What Matters??

Ice Cream

1. Eureka! Molecules in Solids!

Introduction:

- Believe it or not, the simple process of making ice cream involves chemistry!
- Today, you will be making your own ice cream, while toying around with these basic scientific principles.
- And yes… you can eat the ice cream!

History of Ice Cream:

- The origin of ice cream is unknown, though most suspect it was originally discovered by the Roman emperor, Nero.
- Runners would carry snow and ice from the mountains and he would coat it with fruit and sweet toppings.
- Others believe ice cream was invented in China and brought to the US and Europe by Marco Polo.

History of Ice Cream:

- It has been changed and modified over the years, with many different recipes and ice cream parlors opening up.
- It is rumored that George Washington once paid $200 (a whole lotta money back then) for a secret ice cream recipe.
- In 1846, Nancy Johnson developed and patented the first hand-crank ice cream maker.
- Eventually, ice cream became commercialized and many new stores and entrepreneurs took advantage of its popularity.

Background Information:

- Remember what we learned about changing states. Freezing is the change of state when a liquid turns into a solid.
- Often, a liquid turns into a crystalline solid. In a crystalline solid, the particles are arranged in an orderly fashion.
- Salt is also called Sodium Chloride, or NaCl. This is because it is made up of 1 sodium atom and 1 chloride atom.
- When you add salt to ice, something interesting happens. You will be exploring this idea today.

Purpose:

- After completing this lab, every student will be able to explain the concept of state changes.
- Also, every student will be able to describe the effects of adding salt to water.

Materials

Zip Lock Bags:

- 1 gallon-size
- 1 quart-size
- 1 sandwich-size
- 2 cups of ice
- 6 tablespoons of rock salt (NaCl)

Ice Cream Mixture

- 1 tablespoon of sugar
- 1/2 teaspoon of vanilla
- 1/2 cup of whole milk

Hypothesis:

- **Predict what may happen after**
- **1 min**
- **5 min**
- **10 min**

Lab Directions:

In the smaller baggie:

- **Mix the milk, the sugar and vanilla**
- **Seal this baggie TIGHT!**
- **And then put it into the quart bag**

Lab Directions:

In the large baggie:

- **Put ONLY the salt and the ice**

Lab Directions:

- **Place the sealed smaller baggie into the quart baggie then put these into the 1 gallon ice & salt bag.**
- **Seal the 1 gallon ice & salt bag.**
- **Roll the baggies, back and forth over and over until the milk-sugar-vanilla mixture becomes hardened.**

- **Record your ice cream observations at:**

  1-5-10 minutes

- **Record the temperature in the ice bag :**
- Before rock salt
- After rock salt
- Change (Before minus After)

After the 10 minutes of rolling

- **Pull out the quart bag which holds the smaller milk,etc bag & wipe off on the towel.**
- **Pull out the sandwich bag and record your observations…**
- **THEN …Enjoy your results!**
- Complete your lab analysis questions & conclusion sentences