

COLORS ON THE MOVE

LEARN ABOUT CHEMISTRY

What you'll need:

- Milk
- A shallow plate or bowl
- Food coloring
- Liquid dish detergent
- Cotton swabs

How to do the experiment:

1. Pour milk into a dish so that it just covers the bottom of the dish
2. Gently add a few drops of food coloring to the same spot in the center of the milk
3. Dip a cotton swab into the liquid dish detergent and then gently touch the food coloring spot with that cotton swab. Do NOT stir!
4. Push the cotton swab all the way down in the center of the food coloring and hold it there. Watch the colors move!
5. Dip a new cotton swab in dish detergent and try touching new areas of color to see how they move!

What to expect:

Because of different chemical properties in dish detergent and milk, when you touch the cotton swab of dish detergent to the milk, the milk disperses in the dish. The food coloring shows us how it moves. When you first touch the food coloring spot with the cotton swab, the colors should move to the edge of the plate. When you hold the cotton swab down, the colors will start to swirl. When you touch the new dispersed areas of color with new cotton swabs, the colors will swirl and mix more to make cool patterns! Read more below on the **science** behind why this happens!



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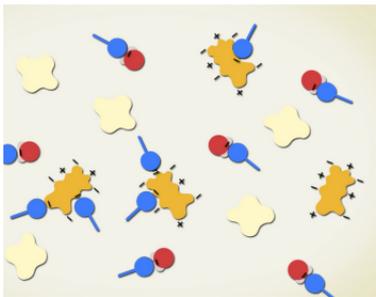
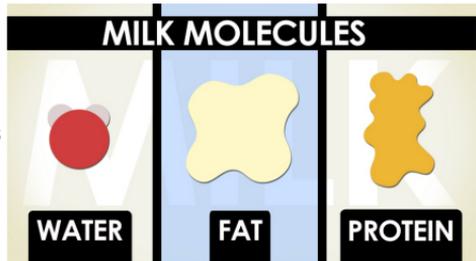
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How it works:

Chemistry is the study of matter and how matter changes. Matter is made up of teeny tiny building blocks called atoms. Imagine you have lots of Legos and can build anything with them. You can build with all the same color or different colors. You can build something big or something small. Atoms can come together in specific ways to form everything in the world - water, air, buildings, and people too! When 2 or more atoms join together, we call these compounds MOLECULES. Molecules can be made up of different atoms combined in different ways to make special molecules.

Milk, for example, is made up of water molecules, fat molecules, and protein molecules. These different molecules (water, fat, protein) are made up of different atoms in different combinations that give them unique properties. The differences in these molecules is what cause them to move differently when touched by dish detergent.



The detergent molecules (in blue) interact differently with the different properties of each type of molecule. When you first put the detergent in the milk, the negative end of the detergent molecule lines up with the positive end of the water molecule, causing the detergent molecules to zoom out in every direction in the milk and push the food coloring to the edge of the dish. There is a lot of movement as the different molecules twist and turn to line up with one another. This chemistry in action gives us the awesome color movement and cool designs!



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