

**Unit name: Kitchen Chemistry-exploring chemical change.**

**Lesson #5:** "Year 6 Sherbet Makers" (Adapted from: "How to make Sherbet" by: Editor-Tracey Tramby, retrieved on 23/10/14 from: [www.csiro.au/helix/scienceemail/activities/sherbet.html](http://www.csiro.au/helix/scienceemail/activities/sherbet.html))

**Prior Knowledge:**

**Physical Change:** is a change in which no new substance is used.

**Chemical Change:** is a change that results in the conversion of the original substances to form new substances

**Key Scientific Knowledge:**

By combining citric crystals acid and bicarbonate soda with the saliva an irreversible chemical reaction occurs and creates a new substance: Carbon dioxide.

Reference: "Science by Email" retrieved from <http://www.csiro.au/helix/scienceemail/activities/sherbet.html> retrieved: 23/10/2014

**Pertinent Loan of Knowledge:**

By combing citric acid crystals, bicarbonate of soda, sugar and jelly crystals (for flavour) you are creating a new substance called 'sherbet'. You will feel tiny bubbles 'fizzing' on your tongue, this is the carbon dioxide 'bubbles'.

**Science & Technology Stage 3:****Outcomes:****A student:**

**identifies the observable properties of liquids and gases, and that changes made to materials are reversible or irreversible**

**ST3-12NM**

**Solids, liquids and gases have different properties and behave in different ways (ACSSU077)**

\*Demonstrate that air has mass and takes up space such as bubbles

**Changes to materials can be reversible or irreversible (ACSSU095)**

\*Observe some irreversible changes that common materials undergo and identify the changes may result in new materials.

**Other Key Learning Areas:****ENGLISH:****Outcome****Literacy-**

**Interacting with others: Participate in and contribute to discussions, clarifying and interrogating ideas, developing and supporting arguments, sharing and evaluating information, experiences and opinions.**

**ACEYL1709**

**Resources**

Each student will have:

3 heaped dessert spoons of icing sugar

2 level dessert spoons of jelly crystals

1 level teaspoon of citric acid crystals

1 level teaspoon of bicarbonate of soda

A small mixing bowl

A teaspoon

A dessert spoon

Snap lock bags (so that students can take home their sherbet)

Flavoured jelly crystals

A Laminated Recipe Card (between two students)

A paddle-pop stick  
Digital camera

### **Lesson outline:**

\*Whilst students are adding ingredients teacher will take pictures, THEN again when they are about to 'taste their creations). These pictures will be mounted around the room to illustrate evidence of learning.

\*In order to support the development of a rich learning environment for all children a local elder (from student's indigenous community) has been invited to assist (Australian Academy of Science, 2008).

### **What to do:**

1. Add 1 level teaspoon of citric acid crystals to the bowl.
2. Add 1 level teaspoon of bicarbonate of soda to the bowl.
3. Now add 3 heaped dessert spoons of icing sugar.
4. Add 2 level dessert spoons to the bowl.
5. Place a small amount on your tongue using a 'paddle-pop stick'.
6. After tasting you may need to vary the ingredients. If it is too bitter, add more sugar, if there isn't enough 'fizz' you may need to add bicarbonate soda or citric acid. Make sure you only add small amounts, remember you can always add more but it is very hard to remove some.

### **What's Happening?**

- Explain to the students that they just created an acid-base reaction in their mouths.
- Explain that when you combine acid (citric acid) and an alkaline (bicarbonate soda) with the saliva, they mix together to create a new substance called carbon dioxide, which are bubbles on their tongue. Also, ask the students if they know where carbon dioxide might come from? (i.e. we breathe it out). Also, explain that these are the same bubbles that make our drinks fizzy.
- The icing sugar is needed to add sweetness as the citric acid and bicarbonate are so sour. Talk about where else they might find citric acid, such as citrus fruits. Ask the students what they think might happen if they add another teaspoon of 'citric acid' crystals to their mixture? Why?
- Explain that this acid is also known as 'ascorbic acid' (commonly known as vitamin C).

### **Group Reflection/Discussion:**

\*Discuss as a group, how physical and chemical changes differ.

\*Physical changes when a change has taken place but no new substances are being used.

\*Ask students to identify experiments that they did in relation to physical change in lessons 1, 2, 3 and 4. How did they know? Why? What evidence did you have?

\*And, A Chemical Change is a change that results in the conversion of the original substances to form new substances. Such as "Sherbet".

\*Explain that they will be doing another experiment next week related to Chemical Change involving bicarbonate soda. However, the next experiments will be conducted in teams.

### **Simplification:**

- This could be done in teams of two

### **Extension:**

If students finish early, provide another 'clip bag' ask them quietly to make another batch but with an extra teaspoon of citric acid

### **Evaluation:**