

# Evolution of a Radioactive Atom Vocabulary Activities

The concepts surrounding radiation can be complex. By conducting a vocabulary activity before beginning an activity or series of activities, students will have a shared base knowledge.

## Materials and Resources

- Vocabulary Materials document.
- Materials noted in activity suggestions.

## Common Core State Standards (CCSS)

The concepts in this activity align with the following CCSS English Language Arts Standards for Literacy in History/Social Studies, Science, & Technical Subjects:

- Key Ideas and Details: CCSS.ELA-LITERACY.RST.6-12.2
- Craft and Structure: CCSS.ELA-LITERACY.RST.6-12.4
- Vocabulary Acquisition and Use: CCSS.ELA-LITERACY.L.6-12.6

## Vocabulary by Activity

Activity 1: Atomic Discoveries	<ul style="list-style-type: none"> <li>• Alpha particle</li> <li>• Atom</li> <li>• Electron</li> </ul>	<ul style="list-style-type: none"> <li>• Neutron</li> <li>• Nucleus</li> <li>• Proton</li> </ul>
Activity 2: Atomic Math and Shorthand	<ul style="list-style-type: none"> <li>• Atom</li> <li>• Electron</li> <li>• Isotope</li> </ul>	<ul style="list-style-type: none"> <li>• Neutron</li> <li>• Nucleus</li> <li>• Proton</li> </ul>
Activity 3: Strong Nuclear Forces	<ul style="list-style-type: none"> <li>• Atom</li> <li>• Electron</li> <li>• Ionizing radiation</li> <li>• Meson</li> <li>• Neutron</li> </ul>	<ul style="list-style-type: none"> <li>• Nucleus</li> <li>• Proton</li> <li>• Radioactive atom</li> <li>• Strong nuclear force</li> </ul>
Activity 4: Atomic Stability	<ul style="list-style-type: none"> <li>• Alpha particles</li> <li>• Atom</li> <li>• Beta particles</li> <li>• Electron</li> <li>• Ionizing radiation</li> <li>• Neutron</li> </ul>	<ul style="list-style-type: none"> <li>• Nucleus</li> <li>• Proton</li> <li>• Radiation</li> <li>• Radioactive atom</li> <li>• Radioactive decay</li> </ul>
Activity 5: Half-Life Data Sheet	<ul style="list-style-type: none"> <li>• Atom</li> <li>• Decay chain</li> <li>• Half-life</li> <li>• Ionizing radiation</li> </ul>	<ul style="list-style-type: none"> <li>• Radiation</li> <li>• Radioactive atom</li> <li>• Radioactive decay</li> </ul>
Activity 6: Radioactive Decay Chain	<ul style="list-style-type: none"> <li>• Atom</li> <li>• Alpha particles</li> <li>• Beta particles</li> <li>• Decay chain</li> <li>• Gamma rays</li> </ul>	<ul style="list-style-type: none"> <li>• Half-life</li> <li>• Ionizing radiation</li> <li>• Radiation</li> <li>• Radioactive atom</li> <li>• Radioactive decay</li> </ul>

## Activity Suggestions

- **Identifying images:**
  - Print the applicable images from the Vocabulary Materials document.
  - Display the images around the room or spread them out in an open area on the floor.
  - Pronounce the vocabulary words one at a time. NOTE: You can provide the definition of the given word at this time or after students have identified the words.
  - Have students take turns identifying the words in an active manner. Suggestions include having students move to and identify the correct image, use a flashlight to point to the correct image (being careful to avoid light in another person's eyes), drive a remote control car to the correct image or throw a bean bag to land on the correct image.
- **Matching words and images:**
  - Print the applicable words and images from the Vocabulary Materials document.
  - Give each student a vocabulary word or image. Options: Fold or ball up the copies and let each student select one. Have students trade their copy with another student once or twice. NOTE: You may need to participate to have an even number of participants.
  - Direct students to find the person with the matching word or image.
  - Review the matches to confirm they are correct.
  - Pronounce each word and provide a definition.
- **Spelling the words:**
  - Print the applicable words and images from the Vocabulary Materials document.
  - Display the words and images at the front of the classroom.
  - Pronounce each word and provide a definition.
  - Conduct a spelling activity:
    - Have students create a word scramble or word find activity; trade papers and complete the activity.
    - Play spelling basketball. Divide the class into two teams. Pronounce a vocabulary word. Have a student (alternating between teams) spell or write the word on the board. Students that spell the word correctly are given an opportunity to shoot a basket (use a trash can) with a ball of paper (ball) from a designated distance (or varying distances for a different number of points). The team that scores the most points wins. You can have students provide a definition for extra points.
- **Creating definitions:**
  - Print the applicable words and images from the Vocabulary Materials document.
  - Display the words and images at the front of the classroom.
  - Pronounce the vocabulary words.
  - Have students work in pairs or small groups to hypothesize and create a definition for each vocabulary word.
  - Options: Direct one student from each pair/group to rotate and join another pair/group or have two pairs/groups join together. Direct the newly formed groups to compare their definitions and modify them if desired.
  - Review each pair/group's definitions, have students discuss what they agree/disagree with and confirm the accurate definition.