Standards:

5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

Introduction:

The Briggs-Rauscher reaction, also known as 'the oscillating clock', is one of the most common demonstrations of a chemical oscillator reaction. The reaction begins when three colorless solutions are mixed together. The color of the resulting mixture will oscillate between clear, amber, and deep purple for about 3-5 minutes. The solution ends up as a purple-black mixture.

Materials:

- Distilled water
- 21.5 g potassium iodate
- 2.25 mL sulfuric acid
- 7.8 g malonic acid
- 1.7 g manganese sulfate monohydrate
- 2 g of vitex starch
- 200 mL of 30% hydrogen peroxide
- 3 600 mL beakers
- 2 L beaker
• Magnetic stir bar
• Stir plate

Safety:
• Always wear eye protection and gloves when doing chemistry experiments
• Conduct this experiment in a well-ventilated area.

Procedure:
1. Solution A:
   
   Add 21.5 g potassium iodate (KIO₃) to ~400 mL distilled water. Stir in 2.5 mL sulfuric acid (H₂SO₄). Continue stirring until the potassium iodate is dissolved. Dilute to 500 mL.

2. Solution B:
   
   Add 7.8 g malonic acid (HOOCCH₂COOH) and 1.7 g manganese sulfate monohydrate (MnSO₄ . H₂O) to ~400 mL distilled water. Add 2 g of vitex starch. Stir until dissolved. Dilute to 500 mL.

3. Solution C:
   
   Dilute 200 mL of 30% hydrogen peroxide (H₂O₂) to 500 L.

4. Place the stirring bar into the large beaker.

5. Pour solutions A and B into the beaker.

6. Turn on the stirring plate. Adjust the speed to produce a large vortex.

7. Add solution C into the beaker. Enjoy!

Data and Observations:
What did you see? Anything you were not expecting?

References:
Helmenstine, Ph. D, Anne Marie. Briggs-Rauscher Oscillating Color Change Reaction.chemistry.about.
http://chemistry.about.com/cs/demonstrations/a/aa050204a.htm (accessed July 31, 2013)