Sewer Slime

Overview: Get ready to be grossed out as you make a sewer slime that closely resembles snot!

What to Learn: You should understand that the guar gum from today's experiment is a polymer, or long chain of molecules. The borax links all those polymers together in a chemical reaction, forming a gel.

Materials

- borax (sodium tetraborate)
- water
- 2 disposable cups
- measuring spoons (tablespoon, ½ teaspoon, ¼ teaspoon)
- popsicle sticks
- powdered guar gum

Experiment

1. Wear your gloves and put your goggles on. No exceptions!
2. Fill a cup with 7 tablespoons of cold water.
3. Add ¼ teaspoon of guar gum by first placing the measured amount in your hand then sprinkling into the water. This prevents clumping. Stir with a popsicle stick 10 times and stop, leaving the stick in.
4. Leave it for 2 minutes to thicken. Cautiously dip a pinkie into the cup, and then rub it in your fingers. Does it smell?
5. Meanwhile, in a second cup, mix ½ teaspoon borax (sodium tetraborate) in one tablespoon water.
6. Add ½ teaspoon of the borax Solution to the guar gum solution. Stir observe what you have made!

Sewer Slime Data Table

Experiment with adding different amounts of guar gum or Borax to see how each affects your slime. Record in the following table:

Cup #1	Cup #2	Results
7 T water + ¼ tsp guar gum	1 T water + ½ tsp borax	
7 T water + ½ tsp guar gum	1 T water + ½ tsp borax	
7 T water + ¼ tsp guar gum	1 T water + 1 tsp borax	

Reading

Guar gum comes from the guar plant (also called the guaran plant), and people have found a lot of different and interesting uses for it. It's one of the primary substitutes for fat in low-fat and fat-free foods. Some kids call this polymer "fake fat" slime, mostly because it's used in fat-free baking. Cooks like to use guar gum in foods as it has 8 times the thickening power of cornstarch, so much less is needed for the recipe. Ice cream makers use it to keep ice crystals from forming inside the carton. Doctors use it as a laxative for their patients.

Chemically, guar gum is a polysaccharide, meaning it is a carbohydrate that can be broken down into two or more small sugar molecules. Guar gum is made of the sugarsgalactose and mannose. Either borax or calcium can cross-link guar gum, causing the long polymer strands to stick together, forming a gel. In today's experiment we will use borax to create gooey, messy sewer slime!

Exercises

1. Describe your slime using as many details as you can.

2. The guar gum is a polymer. What does this mean?

3. Why did the borax make it look like slime?

4. Was this a physical or chemical reaction? How do you know?

Answers to Exercises

1. Describe your slime using as many details as you can. (answers will vary)
2. The guar gum is a polymer. What does this mean? (It is a long chain of molecules)
3. Why did the borax make it look like slime? (It cross-linked all those chains together)
4. Was this a physical or chemical reaction? How do you know? (chemical because it changed two substances into something completely different)