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The following lessons were created by **Cathy Tucker**, a teacher participating in a National Endowment for the Humanities Summer Institute for Teachers entitled Touch the Past: Archaeology of the Upper Mississippi River Region.

Using Radioactive Dating to Better Understand Isotopes

Grade Level: High School

Subjects: General Chemistry

Objectives: To use radioactive dating and its application to archaeology to enhance interest and show application to isotopes.

Standards: Standard #2: Understands and applies principles of physical science.
Power Benchmark: Understands and applies knowledge of the structure and properties of matter.

Duration: 45 minutes. This is a portion of the structure of atom in Chapter 3 of the textbook. 5 days of block scheduling (90 minute classes) for the full chapter.

Materials/Supplies: PowerPoint. (The unit on isotopes also includes a lab and an optional extra credit activity.)

Vocabulary: radioactive, radioactivity, half-life, isotope, C-12, C-13, C-14, frequency in nature, atomic mass unit (amu), atomic number, atomic mass, alpha and beta decay

Background: In Chapter 3 students will previously covered the history of the atom, history of the discovery of subatomic particles, Rutherford's experiment, and an introduction to alpha, beta and gamma radiation.

Setting the Stage: The isotope portion of the PowerPoint is inserted midway, and at the end of the chapter 3 notes.

Procedure: The notes will be given over a period of 3-4 days (depending on the school's schedule.) In addition there will be 2 isotope worksheets and textbook questions assigned. I also have written an isotope lab and an extra credit activity.

Closure: Class discussion

Evaluation: Formative assessment:

Openers and discussion during class

Summative Assessment:

Chapter 3 exam (multiple choice question and problems.)

Lab and optional activities write-up

Links/Extension: Carbon-12 is the basis for the periodic table.