



**The Messy Meter**

Recommended Grades:  
**Pre K - 2**

Estimated Time:  
**20 minutes**

Subject:  
**Chemistry**

## WHAT YOU'LL NEED

### PANTRY STAPLES:

- (1) 20oz ounce bottle, rinsed out and dry
- Dish soap (couple of squirts)
- Food coloring (few drops)
- ¼ cup warm water
- Small bowl
- Funnel (or make one by rolling a sheet of paper)
- Large rectangular baking pan (this keeps the mess minimal)
- Measuring cup

### SPECIALTY SUPPLIES:

- ½ cup hydrogen peroxide, 3% or 6% solution \*Do not use solutions greater than 6%
- 1 packet active dry yeast

### Optional Add-Ons:

- Additional 20 oz bottles and both 3% and 6% hydrogen peroxide can be used to make the project more challenging

## Fizzy Foam Fun

This experiment introduces kids to chemical reactions. They will learn how chemical reactions are impacted by a catalyst (a material that speeds up reactions but doesn't react itself). In this activity youth will create a colorful foam fountain by adding yeast to a chemical reaction.

### STEPS

There are lots of different ways to engineer your wheel and axle machines. For older kids let them try reverse engineering their designs from the picture and experiment with their own ideas. The Steps for the basic pinwheel machine are as follows:

1. Combine the warm water and yeast in a bowl and set aside for now.
2. Put the bottle in the baking pan (this helps to keep from making a mess)
3. Using the funnel, pour the hydrogen peroxide into the bottle
4. Add in a few drops of food coloring
5. Add a couple squirts of dish soap
6. Use the funnel to pour the water/yeast mixture into the bottle.
7. Take the funnel out quickly and stand back and record your observations

**Bonus Fun:** Have kids set up a series of bottles with different colored dye in each bottle. Let them experiment with different amounts of hydrogen peroxide (have both 3% and 6%) and different amounts of yeast. Have them make observations and compare the chemical reactions.



### Questions to Engage Youth:

- What did you observe before adding in the water and yeast mixture?
- What changed when you added in the water and yeast mixture?
- What do you notice if you touch the bubbles?

### Explanation:

This is an example of an exothermic reaction- a reaction that gives off heat. If you touch the bottle or foam after the reaction starts you will find it is warmer than when you started. The heat is caused by the breakdown of hydrogen peroxide into its base elements, water and oxygen. Usually this chemical reaction happens slowly over time, but when you add the yeast- a catalyst- it speeds up the process amplifying the affects. The oxygen that is released by the process combines with the dish soap to make lots of foam!

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