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CH201
Post Lab 2

Lab 2: Separating the Components of a Mixture

Data:

Section	Items	Mass (g)
Part A	Watch Glass #1	50.61 g
Part A	Evaporation Dish #1	109.96 g
Part A	Evaporation Dish #1 and Mixture	112.27 g
Part A	Glass Funnel with Cotton Plug	70.07 g
Part A	Cooled Watch Glass #1, Funnel, and Contents	121.39 g
Part B	Filter Paper #1	1.05 g
Part B	Filter Paper #2	1.00 g
Part B	Watch Glass #2	46.06 g
Part B	Dried Filter Paper #1 and #2, Watch Glass #2, and Contents	49.23 g
Part C	Evaporation Dish #2	43.15 g
Part C	Aluminum Foil	1.40 g
Part C	Cooled Evaporation Dish #2, Aluminum Foil, and Contents	45.03 g

Calculations:

1. 112.27 - 109.96 = 2.31 g of original mixture
2. 121.39 - (50.61 + 70.07) = 0.71 g of NH_4Cl
3. 49.23 - (46.06 + 1.05 + 1.00) = 1.12 g of sand
4. 45.03 - (43.15 + 1.40) = 0.48 g of NaCl
5. 0.71 + 1.12 + 0.48 = 2.31 g of recovered mixture
6. Percent Mass:
    a. NH_4Cl : 0.71 g/2.31 g * 100 = 30.7%
    b. Sand: 1.12 g/2.31 g * 100 = 48.5%
    c. NaCl : 0.48 g/2.31 g * 100 = 20.8%
7. Percent Recovery: 2.31 g /2.31 g * 100 = 100%

Results:

1. Original mixture mass: 2.31g

	Mass Recovered (g)	Percent Mass	Percent Recovery
NH_4Cl	0.71 g	30.7%	
Sand	1.12 g	48.5%	
NaCl	0.48 g	20.8%	
Total	2.31		100%

Conclusion:

The purpose of this lab was to investigate three separation techniques: sublimation, filtration, and evaporation. Through these laboratory processes we were able to take some amount of a mixture of compounds, separate them, and obtain a percent mass of each constituent of the mixture for the sample tested.

During part B of the experiment, the filtration stage, the filter paper broke and spoiled our first filtration attempt. We filtered the mixture a second time without any incident. Both filter papers initial and post masses were measured to ensure accuracy of sand filtered. In our experiment, the mass recovered in each separation step added up to the original mass of the sample mixture.

Our experiment estimates the percent mass of each constituent part of the mixture is as follows: NH_4Cl: 30.7%, Sand: 48.5%, NaCl: 20.8%. Even though our mass recovered equals the

mass of the original mixture it is still possible that there could be error in our mass percentages. One place where error may have occurred is that we may have not separated all the NH_4Cl and NaCl from the sand mixture, therefore, the mass stayed in the sand portion rather than having been sublimated or filtered from the mixture in parts A or B. Comparing our results to the given percent masses, our percent mass for sand is 11.12% higher, which seems to corroborate the hypothesis that NH_4Cl and NaCl was not fully separated from the sand. This error is likely a random error. The original mixture may have not been perfectly mixed, leaving different percent mass of various compounds in different amounts in different parts of the mixture, or randomness in the process of sublimation or filtration.

Supplementary Questions:

1. a) 3 sf b) 4 sf c) 1 sf d) 3 sf e) 5 sf f) 1 sf g) 3 sf h) 2 sf
2. a) 10. mL b) 13,000 g c) 44 m d) 2.1 g/L e) 1000 sf f) 7.4 km g) 0.0031 oz h) 80%
3. a) 18 m b) .55 g/cm^3 c) 13.30 L d) 200.9679 m e) 0.19 g f) 0.0880 cm^{-1} g) 160 in^2 h) 1.53 $X10^4$ ft^2 i) 6.66 x 10^3 g