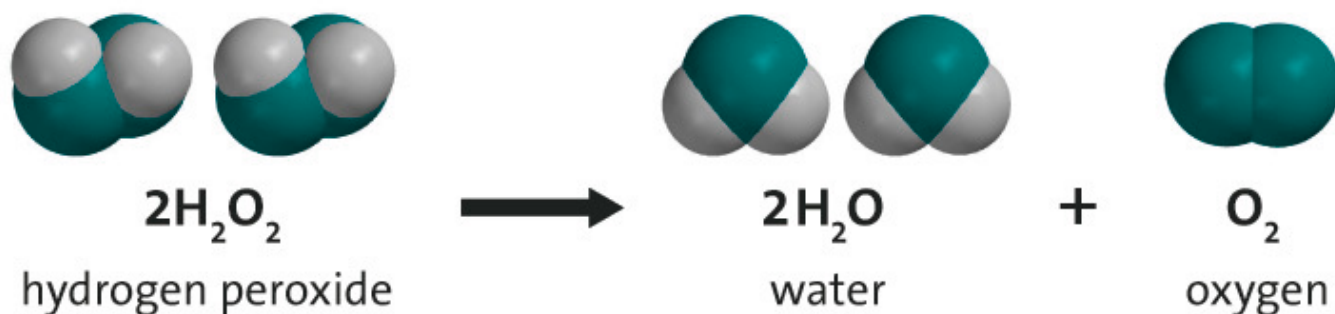


# Bubble Trouble

What will happen when you change the amount of a catalyst added to a chemical reaction? Check out this experiment to find out!



## Materials:

Safety goggles  
Baker's yeast

Dish soap  
Hydrogen peroxide

2 16-20 oz bottles  
Warm Water

## Procedure:

Allow students to make predictions about the effect that yeast will have on a reaction rate. Prior knowledge: Yeast species contain an enzyme called catalase that breaks hydrogen peroxide down into water and oxygen. When added to hydrogen peroxide and water, a visible reaction can be seen. Students will develop a hypothesis.

Note: To allow for differentiation, you may choose to encourage students to design the experiment themselves or you can help them define the following variables and constants.

Identify the independent variable (amount of yeast or catalyst).

Identify the dependent variable (reaction rate or amount of bubbles given off by the reaction).

Discuss the control group (a comparison of the amounts of yeast added will act as the control).

Identify experimental constants (size of container, amount of peroxide, amount of soap, etc).

Students will carry out their experiment by observing the amount of bubbles produced from adding two different amounts of yeast to a hydrogen peroxide and dish soap solution.

Wear safety goggles and perform this experiment over a sink or in a large tray or bowl.

Mix 50 ml hydrogen peroxide with 5 ml liquid dish soap in a water bottle.

Repeat in a second water bottle.

In a separate container, mix 1/2 teaspoon (~2.5 ml) yeast with 30 ml warm water. In another container, mix a tablespoon (~15 ml) of yeast with 30 ml warm water.

Slowly add the 1/2 teaspoon mixture into the first bottle. Observe.

Slowly add the 1 tablespoon mixture into the second bottle. Observe.

Students will develop a conclusion explaining the outcome of their hypothesis and discussing the data and variables they tested.

# The Effect of

on

\_\_\_\_\_ (independent variable)

\_\_\_\_\_ (dependent variable)

Science is all about investigating questions or problems in order to find a solution. This means that curiosity is one of the most important aspects of science! Think about the questions you come up with on a daily basis. Where do they come from? What makes you question the world around you? Every question you develop comes from an observation, so you must begin any scientific process with your five senses!

You will design your own procedure based on the following information. In order to carry out a successful experiment, you must organize your initial observations, your hypothesis, your subjects or groups, and the variables you will be manipulating and observing.

Observations:

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Hypothesis: Is it testable? Be sure to include both variables!

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Independent (manipulated) variable:

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Dependent (responding) variable:

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Control Group:

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Control Variables/Constants: Make sure they're kept the same throughout the experiment!

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Procedure: Describe the steps you will take to carry out the process of testing your hypothesis:

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_
4. \_\_\_\_\_  
\_\_\_\_\_
5. \_\_\_\_\_  
\_\_\_\_\_

Data: Use another sheet of paper to construct a data table for your experiment.

Conclusion: Write a detailed summary describing the outcome of your experiment. Was your hypothesis correct? Why or why not? What could be done to improve your experiment?