

Elements, Compounds, and Mixtures Lab Report

1)

Author: Abigail King

Title: Elements Compounds and Mixtures

Date of experiment: 9/19/2023

Date submitted: 9/22/2023

Class: Chemistry

2) Purpose

The purpose of this lab is to show the differences between Elements, Compounds and Mixtures. In addition it will demonstrate how to make hydrogen sulfide gas.

3) Materials

- Sulfur
- Iron shavings
- Hydrochloric acid
- Test tube
- Scraper
- Butane torch
- Glass rod
- Beaker
- Paper
- Scale
- Small bowl
- Clamp
- Plastic bag
- Magnet

4) Procedure

I. Two Elements and a Mixture

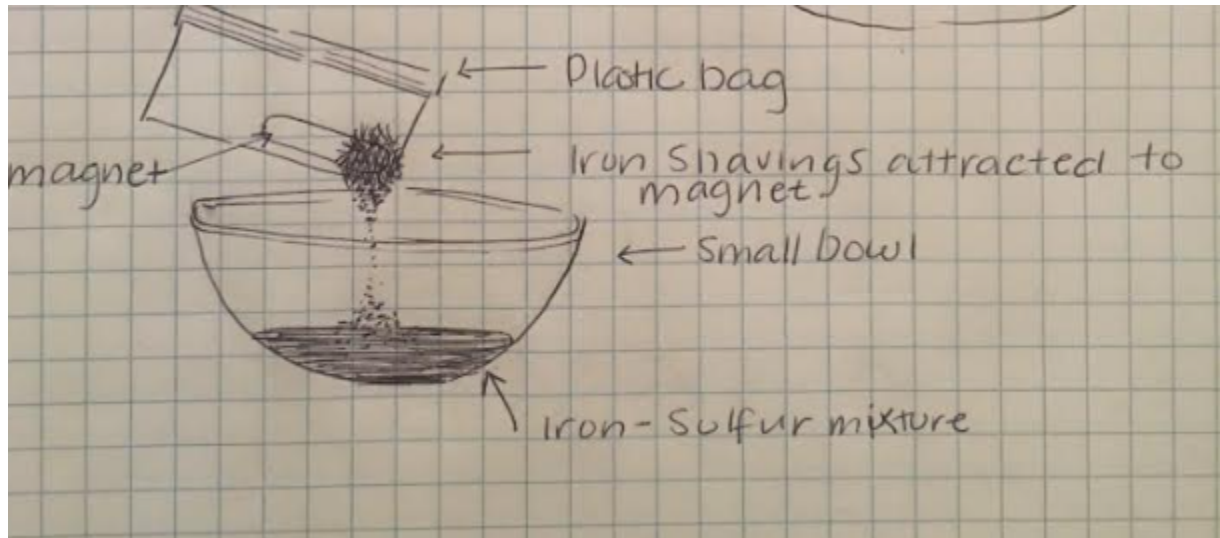
We first measured out 3.5 grams of Iron and 2 grams of Sulfur. We did this by placing the elements on squares of paper on the scale. Next, we poured the elements from the paper into a small bowl. Then we mixed them together in the small bowl. Next we took the magnet and placed it inside of a plastic bag. Then, we put the magnet up to the Iron-Sulfur mix, allowing the iron to be attracted, and stick to the magnet. The purpose of the plastic bag is to make cleaning the iron shavings off easier.

Results:

The iron shavings attracted to the magnet and left the sulfur behind.

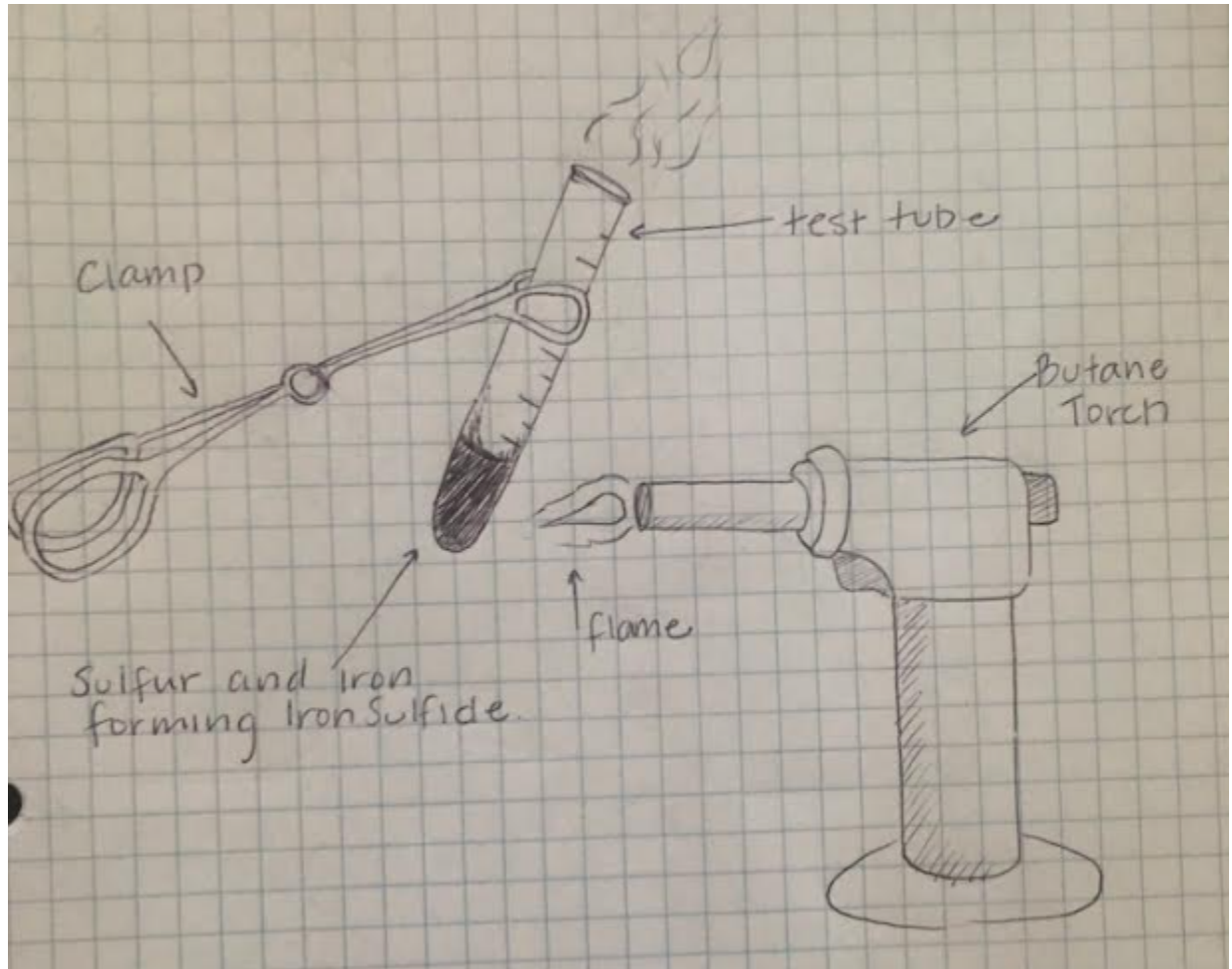
Conclusion:

