

A CHEMICAL REACTION

Grade Level: 4th Grade
Written by: Heather Wood, Woodrow Wilson Academy, Arvada, CO
Length of Unit: Six lessons (approximately 1.5 weeks; 1day = 30 minutes)

I. ABSTRACT

This unit covers the necessary information in the fourth grade *Core Knowledge Sequence* incorporating a variety of lessons, visuals and experiments. Students will receive the opportunity to use critical thinking skills and deductive reasoning to explain certain chemical phenomena.

II. OVERVIEW

- A. Concept Objectives
 - 1. Students understand the processes of scientific investigation and design, conduct, communicate about and evaluate such investigations.
 - 2. Students know and understand common properties, forms, and changes in matter and energy.
- B. Content from the *Core Knowledge Sequence* (pages 104- 105)
 - 1. All matter is made up of atoms
 - 2. Scientists have developed models of atoms
 - 3. Protons(+), Neutrons(neutral), Electrons(-)
 - 4. Unlike charges attract, like charges repel
 - 5. Properties of Matter: Density, Volume, Mass, Vacuum
 - 6. Elements; basic kind of matter
 - 7. Solutions; solute, solvent, concentration and saturation
- C. Skill Objectives
 - 1. Students will review the three forms of matter and give examples of each.
 - 2. Students will become familiar with the atom and label the different parts of an Oxygen atom.
 - 3. Students will demonstrate knowledge learned by taking notes and illustrating an atom, element, and a compound.
 - 4. Students will complete a worksheet of chemical formulas by decoding the formulas and recording the atoms needed to make the compounds listed.
 - 5. Students will understand the three properties of matter, take detailed notes and illustrate experiments of each. Students will also understand the concept of a vacuum of empty space.
 - 6. Students will conduct a simple experiment in which they will observe a chemical change in a solution.

III. BACKGROUND KNOWLEDGE

- A. For Teachers
 - 1. Ardley, Neil. *The World of the Atom*. New York: Gloucester, 1989.
 - 2. Berger, Melvin. *Atoms, Molecules and Quarks*. New York: Putnam, 1986
 - 3. Gregoire, Tanya. *Museums of Science Activities for Kids*. Holbrook, MA: Adams Media, 1996.
 - 4. Baltimore Curriculum- Fourth Grade Chemistry