

Hello Lab Assistants (That's You!),

I'm Science Girl and welcome to my Lab! Usually, I would be on Main Street showing you amazing smoke-bubbles or having you flip water upside down. This year at the Virtual NM State Fair, I get to show you experiments that you can do right at home! Are you ready to explode some toothpaste? As long as you promise not to blow-up your own toothpaste in your bathroom, I think we will be just fine!

⚠️ **LAB NOTE** ⚠️: Make sure you document the fun with pictures and/or videos and send them into the NM Virtual State Fair and Science Girl's Lab!

Here are the Materials that you will need!

1. Hydrogen Peroxide (3%; Found at most pharmacy stores)
2. Instant Yeast (1 Packet or 2 ¼ Teaspoons)
3. Warm Water (4 Tablespoons)
4. Empty, Plastic Water Bottle
5. A plate/tray with plastic to cover the table or counter
6. A small cup
7. Dish Soap
8. Stirring stick or spoon
9. Food Coloring (optional)
10. Safety Glasses
11. Adult Supervision (with a camera!)



⚠️ **LAB NOTE** ⚠️: A good scientist ALWAYS reads through the instructions BEFORE doing the experiment.

Here is the experiment Procedure:

1. Find an Adult: Find an adult to watch you do this experiment. Experiments are WAY more fun (and safer!) with an audience.
2. Clear a Space and Cover It: You will need a counter, a table, or a patch of dirt/concrete to do this experiment.
3. Dress Up: Put on those safety glasses.
4. Pour H<sub>2</sub>O<sub>2</sub>: Pour about 4 oz. of Hydrogen Peroxide into the empty plastic bottle.

# Exploding Toothpaste with Science Girl!

5. Add: Put a “squirt” (very scientific term) of dish soap into the bottle with the hydrogen peroxide. I usually start squeezing and count to 2!
6. Add: Put 5-7 drops of food coloring into your bottle.
7. Swirl: Give the bottle a swirl to mix it up.
8. Mix: Pour the yeast into the warm water that is in the small cup and give it a stir with your spoon. We want the yeast to dissolve completely.
9. React: Pour the yeast mixture into the plastic bottle with your colorful mixture. Pour the ENTIRE yeast solution in.
10. Observe: Stand back and watch the reaction happen. Make sure the camera is rolling!!
11. Clean Up: The reaction can be safely washed down the drain in a sink. Any stains can be cleaned up with soap and warm water.

 **LAB NOTE** : Now that you have read the science experiment, go ahead and read these questions and answer them **BEFORE** you watch the video of Science Girl doing it!

## BEFORE VIDEO QUESTIONS

1. Predict what you think will happen when the yeast is mixed into the hydrogen peroxide mixture.

---

---

---

2. Why do you think that? (i.e. Because the experiment said..... ; Because I have seen.....)

---

---

3. What do you think the reaction will look/feel like?

---



# Exploding Toothpaste with Science Girl!



4. What is ONE question about this experiment that you want to answer?

---

---

**WATCH:** Go watch the video of Science Girl performing this experiment!!!

## POST-VIDEO QUESTIONS:

5. What happened when Science Girl added the yeast to the hydrogen peroxide mixture?

---

---

6. Look back at your answer to question 1. Was your prediction correct? How was it the same/different from what happened in the video?

---

---

---

7. Based on the video, write down the reason for the reaction. Why is this happening?

---

---

---

8. Write down what Science Girl challenged you to do with your own experiment:

---

---

---

## **YOUR TURN!!!**

Now it is time to do your own experimenting! Let's get started:

## PRE-EXPERIMENT QUESTIONS:

9. What is the ONE thing you are going to change in your experiment? Be specific about your answer. (i.e. I am going to put \_\_\_\_ more/less of \_\_\_\_ than the experiment says.)

---

---



# Exploding Toothpaste with Science Girl!



10. Predict how the change is going to affect the results of your experiment. How do you think it will look different from Science Girl's experiment?

---

---

---

## TIME TO SCIENCE:

Do the experiment by using the procedure written above but with your ONE adaption to the experiment. Make sure to get documentation!

## POST-EXPERIMENT QUESTIONS:

11. Look back at question 10. Was your prediction correct? How was it the same or different than what you thought would happen?

---

---

---

12. Based on your answer in question 7, explain why your results were or were not different than Science Girl's experiment.

---

---

13. What do you want to try next?

---

---

## **SHARE YOUR RESULTS:**

1. Write 3-4 sentences about what you (1) did in the experiment, (2) changed in your experiment, and (3) what happened to the results.
2. Share the results along with any (1) Photos, (2) Videos, and/or (3) Drawings to:
  - a. Virtual New Mexico State Fair Website/Social Media
  - b. Science Girl's Lab Website ([www.sciencegirlslab.com/contact-1](http://www.sciencegirlslab.com/contact-1))
  - c. Science Girl's Lab Facebook Page (<https://www.facebook.com/sciencegirlslab>)
  - d. Teachers
  - e. Classmates
  - f. Family

# Exploding Toothpaste with Science Girl!

## VOCABULARY:

Show off your vocabulary skills! Match the vocabulary word with its definition. (Hint: Science Girl used these words in her video. Go back and see if you can figure it out!)

- |                           |   |
|---------------------------|---|
| ___1. Solution            | a. Where the products of the reaction are different from the beginning ingredients. |
| ___2. Chemical Reaction   | b. A reaction that produces energy as heat.   |
| ___3. Exothermic Reaction | c. It is made of two or more atoms.   |
| ___4. Catalyst            | d. A substance that speeds up a reaction.   |
| ___5. Molecules           | e. A mixture that has 2 or more items mixed together.                               |

I hope you had a great time doing this experiment. I know I had a blast! Make sure to check out my YouTube Channel and other social media so that we can stay connected. Please send me messages and emails! I want to hear from you because you matter so much to this community. Remember to Go Be Awesome!

Website: [www.sciencegirlslab.com](http://www.sciencegirlslab.com)

Facebook: <https://www.facebook.com/sciencegirlslab> (@sciencegirlslab)

Instagram: <https://www.instagram.com/sciencegirlslab/> (@sciencegirlslab)

YouTube: <https://www.youtube.com/channel/UCXeadkZB1tUxRT6cVbUw1iw> (Science Girl's Lab)





# Exploding Toothpaste with Science Girl!



Teacher's and Parent's Notes:

One of my goals is to support you as you try to create experiences for your students and/or children during virtual learning. We want to support you as an essential part of the New Mexican community. That is why the New Mexico State Fair Virtual Team and I decided to add more educational aspects to this experiment.

**MAIN CONCEPT LEARNED:** Chemical Reactions and their Products

Student Outcomes	CCSS Connection
Students will be able to ask and answer questions from the experiment using key details from their observations	RI.K.1., RI.1.1, RI.2.1, RI.3.1, RI.4.1
Students will be able to recall and write key details presented in the experiment and from their observations.	RI.K.2, RI.1.2, RI.2.2, RI.3.2, RI.4.2, RI.5.2
Students will be able to use visuals, pictures, and/or drawings to provide details of their observations and experiments.	SL.K.5
Students will describe and write about main ideas and details using diverse media (i.e. video)	SL.2.2, SL.1.2, SL.3.2, SL.4.2, SL.5.2
Students will be able to recall information from experiences to answer a question	W.K.8, W.1.8, W2.8
Students will be able to determine and answer vocabulary questions based on details from the video.	RI.K.4, RI.1.4, RI.2.4, RI.3.4, RI.4.4, RI.5.4