Since the two elements can be separated, it is a mixture.



II. Compound

The same iron-Sulfur Mix was placed into a test tube. Then, being held with a clamp, we heated the mixture until it formed a new black substance (about ten minutes). This is Iron Sulfide (FeS). ($\text{Fe} + \text{S} \rightarrow \text{FeS}$)



Results:

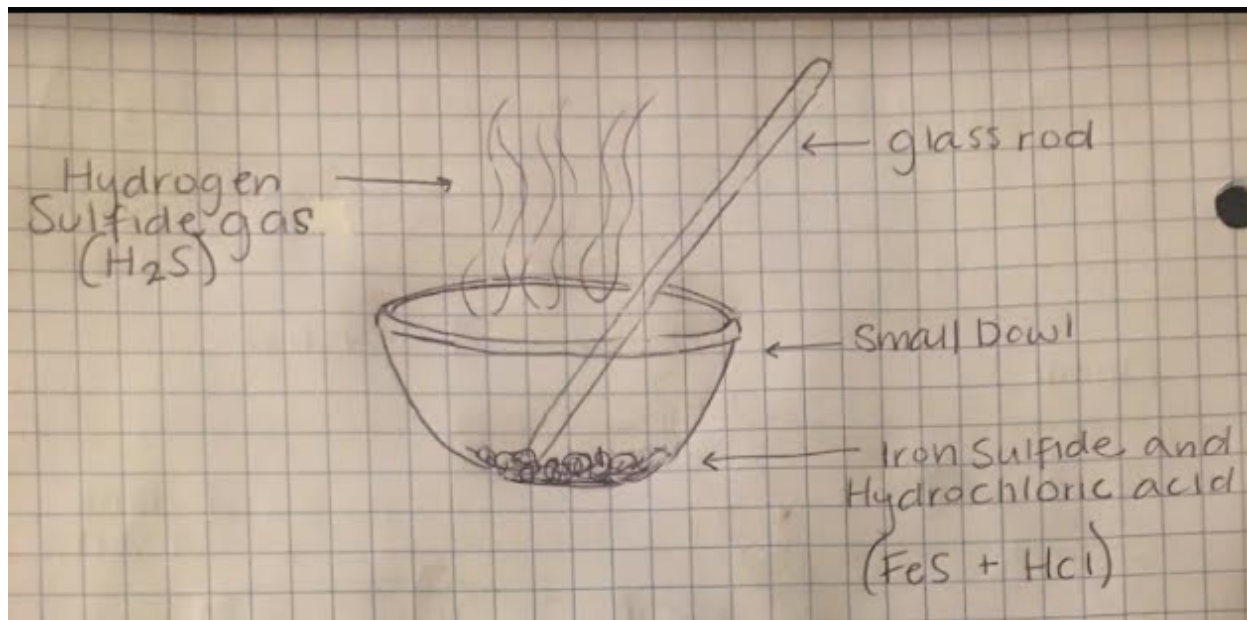
As they were heated, the elements in the test tube bubbled and became a darker black color and a hard charcoal-like substance.

Conclusion:

These two elements now cannot be separated and thus, we can deduce that iron-sulfide is a compound.

III. Making Hydrogen Sulfide gas

Once the Iron Sulfide was created, it was scraped out into a small bowl. We then added several drops of Hydrochloric acid(HCl). This was stirred using a glass rod.



Results:

Once mixed, a potent odor coming from the bowl could be smelled.

Conclusion:

These two compounds reacted and formed another new compound, Hydrogen Sulfide gas(H₂S). ($\text{FeS} + \text{HCl} \rightarrow \text{H}_2\text{S}$). This was the cause of the odor.

5)

In summary, elements are pure substances (only one type of atom). When elements are put together to form mixtures they can be separated. However, if certain chemical reactions take place between two different elements and form a new compound, those elements can no longer be separated.