

# Science

## Chemical Changes

### Purpose:

- Create and observe chemical reactions (when 2 or more substances combine and change into a new substance)
- Identify five indicators that a chemical reaction has occurred (temperature change, color change, gas given off, precipitate formed, new substance formed)
- Experiment with three different chemical reactions
- Demonstrate that science is fun

### Activity 1 : Observing a chemical reaction

#### Supplies:

- Measuring spoons & cup
- Baking soda, 2 Tbsp/participant
- Pop bottles or similar bottles
- Vinegar, 1/3 c./participant
- Large strong balloons (with funnel, insert baking soda)
- Salt

Work with a partner. Each pair gets a bottle. Pour  $\frac{1}{4}$  c. vinegar into the bottle. You have a balloon with powder in it. Place the lip of the balloon, very carefully, over the lip of the bottle. Pinch the lip of the balloon on the bottle lip with one hand. On the count of three, use your other hand to lift the balloon to allow the powder to mix with the liquid.

#### Discussion:

1. What did you observe?
2. Why did the balloon inflate?
3. What is in the balloon?

### Activity 2: "POP" in a Bag

#### Supplies:

- Measuring spoons
- Plastic sandwich bags, 1/participant
- Cream of Tartar, 1 tsp/participant
- Baking soda, 1 tsp/participant
- Water, 3 Tbsp/participant

Put cream of tartar and baking soda into resealable plastic sandwich bag. Seal bag and shake for 10 seconds. Add 3 Tsp water. Quickly reseal bag.

#### Discussion:

Use your senses and tell what happened.

### Activity 3: Penny Cleaning Factory

#### Supplies:

- Pennies, 2/participant
- Water
- Soap
- Baking Soda
- Vinegar
- Salt

Ask participants how they might be able to clean a penny. They may suggest water, soap, vinegar, soda, salt. Have each participant develop a hypothesis (a guess as to what might work) that they can test. Give each participant 2 pennies. One will be a "control" penny with nothing done to clean it. Participants test their hypotheses and then share results with the group. Note: salt and vinegar will make the penny shine.

Adapted from: *Science Discovery Series* <http://www.org/shop/products.aspx4hccs>



**COLORADO STATE UNIVERSITY  
EXTENSION**

3 activities for grades K-6. Allow 45 - 60 minutes. Science Standard - Physical (Chemistry)  
Colorado State University Cooperative Extension 4-H Youth Development