

Changes Activity (Shifted)

In this activity, you'll try to determine whether or not a chemical change has taken place by investigating the question, "What indicates the occurrence of a chemical change?" Careful observations will help you gather evidence.

Exploration: Part I

Read all of Part I. Then design a data-collection sheet on which you can record what you do and what you observe. Be sure that it is in a format that is easy to follow and can be shared with others. Then do the activity.

- Put on your safety equipment.
- Place $\frac{1}{4}$ teaspoon of sodium bicarbonate (NaHCO_3) and $\frac{1}{2}$ teaspoon of calcium chloride (CaCl_2) into a ziplock bag.
- Fill a medicine cup with 5 mL of phenol red solution. Carefully place the cup in the bag, keeping it upright until after you zip the bag closed.
- Squeeze out as much air as possible and seal the bag.
- Keeping the bag sealed, tip the cup over, mix the chemicals together, and observe the result.
- Record what you did and what you observed on your data-collection sheet. Record the evidence you think indicates a chemical change.

Exploration: Part II

Choose Option A or Option B (below) to continue your investigation. Design a new data-collection sheet for that option. Complete the second option if time permits, using another data collection sheet.

OPTION A

- Predict what would happen if you tried the experiment again but left out one of the chemicals.
- Test your prediction. Record what you did and what you observed.
- Repeat this experiment, leaving out a different chemical.

OPTION B

- Predict what would happen if you varied the amount of one of the chemicals.
- Test your prediction. Record what you did and what you observed.
- Repeat this experiment several times, each time varying a different chemical.

Summary

1. Analyze and summarize the results of your experiments on your data-collection sheets.
2. List any questions you still have on your data-collection sheets.
3. Describe what you have discovered about chemistry from this activity.

Adapted from an activity created by the Earth System Implementation Project of Anchorage, Alaska. Presented at the Kits to Inquiry Graduate Seminar at the Exploratorium's Institute for Inquiry, March 1999.