

# A STEM in the Park

## Take Home Activity

# STEM

in the **PARK**™

Science, Technology, Engineering, and Mathematics

## Fluffy Slime

### ***What You Need***

- Elmer's Glue
- Shaving Cream
- Saline Solution
- Optional - Food Coloring, glitter, googly eyes



### ***What To Do***

- 1: Put 1 cup of shaving cream in a bowl
- 2: Add any food coloring to color the slime
- 3: Add 1/2 cup of Elmer's Glue
- 4: Mix the shaving cream, glue, and food coloring together
- 5: Add 1 tablespoon of Saline Solution and continue to stir

The slime will begin to form following the addition of saline solution. If the mixture is still sticky add more saline solution.

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## ***The Science***

Is it a solid or a liquid? Solids consist of tightly packed particles called molecules or atoms that clasp onto each other so the solid holds its shape. Liquids have particles that can slide over and around one another, allowing the fluid to flow. Only adding or taking away heat can make some liquids, like water or oil, flow better or worse. These are called Newtonian liquids. Non-Newtonian liquids, such as ketchup and slime, are different. Manipulations like squeezing, stirring or agitating can also change how they flow. Sometimes they can become so viscous—or have such a hard time flowing—that they could easily be mistaken for a solid.

One such non-Newtonian liquid can be created with white school glue, which is a polymer. A polymer is made from long chains of repeating parts called monomers. One polymer might consist of hundreds of thousands of monomers. Polymers are also called macromolecules, or large-sized molecules. Some are man-made, such as plastic and nylon. Others occur in nature, such as DNA, wheat gluten and starches.

White school glue is liquid because its long polymers can slide over and along one another. It does not flow easily, though; it is quite viscous. The addition of some chemicals—such as a saline solution—can cause cross-links to form between the polymers. It is as if the very long molecules started to hold hands. Will the result still be a fluid where the polymers can glide over each other, or will it become a solid?

***This activity is brought to you by BP***

