

GNE162

Introduction to Environmental Science

Lab 7 (Scientific Method 2)

Instructions:

In this lab you will devise an experiment to answer two questions:

1. Does temperature play a role in the rate in which Alka-Seltzer will dissolve in water?
2. Does surface area play a role in the rate in which Alka-Seltzer will dissolve in water?

All of the materials that you should need to conduct this experiment are provided on your lab tables. If you think you will need additional materials please let me know. As a guide, use water at three different temperatures for question 1 and Alka-Seltzer at three different surface areas (sizes) for question 2. Please take time to plan what you are going to do to save time. Planning also improves safety.

Your write-up for this lab should be in the format outlined below and is due next Wednesday October 10th. **In your conclusion discuss the practical significance of your results, listing references where appropriate.**

1.

2. Question (s):

- 1- Will water temperature effect the rate at which the alka seltzer dissolves?
- 2-Will the surface area effect the rate at which the alka seltzer dissolves?

2. Hypotheses:3. Materials and Method:

Materials 1- Three beakers, three alka seltzers, water, thermomator, timer, and a water heater

Method 1- We filled each beaker with 150ml of water. One with cold water, one with room temperature water and one with warm water. Then we dropped in the alka seltzers and used a timer to record how long each took to dissolve. Then we recorded our data.

Hypothesis 1- Water temperature will have an impact upon the rate at which the alka seltzer will dissolve.The warmer the water temperature the faster the alka seltzer will dissolve.

Materials 2- Three beakers, three alka seltzers, water, timer, grinder.

Method 2- We filled each beaker with 150 ml of room temperature water. We then ground up one of the alka seltzers into a powder form and broke one into four pieces. The other we kept whole. We then dropped in the alka seltzers and used a timer to record how long each took to dissolve. We then recorded our data.

Hypothesis 2- Surface area will play a role upon the rate at which the alka seltzer will dissolve. The lower the surface area the faster the alka seltzer will dissolve.

4. Results (please put data you obtained in a table):

Table 1 and Table 2

Water temp	Dissolve rate		
14 degrees	1:07 seconds		
25 degrees	56 seconds		
65 degrees	34 seconds		

Surface Area	Dissolve Rate		
Powder	10 seconds		
Pieces	34 seconds		
Whole	52 seconds		

5. Conclusion:

1- Water temperature does have an effect upon the rate at which alka seltzer dissolves. The higher the water temperature, the faster the rate at which the alka

seltzer will dissolve. At fourteen degrees it took a minute and seven seconds to dissolve and at 65 it took less than half of that time.

2- Surface area does play a role in how fast the alka seltzer will take to dissolve. The smaller the surface are the faster the alka seltzer will dissolve. The powered alka seltzer only took ten seconds to dissolve as the whole one took about nine times more time.

6. References

Take the alka seltzer pills with room temperature water and break it up into pieces. Cold water slows down the dissolving process and hot water can create excessive foam. If you use room temp water and break it into smaller pieces than it will dissolve nicely and hurt your stomach less.

<https://www.alkaseltzer.com/food-fun/faqs/>