Color Splash

Safety Precautions

- This activity MUST be done outside, since it can be messy.

Vocabulary

- density – mass per unit volume
- solubility - the property of a solid, liquid, or gaseous substance to dissolve

Materials and Equipment

- water
- water bucket
- vegetable oil
- 4 clear plastic cups
- red, blue, or green food coloring
- pencil or toothpick

Questions

1. Will the food coloring in cup #1 mix with the water?
2. Will the food coloring in cup #2 mix with the oil?
3. Will the vegetable oil in cup #3 float on the water?
4. What do you think will happen when you poke the food coloring drops on the vegetable oil in cup #3?

Research

Food coloring is made mostly of water, so it is soluble in water. Water is denser than vegetable oil, so vegetable oil floats on top of the water. When drops of food coloring are covered in vegetable oil, they remain intact, meaning that they do not break up, unless they are broken by force.

Hypothesis

What is your hypothesis? Be sure to include your "best guess" answers to the 4 questions above.

1.

2.

3.

4.

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Experiment

1. Label 4 clear plastic cups #1, #2, #3, and #4.
2. Use cup #4 to fill cup #1 about half full of water.
3. Add a few drops of food coloring to cup #1, leaving space between the drops so they don't touch.
4. Use cup #4 to fill cup #2 about half full of oil.
5. Add a few drops of food coloring to cup #2, leaving space between the drops so they don't touch.
6. Use cup #4 to fill cup #3 about half full of water.
7. Slowly pour enough oil in cup #3 so that it forms a very thin layer on top of the water, and allow it to settle.
8. Slowly add a few drops of food coloring to cup #3.
9. Poke the drops of food coloring in cup #3 with the tip of a pencil or the toothpick to break them up and allow them to mix with the water.

Data and Observations

- What did you observe? How do water, oil, and food coloring behave when they come in contact with each other?

Analysis

1. Is the food coloring soluble in water, in cup #1?

2. Is the food coloring soluble in oil, in cup #2?

3. Why does the oil in cup #3 float on the water? Which is more dense, oil or water?

4. Why does the food coloring in cup #3 remain in little drops before you poke it? What happens to it after you poke it into the water?

Conclusions

Water is denser than oil, so the oil floats on the water. When food coloring drops are covered in oil, they remain intact, until broken, and then mix with water.

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