

## How to teach radioactive decay and radioisotopes in an interdisciplinary, low-cost way

# Activity 2: Worksheet B

Carbon is a primary component of our lives. The moment an organism stops exchanging carbon with the biosphere is considered the moment of its death. Therefore, Carbon-14, a radioactive isotope of carbon, is used to determine the age of organic materials. This method, known as **radiocarbon dating**, is a staple of archaeological research.

1. The half-life of Carbon-14 is about 5730 years. Keeping this in mind, is radiocarbon dating more precise for medieval or for prehistoric archaeology? Why?

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2. Why do archaeologists wash off dirt and other matter from a discovered artifact, or use chemical cleaning procedures?

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„Archaeologists hate trees!” Obviously, that’s not exactly the truth, but they do have trouble carbon dating trees. This situation is often referred to as the ‘old wood problem’.

- Read the first three paragraphs of the article: *unlocking ancient environmental change with the help of living trees* on the arboretum Harvard website (<https://arboretum.harvard.edu/stories/unlocking-ancient-environmental-change-with-the-help-of-living-trees>)
- and the entirety of the article: *understanding the old wood effect* on the radiocarbon website (<https://www.radiocarbon.com/old-wood-effect.htm>)

3. Describe the ‘old wood problem’ in one or two sentences.

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[www.scienceinschool.org](http://www.scienceinschool.org)

4. Name two contributors to the 'old wood problem'.

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5. Do you think the results of radiocarbon dating could be too young or too old for wood or charcoal samples? Why?

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