Hard Water

The Action
A solid is formed when 2 liquids are combined.

Grade Level
Grade 8 - Solutions

Materials
- 150 mL of ethanol
- Calcium acetate solution (30 g of calcium acetate in 100 mL of water)
- 2 - 400 mL beakers
- Beaker tongs
- Large watch glass

Instructions
- Prepare the saturated calcium acetate solution. Pour 20 mL of this solution into one of the 400 mL beakers. In the other 400 mL beaker, pour the 150 mL of ethanol.
- Transfer the solutions back and forth until a solid is formed. This solid can be lift, demonstrating the change to fire water.
- Extinguish the fire by placing the watch glass over the beaker. The beaker will be very hot so handle with beaker tongs.

Safety
The flame is very hot so caution students to stay away from the flame. The flame is also hard to see when the lights are on so be aware that the solid may be burning even though a flame is not easily visible.

Hints
Turn out the lights to make the flame more visible. Also, try to experiment once or twice before hand to make sure that the solutions are adequate to form the colloid.

Science Principle
Mixing the two solutions produces a colloid. The colloid produced is a gel of the type that is used to produce solid fuels such as Sterno.