SCI10-CR4

Investigate the rates of chemical reactions, including factors that affect the rate.

Indicators for this outcome:

(b)	Predict how factors such as temperature of the reactant(s), concentration of the reactant(s), surface area of the reactant(s) and the presence or absence of catalysts or inhibitors might affect the rate of a chemical reaction.
(c)	Formulate scientific questions about the rates of chemical reactions and the factors that affect rates of chemical reactions.
(d)	Design and perform an experiment to determine how various factors affect chemical reaction rates, including identifying and controlling major variables.
(e)	Compile and organize data, using appropriate formats and data treatments to facilitate interpretation of data related to rates of chemical reactions.
(f)	Interpret patterns and trends in data and infer or calculate linear and nonlinear relationships among variables related to chemical reaction rates.
(g)	Reflect upon data collection and analysis procedures and suggest improvements to increase precision and accuracy.
(i)	Value the processes for drawing conclusions in science.
(k)	Work co-operatively with team members to develop and carry out a plan and troubleshoot problems as they arise when investigating rates of reactions.

Introduction

Alka-Seltzer is a common medicine that is used in North America to treat upset stomachs and headaches. It has 3 ingredients:

- Acetylsalicylic acid (Aspirin)
- Citric acid (acid with the anion $C_6H_5O_7^{3-}$)
- Sodium bicarbonate

When the tablet (pill) is put in water, the **citric acid** reacts with the **sodium bicarbonate**. This creates sodium citrate, carbon dioxide, and water. The Acetylsalicylic acid then mixes and relieves pain and upset stomachs.

Purpose

In this lab, effect of temperature, surface area and concentration on the rate of a chemical reaction will be investigated.

Potential Materials

- Alka-Seltzer tablets
- Film canister with lid
- Graduated cylinder
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Hypothesis

Create a hypothesis for each of the following effects on the reaction rate:

1. Temperature
2. Surface Area
3. Concentration

Procedure

Formulate a procedure to establish a control and to test your hypothesis'.

Data Analysis

Devise a method to collect, record, and analyse data.

Conclusion

Summarize what you learned about the rates of chemical reactions in this lab experience.