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Physical vs. Chemical Changes & Nomenclature lab

Introduction: In this unit you learned about the states of matter, specifically how matter can be classified into two categories, *pure substances* and *mixtures*. You then learned that pure substances can either be defined as *elements* or *compounds*, and that mixtures can be defined as *homogenous* or *heterogeneous*. You also learned that mixtures can be separated by *physical changes*, and that compounds can be created from elements via *chemical changes*. You also learned how to name elements and compounds in this unit.

- Purpose:** In this lab you will perform different experiments and for each experiment you will determine the following
- 1) Follow the directions listed below for each experiment.
 - 2) Each person at the lab station will get to do 2 of the experiments listed below. Number off each person 1-4. Perform the experiment that is listed with your number.
 - 3) Write the name/formula for each of the reactants
 - 4) Determine the state of matter of the reactants
 - 5) Determine if each reaction is an example of physical or chemical changes.

Data: Fill out the following table based on your observations during the experiments.

Exp.	Directions	Name of the reactants	Mixture or Pure Substance?	Homogenous, Heterogeneous Or Element or Compound	Observations	Physical or Chemical Change?
*	<p>* Instructor Demonstration</p> <p>The instructor will place some crystals of I_2 into a beaker and then heat the iodine crystals.</p>					
*	<p>* Instructor Demonstration</p> <p>The instructor will bring a magnet near Fe fillings.</p>					

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Exp.	Directions	Name of the reactants	Mixture or Pure Substance?	Homogenous, Heterogeneous Or Element or Compound	Observations	Physical or Chemical Change?
1a	Pour ~10-20 drops of HCl into a small beaker. Add a small piece of Mg (<i>get from instructor</i>) into the beaker. <i>* Dispose of waste in fume hood</i>					
2a	Fold your piece of paper in half.					
3a	Add 4-5 drops of KI together with 4-5 drops of Pb(NO₃)₂ <i>* Rinse the waste down the sink.</i>					
4a	Light the candle at your station.					
1b	Add 4-5 drops of bromothymol blue indicator to NaOH . Then add 10-15 drops of HCl . <i>* Rinse down the sink.</i>					
2b	Add a scoop of CuSO₄ using the spatula into a small beaker. Add ~10-20 drops of water. <i>*Dispose in the fume hood.</i>					

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Exp.	Directions	Name of the reactants	Mixture or Pure Substance?	Homogenous, Heterogeneous Or Element or Compound	Observations	Physical or Chemical Change?
3b	Add ~ 1 scoop of NaHCO_3 into a small beaker. Add 5-10 drops of $\text{HC}_2\text{H}_3\text{O}_2$ (vinegar) into the beaker. <i>* Rinse down the sink.</i>					
4b	Get a piece of dry Ice (CO_2) from the instructor. Place the piece of ice on the lab bench, or in a small beaker of water.					

**** Rinse the beakers and spatula. Return all items into the small basket. Place goggles in the center of the lab bench. Raise your hand to get a clean-up stamp when you are done.**

Results: Write 4-5 sentences to answer the following questions. Use evidence from the lab to support your claim.

What is the difference between a chemical and a physical change?

Additional Questions

1. What are some evidences of physical changes?

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2. What are some evidences of chemical changes?

3. How do you name and write the formula for ionic compounds? How do you name and write the formula for covalent compounds?

4. Which of the reactants that you used in the lab were ionic? Which were covalent? Which were acids?

Ionic Compounds	Covalent Molecules	Acids

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Hi Hugo,

I am being observed on Friday and would like to do a lab. Do you think that you could have these materials to me no later than **Wednesday** so that I can prepare all of the materials for Friday?

I am going to do a demonstration and would like to use the following

- Iodine crystals
- Iron fillings
- Magnet

I would like to make **eight** sets with each of the following.

- Strips of Mg Metal
- 1 M HCl bottle solution
- 0.1 M KI bottle solution
- 0.1 M $\text{Pb}(\text{NO}_3)_2$ bottle solution
- 1 M NaOH bottle solution
- CuSO_4 crystals
- Baking soda
- Vinegar solution bottle

Thank you so much! Please let me know if you have any questions, or we don't have any of these materials.

Thanks,
Breanna