Kitchen Chemistry: Acids and Bases

Overview: Children will engage in a conversation about what acids and bases are followed by a brief demonstration of an acid and base reaction.

Subject area: Kitchen Chemistry

Grade level: 3rd-7th

Oregon Benchmarks/Common Core Standards:

- *5-PS1 Matter and Its Interactions*
  5-PS1-3: Make observations and measurements to identify materials based on their properties
- *MS-PS1 Matter and Its Interactions*
  MS-PS1-1: Develop models to describe the atomic composition of simple molecules and extended structures

Objectives: Children will learn the basic properties of acids and bases and how they could be used in the kitchen.

Prep time: 5 minutes

Lesson time: 15 minutes

Materials needed:

- Lemon juice
- 1 cup baking soda
- 1 large clear bowl
- Something to write on (whiteboard or easel)

Space needed: A demonstration table

Staff needed: 1

Preparation steps:

1. Pour one cup of baking soda into the clear bowl.
2. Have 1-3 tablespoons of lemon juice ready.

Presentation steps:

1. Talk to the children about what they already know about acids and bases. Where can you find acid? (lemon juice, vinegar, in your stomach) What does acid do for instance in your stomach? How is this useful in the kitchen? Where can you find bases? (soap, baking soda) How are they useful in the kitchen? (neutralize acids like in baked goods with fruit or citrus and help clean things) What is pH? What does it mean if something is

neutral? (like water) Write down the highlights of the conversation including properties of acids and bases.

2. Ask children what they predict will happen when you add an acid to a base.
3. Demonstrate how acids and bases react by adding lemon juice to the bowl of baking soda.
4. Have children document their observations.

Variations: Are some acids stronger than others? Have children predict which the stronger base is: lemon juice or vinegar. Demonstrate step 3 using one bowl with lemon juice and one with vinegar and equal amounts baking soda in each.