STEM in the lab

Inspiring Idaho's future STEM workforce

KOOL-AID CHEMICAL REACTIONS

GRADE LEVELS

This activity is appropriate for students in grades 6-9 to complete on their own. Students K-5 will need an adult's help for this reaction.

MISSION

How do you know when a chemical reaction has occurred? This experiment will help you learn the indicators of a chemical reaction.

VOCABULARY

CHEMICAL REACTION: where one or more substances, are converted to one or more new substances.

REACTANTS: the substance that takes part of a chemical reaction.

PRODUCTS: what is produced in a chemical reaction.

MATERIALS

- Lemon juice
- Vinegar (any type)
- Kool-Aid packet
- Water
- Baking soda
- 3 cups
- Food coloring (optional)
- Trays

DIRECTIONS

CAUTION! This can get messy. Use a tray to contain the mess or do this experiment outside if possible.

1. In the first cup, dissolve the Kool-aid packet in ½ cup (or approximately 120 mL) of water. Set on tray.
2. In the second cup, add ½ cup (or approximately 120 mL) of lemon juice. Set on tray.
3. In the third cup, add ½ cup (or approximately 120 mL) of vinegar, add a couple of drops of food coloring if you like. Set on tray.
4. Predict what will happen to each liquid when you add the baking soda.

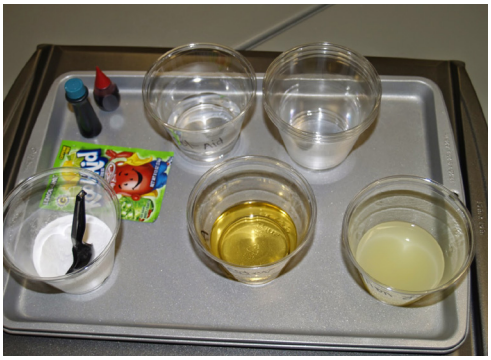

Photo credit: Lynda Williams from teachingscience.us

Liquids	Predictions	Predictions	Predictions
Kool-Aid & Water			
Vinegar			
Lemon Juice			

5 Add 1 tsp baking soda (or approximately 5.6 grams) to each liquid.

6 Describe the reaction:

Liquids	Predictions	Predictions	Predictions
Kool-Aid & Water			
Vinegar			
Lemon Juice			

QUESTIONS

1. Did a chemical reaction occur? How do you know?
2. Do you think changing the temperature of the water the Kool-Aid would influence the reaction?
3. Is cooking a chemical reaction? How do you know if it is?

FURTHER EXPLORATIONS

» Try testing the reaction with baking soda and different liquids such as other fruit juices, soda, or milk. Will these react the same?

» Substitute half of an antacid tablet for the baking soda. How this affect the reaction?

» Compare different types or brands of powdered drink mixes.

» Watch this video to learn more about acids and bases.

» Watch this video to learn about more chemical reactions.

» Watch this video to learn about some important chemical reactions.

THE SCIENCE BEHIND IT

Kool-Aid and lemon juice contain citric acid which is an acid that chemically reacts when mixed with a base, such as baking soda. This is the same reaction that occurs when vinegar is mixed with baking soda to make a baking soda volcano!

REFERENCES

» Williams, L. (2021, August 2). Fun experiment with Kool-Aid chemical reactions. Teaching Science with Lynda R. Williams. https://teachingscience.us/fun-experiment-with-kool-aid-chemical-reactions/.

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