from rayon.

Instructions:

Please read each set of instructions out loud. Make sure that you direct the correct person to complete each assigned task.

- **Adult:** In your plastic cup, mix one Tablespoon of plain warm tap water with one Tablespoon of white glue.
- **Student:** Stir well with a popsicle stick. Tell your partner which color to use for the next step.
- **Adult:** Add a few drops of food coloring to the glue and water mix.
- **Student:** Stir well with a popsicle stick, keep stirring during the next step.
- **Adult:** Slowly pour two teaspoons of the Borax solution into the glue and water mixture.
- **Student:** Keep stirring until there is no liquid left.

How It Works:

The glue and water mixture contains chains of molecules, called "polymers," which move relatively freely as a liquid. When the Borax solution is added it crosslinks the polymer chains together, restricting their movement. It is this molecule in the Borax solution that causes the liquid to turn into slime.

Vocabulary:

Polymer: A natural or synthetic (man-made) substance made from joining together many small molecules or units.' Poly' means many and 'mer' means units.

Solution: Two or more substances mixed evenly together

Real-World Application:

One characteristic of polymers is that—like Sticky Icky—they can easily take a variety of shapes. We see polymers all around us: in our plastic toothbrushes, cell phone cases, rubber-soled shoes, and even synthetic fabrics made into clothes and sheets! Knowing about polymers is useful in many STEM jobs from understanding DNA to designing smartphones.