

[MUSIC PLAYING]

JESSICA

Hi, I'm Jessica and today I'm going to be talking about a chemical demonstration called the

HARROP:

Briggs-Rauscher Reaction. This reaction was discovered by two San Francisco-area high school chemistry teachers, Briggs and Rauscher, who were working in a lab to come up with a visually striking way to demonstrate an oscillating clock reaction,

Let's watch MIT's Dr. John Dolhun show us the reaction. Here he is at the Cambridge Science Festival.

JOHN DOLHUN:

OK. So what I'm going to do is I'm going to pour three colorless solutions into this beaker. Solution number one, and I'm going to use kitchen chemistry, so I'm using my eye here. Let me just see. OK, there we are.

Second solution. And the third solution.

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So what happened? Dr. Dolhun mixed three clear, colorless solutions together. The first

HARROP:

solution contains potassium iodate and sulfuric acid dissolved in water. The second solution is malonic acid and manganese sulfate monohydrate in water. And the third is hydrogen peroxide in water.

And when mixed together, things get complicated. The overall reaction is this. So iodate, hydrogen peroxide, malonic acid in the presence of sulfuric acid, reacts to produce this compound-- oxygen and water.

But think about the reaction this way. It's equivalent to saying that metal and plastic react to produce a bicycle. In reality, there are many steps that occur between those raw materials and the finished result.

And the Briggs-Rauscher Reaction is similar. Here are the many subreactions that occur to get from the reactants to the products. What we see is a cycle from colorless to amber to dark blue. And as these reactions run, the relative amounts of the reactants and the products dictate the color of the solution.

I₂ is amber. I⁻ is colorless. And I₃⁻ is deep blue when it interacts with starch in the solution. Triiodide is formed when iodine and iodide interact. And this cycle continues until all

the reactants are used up. Hope you enjoyed the video and I'll see you next time.