HILL AEROSPACE MUSEUM
HILL AIR FORCE BASE | UTAH

Chemistry!

This lesson aligns with Utah SEEd Standard 2.3.4

States of Matter and Physical Changes

There are three states of matter: Gas, Liquid, and Solid. If a substance goes from one state of matter to another, it is called a **PHYSICAL CHANGE**. Water is an excellent example, its most common form is liquid, heat it up and it becomes gaseous steam, freeze it and it is solid ice.

When a Physical Change occurs, the chemical make-up of the substance does not change, and it is a reversible process. The only thing that changes is its physical appearance. Some changes that constitute a **PHYSICAL CHANGE** include a change in temperature, shape, texture, and transition between states of matter.

Chemical Changes

When a Chemical Change occurs, it is an irreversible process that makes a new substance. In other words, the reaction changes the chemical make-up of the original substances. Burning, cooking, and rusting are examples of a chemical change. For example, when you bake cookies, you are not going to be able to turn a baked cookie back into cookie dough. After it is cooked, there is no way to reverse the chemical change that took place.

SLIME Recipe!

Materials:

- 1 cup Elmer's Glue
- 1 teaspoon Borax*
- 1 cup Warm Water
- Food Coloring
- Large bowl
- Small bowl

In the large bowl, mix the Elmer's glue WELL with 1 cup of warm water. In the small bowl, mix the borax with 1/2 cup warm water. Mix until the Borax is dissolved into the water.

Once the glue and water is mixed together, add drops of desired food coloring into the mixture and stir. Once both bowls are well mixed, pour the Borax solution into the water and glue. This will instantly turn to slime!

This is an example of a Chemical Change! We made a new substance, and it cannot be reversed.

**This recipe includes Borax. Borax is toxic if ingested.*

Chemistry!

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What are the three States of Matter?

❶ _____ ❷ _____ ❸ _____

If you go from one state of matter to another, is it a PHYSICAL change or a CHEMICAL change? *(Example: from a solid to a liquid, from ice to liquid water.)*

If a reaction is NOT reversible, is it a PHYSICAL or a CHEMICAL change?

Look at the examples below, and decide if they are a PHYSICAL change or a CHEMICAL change.

Fire burning wood	PHYSICAL	CHEMICAL
Cracking an egg	PHYSICAL	CHEMICAL
Water going from a gas to a liquid	PHYSICAL	CHEMICAL
Cracking a glow stick to make it glow	PHYSICAL	CHEMICAL
Baking a cake	PHYSICAL	CHEMICAL
A melting ice cream cone	PHYSICAL	CHEMICAL
A rusting nail	PHYSICAL	CHEMICAL
Slicing bread	PHYSICAL	CHEMICAL
Ripping a piece of paper	PHYSICAL	CHEMICAL
Chopping a carrot	PHYSICAL	CHEMICAL