

# ACTIVE CHEMISTRY

## CHAPTER 7

### THE PERIODIC TABLE

#### Chapter Overview

In Chapter 7, *The Periodic Table*, students are challenged to develop a game that will actively involve the players in learning what the periodic table is and how it is used in science. The periodic table is the backbone of chemistry and a good understanding of it is essential to all sciences. The periodic table provides the framework needed to determine the chemical and physical properties of elements, and therefore to make reasonable predictions about their behavior.

The chapter begins with students investigating the importance of categorizing items. They are asked to organize the items in a supermarket. Students then look for ways to organize the elements. Each new piece of data that they collect will cause them to make some changes in their thinking. Experimental studies in developing the structure of the atom are reviewed. Students will develop an understanding of the properties of elements and how ionization energy is used to develop electron arrangements. Using this knowledge they learn how atoms combine to form compounds and how to differentiate between covalent and ionic compounds. They also learn about different isotopes of an element and what properties are necessary for these isotopes to be stable. The chapter concludes with a study of nuclear reactions and radioactive decay.

#### Chapter Goals for Students

- Understand how the periodic table is used to classify elements.
- Learn how the average atomic mass is determined for an element.
- Learn that the nucleus of the atom is very dense and that the neutrons and protons reside in the nucleus.
- Understand that the electrons are outside of the nucleus and that the atomic number tells you the number of electrons or protons that the atom contains.
- Learn how to combine atoms using the periodic table.
- Learn that not all isotopes of an element are stable and some can be radioactive.