

## Fission and Fusion

<b>Course Name: Physical Science, Earth Science, Biology</b>	
<b>Unit Title: Radiation in the Human Body</b>	<b>Day: 3/15</b>
<b>Relevant NC Standard Course of Study Goal(s):</b> <ul style="list-style-type: none"><li>● <b>PSc.2.1.4 Interpret the data presented in the Bohr model diagrams and dot diagrams for atoms and ions of elements 1 through 18.</b><ul style="list-style-type: none"><li>○ Describe the charge, relative mass, and the location of protons, electrons, and neutrons within an atom.</li><li>○ Calculate the number of protons, neutrons, electrons, and mass number in neutral atoms and ions.</li><li>○ Explain how the different mass numbers of isotopes contributes to the average atomic mass for a given element (conceptual, no calculations).</li><li>○ Explain Bohr's model of the atom.</li></ul></li><li>● <b>PSc.2.3.2 Exemplify the radioactive decay of unstable nuclei using the concept of half-life.</b><ul style="list-style-type: none"><li>○ Conceptually explain half-life using models</li><li>○ Perform simple half-life calculations based on an isotope's half-life value, time of decay, and/or amount of substance.</li></ul></li></ul>	
<b>Specific Lesson Objectives</b>	
<b>Students will understand:</b> <ul style="list-style-type: none"><li>● how elements are organized in the periodic table</li><li>● the general process of radioactive decay on the atomic level</li></ul>	
<b>Students will know:</b> <ul style="list-style-type: none"><li>● the characteristics of metals and nonmetals</li><li>● what an isotope is and how it differs from an element</li></ul>	
<b>Students will be able to:</b> <ul style="list-style-type: none"><li>● calculate half-life of an isotope</li><li>● find designated elements on the periodic table</li></ul>	

<b>Key Vocabulary/Formulae for this Lesson</b>
<ul style="list-style-type: none"><li>● element</li><li>● atomic number</li><li>● periodicity</li><li>● radius</li><li>● isotope</li><li>● half-life</li><li>● group</li><li>● family</li></ul>

<b>Materials</b>
<ul style="list-style-type: none"> <li>● white board</li> <li>● marker</li> <li>● laptop</li> <li>● projector</li> <li>● PowerPoint presentation</li> </ul>
<b>Technology Needs</b>
<ul style="list-style-type: none"> <li>● teacher laptop</li> <li>● projector</li> <li>● Internet or downloaded YouTube video</li> <li>● Isotopes and Half-life PowerPoint</li> </ul>

<b>LESSON ACTIVITIES</b>			
<b>Opening (Hook, Warm-Up, Anticipatory Set, Review, etc.)</b>			
<i>Describe activity to elicit active involvement of students or refer to previous learning:</i>			
Do Now - review questions from atomic structure lesson the day before (10 min)			
<b>Procedure: Include all sections that apply to this lesson; combine as necessary.</b>			
Section	Time	What the Teacher will do:	What the Students will do:
<b>Statement of Objective &amp; Purpose</b>	2 min	State the goals and agenda for the day	listen
<b>Input, Modeling, &amp; Check for Understanding</b>	15 min	show video - Introduction to the Periodic Table ( <a href="https://www.youtube.com/watch?v=uPkEGAHo78o">https://www.youtube.com/watch?v=uPkEGAHo78o</a> )	listen and watch, write ten facts from video
<b>Guided Practice</b>	30 min	assign Elements and Periodic Table guided practice, circulate to guide students	work in groups to complete guided practice about elements and the periodic table
<b>Input, Modeling, &amp; Check for Understanding</b>	20 min	present notes on isotopes and half-life	listen, take notes in format according to teacher preference, answer when prompted, ask questions to clarify understanding
<b>Closing/ Summary</b>	3 min	assign exit ticket	complete exit ticket
<b>Assessment of Student Learning</b>			
<i>Students will have a vocabulary quiz on Day 5 and a Unit Test on the final day of the unit. The assessment for this day alone is evaluation of the assigned exit ticket and Elements and Periodic Table practice activity (optional). Qualitative evaluation should be consistently carried out by the teacher in the form of leading questions and class discussions.</i>			