

# Observation of chemical change essay sample

[Science](#), [Chemistry](#)



## Purpose

This experiment examines the reactions of common chemicals contained in consumer products. The purpose is to observe the macroscopic changes that these chemicals undergo. The goals of the experiment observe properties of chemical reactions and to associate chemical properties with household products.

## Procedure

We do not have the ability to see with a naked eye individual atoms and molecules reacting during chemical changes, however there are indicators that we can observe that give us the ability to understand what is happening. In this experiment there were fourteen different chemicals of which were mixed with each other twelve different times and I observed there reactions.

Using a pipet two drops each chemical was deposited into the 24-well plate. The chemical mixtures are noted below in the Data Tables.

## Data Tables and Observations

Question/ Well Number

Chemicals

Reactions/Observation

A / A1

### NaHCO<sub>3</sub> and HCL-CO<sub>2</sub>

Formation of gas bubbles were immediate and consistent for some time. No color change, clear. Easier to see under black paper.

### B / A2

#### HCl and BTB

After adding BTB the color automatically changed to a copper color. The color was more pronounced under the white piece of paper.

### C / A3

#### NH<sub>3</sub> and BTB

Color was almost identical to BTB, dark blue. I expect BTB to turn orange with an acid and blue with a base.

### D / A5

#### HCl and Blue Dye

Automatically turned a dark green. More pronounced with white paper.

### E / A6

#### Blue Dye and NaOCl

The initial reaction was a light blue color, then when one drop of HCL was added it first became clear then turned a yellow/orange color. That yellow stayed concentrated at the top segregated.

### F / A7

NaOCl and KI

Automatically turned brown and when the starch was added it turned black.

G / A11

KI and Pb(NO<sub>3</sub>)

Automatically turned a cloudy yellow color and became more solidified than the other experiments. H / B1

NaOH and phenolphthalein

Automatically turned a bright pink.

I / B2

HCl and phenolphthalein

Clear no reaction. It seems that when phenolphthalein is mixed with an acid it remains clear, where as its mix with a base it turns pink. J / B3

NaOH and AgNO<sub>3</sub>

Automatically turned brown. Looked thicker than other liquids. K / B4

AgBO<sub>3</sub> and NH<sub>3</sub>

The reaction was clear. After exposure to bright light from my light bulb it turned a dark brown. L / B5

NH<sub>3</sub> and CuSO

The reaction was a misty blue color.

Highlighted Observations

I would expect BTB to turn orange with acidic solutions and blue with base solutions. When phenolphthalein is mixed with an acid it remains clear,

where as its mix with a base it turns pink. When the starch was added to sodium hypochlorite NaOCl and potassium iodide KI it turned black.

## Questions

1. Suppose a household product label says it contains sodium carbonate (sodium bicarbonate). How would you test this material for the presence of sodium bicarbonate?

NaHCO<sub>3</sub> sodium bicarbonate is a widely known household product otherwise known as baking soda. The basic test to detect the presence of sodium bicarbonate is adding a acidic solution such as HCL (hydrochloric acid) and if there is a release of bubbles (CO<sub>2</sub>) like in our experiment above then it is present in the solution you are testing.

2. Three household products mixed with bromothymol blue (BTB): a. Green Works from Clorox

i. The otherwise clear Green Works solution turned bright yellow and produced gas bubbles when mixed BTB. ii. The reaction turning yellow would be indicative of an acidic solution when mixed with BTB. b. Windex

i. Other than some bubbles produced there was no significant changes occurred when BTB was added. It did turn a bit darker blue. ii. The result of the mixture indicates that the solution is basic because it turned (stayed) blue. c. Apple Jucie

i. Turned a dark orange color.

ii. This would indicate that it is acidic.

d. Clementine Izzy

i. Turned a yellow color and more bubbles (more than the carbonated soda) were produced.

ii. Also indicating that it is acidic.

3. You found a solution that has a faint odor resembling vinegar. You are verifying that is indeed vinegar and you add a few drops of phenolphthalein. The sample turns pink what can you assume about his sample?

In our prior experiments when phenolphthalein was added to a solution that was acidic it had no reaction, it stayed clear. However when it was mixed with a base solution it turned pink. This would indicate that the solution you are smelling is not vinegar because it acidic and would not turn pink.

4. While performing a starch test on several different cookie brands, four test result in the typical black color of starch presence, but the fifth gives you a yellow-brown color. How might you interpret this result?

The result of mixing the chemicals sodium hypochlorite  $\text{NaOCl}$  and potassium iodide  $\text{KI}$  created a yellow brown substance, when starch was added it created the dark black color. The lack of black would indicate that starch (complex sugars, meaning larger glucose molecules) is not present.

5. Vitamin Water PH is neutral. Using BTB, you select five flavors of vitamin water to test. Three of the flavor-samples turn a murky green indicating the likelihood of acid/base balance. Of the two remaining one turns slightly yellow while one remains blue. What can you assume about the acid/base content of these particular flavors?

Looking at the result from our prior experiments where I now know that when BTB turns yellow it indicates higher acidity levels means that that particular flavor of vitamin water is higher in acidity than the ones that were neutral (green), and the flavors that turned blue were the opposite and indicate that they are more base.

6. You have read that a new brand of hair tonic is supposed to contain lead (an ingredient in Grecian Formula). Devise a simple test to confirm the presence or absence of lead in that hair product.

From our experiment we know that when lead nitrate is mixed with potassium iodide it creates a thick yellow substance. To test that lead is present in the product I would mix an even amount of the hair product with potassium iodide and see if a similar reaction occurs. If not it is safe to say that there is no lead in the product.