SEPARATION OF SALT AND SAND

Purpose: To investigate the Law of Conservation of Mass using filtration and evaporation.

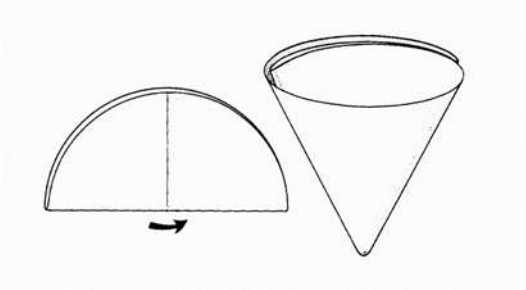
Background: The Law of Conservation of Mass states that in any chemical or physical reaction, mass is neither created nor destroyed. Separating a mixture is an example of a physical change. There are several ways to separate a mixture. The use of one's hands in pulling the parts of a mixture apart is one example. Filtration is another way to separate mixtures. Filtration is the separation of a heterogeneous (not alike, different) mixture, by adding a solvent (usually water) and passing the resulting mixture through a funnel with filter paper. Evaporation of a homogeneous (alike, same) mixture will reveal any solid particles which were dissolved in the original mixture.

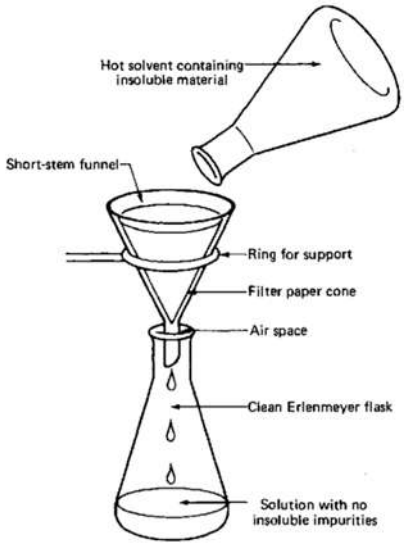
MATERIALS:

sand	
salt	water
filter paper	50 mL & 100 mL beaker
funnel	Ring Stand with ring
wire gauze	Bunsen burner
electronic scale	evaporating dish
Watch glass	weigh trays (2)
Glass stir rod	

DIRECTIONS:

1. Using a weigh tray, measure out a .5-1 gram sample of salt. Enter into data table
2. Using a weigh tray, measure out 1-2 gram sample of sand. Enter into data table
3. Place salt and sand in a 100 mL beaker.
4. Using a 25 ml graduated cylinder measure out 20 mL of water. Add the 20 mL of water to the mixture. Using a glass stir rod, mix the solution until all of the salt has dissolved.
5. Set up filtration by using filter paper and a funnel. Place the 50 mL beaker onto the ring stand. Separate the sand from the mixture. The sand will be left on the filter paper, leaving a mixture of salt and water in your 50 mL beaker.
6. Weigh your evaporating dish to the nearest .1 gram and enter this into your data table.
7. Weigh your watch glass to the nearest .1 gram and enter this into your data table.
8. Pour your salt water mixture into the evaporating dish and place it onto the ring stand.
9. Place your Bunsen burner under the ring in order to heat up your solution.
10. When your solution is half gone, place the watch glass over your evaporating dish.
11. Continue to heat until all of the liquid is gone.
12. Wait 10-15 minutes or until your evaporating dish, watch glass set up is cooled. Weigh them together to the nearest .1 gram. Record this in your data table.





		Mass in grams
1.	Mass of Salt sample	
2.	Mass of Sand sample	
3.	Mass of evaporating dish	
4.	Mass of watch glass	
5.	Mass of evaporating dish and watch glass (A) Add #3 and #4 together	
6.	Mass of evaporating dish and watch glass after heating. (B)	
7.	How much salt did you recover? Subtract mass of evaporating dish and watch glass from the mass after heating. (B) – (A)	
8.	Percent error: $\frac{\text{Actual-Theoretical}}{\text{Actual}} \times 100$ Your Actual is from #1 and your theoretical is from #7	

QUESTIONS:

1. What is the definition of a physical change?
2. What is the definition of a chemical change?
3. When we mixed the sand and salt with water, was this chemical or physical change?
4. When we evaporated off the water, was this a physical or chemical change?
5. Why did we use a watch glass to cover the evaporating dish?
6. If you had above a 10% error in your lab, what might be some reasons this occurred?
7. State in your own words the Law of Conservation of Mass.
8. What are some criteria to tell the difference between a physical and chemical change?

You will write a formal lab report on this lab! I will go over directions on how to do this. As always, the directions for writing a formal lab report, along with this lab will be on my website.