CHANGES IN MATTER

When you cook an egg, something that was once liquid turns into a solid. Whether it’s hard-boiled, scrambled, or fried, the egg changes permanently. The cooked egg is very different from the raw egg. Not only did it change states, but the particles are different, it has a new smell, and the transparent part turned white. Its properties are very different. Something new has been made.

What does this mean? It means that cooking an egg is a chemical change.

In our everyday lives, matter changes all the time. It happens when you cut paper into pieces, when you boil water to make spaghetti, and when you bake a cake. Understanding these changes can help us better understand how matter behaves.

Properties of Matter

All matter has certain properties. Basically, these are ways you can describe or measure matter. Some examples are color, weight, size, or how hard it is. For example, some of the properties of paper might be that it’s light, white, thin, and flexible. If you measure these properties, you will know more details about the paper. For example, some paper is thicker and heavier than other paper.

Another property of matter is solubility. This refers to whether or not you can dissolve the matter. For example, if you mix water and sugar together, the sugar dissolves into the water. It’s soluble. When you mix something soluble with water, you make a solution.
However, making a water and sugar solution doesn’t mean the sugar disappeared. Although you can’t see it, it’s still there. You can test this by weighing the sugar and water separately ahead of time. Then, when you weigh the solution of water and sugar, you’ll find it weighs the same as the combined weight of the originally separate sugar and water. Another way to see that the sugar is there is by letting the water evaporate. After it does, the sugar will be left behind.

However, other things, like sand, are not soluble. No matter how long you try to stir sand into water, it won’t dissolve. So, if you do mix sand and water together, this is a heterogeneous mixture. These mixtures can be separated with physical methods. In other words, you can use a sieve to filter the sand out of the water.

**Chemical Vs. Physical Changes**

When a change happens to matter, sometimes the properties change and sometimes they don’t. For example, when you cook an egg, the properties change. When the properties change and a new substance is made, we call this a chemical change. Other signs of a chemical change are that the color changes, a gas or bubbles appear, a smell changes, or the temperature changes on its own.

However, in physical changes, the properties of the matter stay the same. No new substance is made. When matter changes state, this is also a physical change. For example, if an ice cube melts into water, this is a physical change. Another example of a physical change is if you cut paper. The properties of the paper remain the same. You might say that the paper seems to change size. However, if you put the pieces back together, the size is the same. On the contrary, if you burn paper, you make a gas and a new substance: ash. This is a chemical change.

Another example of a chemical change is when you mix baking soda and vinegar. As soon as you mix these items, frothy bubbles will appear. This shows that a gas has been created. In fact, you can see the gas if you put a small amount of vinegar in a bottle and put a balloon with baking soda over the mouth. Then, when you dump the baking soda from the balloon into the bottle, the balloon will inflate thanks to the newly created gas.

Matter is all around us and is always changing. Can you see some chemical or physical reactions happening in your house?