

GLOW-IN-THE-DARK SLIME

Students explore chemical engineering by making a cup of gooey glow-in-the-dark slime to take home. They will explore chemical reactions by making a cup of separate ingredients combine to form a new substance. See p. 2 for standards this workshop supports.

SCIENCE CONCEPTS

Students learn about **chemicals**.

- They are in everything we touch and see, and can be helpful or harmful, both or neither.
- They can also combine with each other to make new substances that don't act like any of their component parts.

Educators might highlight the importance of **style** or **aesthetic** in engineering.

- It takes only three materials to create the slime itself, but we choose to make it glow and give it a color because it makes the slime more enjoyable and more likely to be used.
- Engineers often make these decisions when designing cars, buildings, or even devices like prosthetic limbs. It can be valuable to highlight the artistic and often unsung creative side of engineering.



BEFORE YOU VISIT

What are chemicals?	Most things we encounter are chemicals or are made up of chemicals. Water is a chemical. So are cleaning solutions, medicines, and many other substances.
Does the order matter when we mix chemicals and perform actions on them? Why or why not?	Sometimes it does! It often helps to think of chemistry like following a recipe, since cooking is a kind of chemistry. When making cookies, we can add flour, sugar, and baking powder in any order, but we have to mix everything together before we bake it. We could add chocolate chips after we bake cookies, but they would not turn out the same as if we added them before cooking.

BACK IN THE CLASSROOM

Questions

- Have students reflect on their experience. Was there a particular moment when their cup of chemicals became slime? Could we have skipped any steps? (Answer: Yes! Adding glow powder or dye.) How would the slime be different in that case?
- What other ways can you make slime? Common recipes use borax and Elmer's glue, and students may have tried them on their own. It can be helpful to discuss how engineers explore different paths to arrive at similar goals.

Activities

- Teachers might compare how different colors of slime glow. Educators will advise students during the workshop that red dye makes the slime glow poorly, while blue and yellow do better, and no dye at all is best.
 1. Turn lights off.
 2. Have students arrange slime in order from brightest to least bright glow.
 3. Turn lights back on.
 4. Do students notice a pattern in the colors?

CAREERS THAT USE ENGINEERING

Chemical engineer: These engineers often get to be hands-on, mixing chemicals in a laboratory or perhaps while out doing fieldwork. They might create new fertilizers, foods, or fuel cells. Without chemical engineers, we wouldn't be able to grow enough food to feed the world, or deliver the energy people need to live.

Water safety: Technicians who make sure our water sources are safe for drinking use chemistry every day. They may travel around cities and towns testing water, or work from a lab designing new ways to test and filter water. They might work here in the United States, or travel abroad to help establish and maintain safe drinking water in other countries.

Learn about [more careers](#) that use engineering!

MINNESOTA ACADEMIC STANDARDS FOR SCIENCE K-12

0.1.1.21 Use observations to develop an accurate description of a natural phenomenon and compare one's observations and descriptions with those of others.