



STEM @ HOME GUIDE

Elephant Toothpaste

AIM: Create a mixture out of liquids and a living yeast.

Materials Required:

- transparent glass jar or plastic bottle (at least 12oz)
- 1 packet yeast (Rapid rise yeast or instant dry yeast)
- ½ cup of 3% hydrogen peroxide
- 3 drops of liquid soap
- Food coloring and/or glitter (optional)
- 1 bowl/ cup
- 4 teaspoons of room temperature water
- Spoon

Questions to think before you start:

- Are yeast alive, how can you tell?
- Why do you we need to add water to the yeast before we start?
- What do you think will happen in this experiment?
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NOTE: Make sure to do this activity on a washable surface. This is a great activity to do outside, in a bathtub or on a tray

Instructions:

1. **Student:** Take a bowl or cup and add yeast to it. Slowly add warm (not hot) water to it and stir it up with a spoon. Let it sit for at least 2 minutes.
2. **Adult:** Take the bottle and add the hydrogen peroxide to it. Add 3-4 drops of any liquid soap to it. Swish it around a bit to mix it.
3. **Student:** Add few drops of food coloring to the mixture of hydrogen peroxide and liquid soap. (This step is optional)
4. **Student:** Let the fun begin. Slowly add the yeast and water mixture to the mixture of hydrogen peroxide and liquid soap. Step back and watch the giant foam.
5. **Cleanup:** You can wash the foam down the drain when you are done. You may also play with the foam, however it should not be put in your mouth or swallowed.

HINTS:

Using a more bottle with a narrow opening will increase the height of the foam.

The water added to the yeast should not be cold. Warm water works best.

Place the yeast mixture in a warm place to activate yeast quickly.

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Extension questions and activities:

- Feel the bottle and notice that it feels warm, why do think that is?
- Try using different size and shape bottles and see how that makes the foam move faster, slower or higher.
- What would happen if you did not use dish soap? Or try using different types of liquid soap and observe any differences.

How It Works:

The foam you made consists of many bubbles, each tiny bubble is filled with oxygen. The yeast acted as a catalyst (a helper) to remove the oxygen from the hydrogen peroxide and the soap traps the released oxygen in form of lot of tiny foam bubbles.

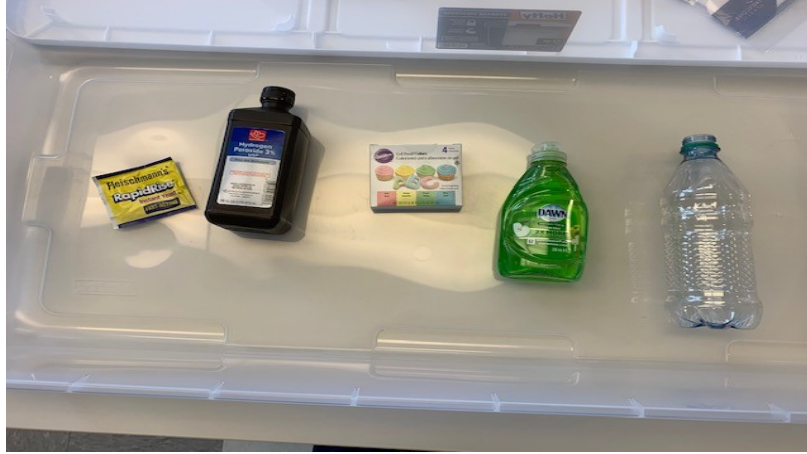
Before we started, we had to add some warm water to the yeast, the water helps to 'wake' the yeast up and allow them to start producing carbon dioxide. You may have noticed some bubbles or a strong smell in the bowl of yeast, that's how you know the yeast is alive. **Vocabulary:**

- **Exothermic reaction-** Reaction or process accompanied by the release of heat.
- **Catalyst:** Something that speeds up a reaction

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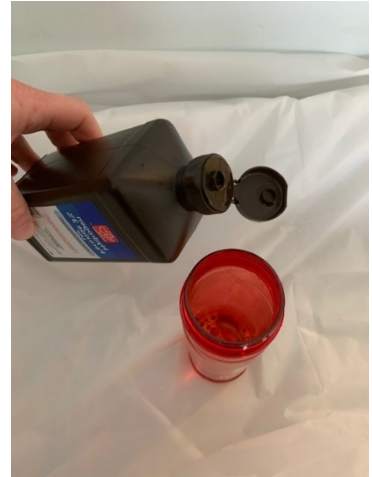
Materials



Step 1



Step 2



Step 2 +3



Step 4



Foam!

