

Name _____

Radiation Unveiled: The Mystery of Radioactive Decay

Open-Ended Response Answer Key

1. Radioactive isotopes have both risks and benefits. In medicine, they are used for cancer treatment (benefit) but can pose health risks if not handled properly. In energy production, nuclear power (benefit) can lead to accidents and long-term waste disposal challenges. In scientific research, they help date ancient artifacts (benefit) but require safety precautions.
2. Understanding the half-life of a radioactive isotope is crucial in carbon dating, used to determine the age of archaeological artifacts or ancient fossils. By measuring the remaining carbon-14 in a sample, scientists can estimate its age and unravel the past.
3. Marie Curie and Henri Becquerel made pioneering contributions to the discovery of radioactivity. Curie's work on radium and polonium led to the isolation of radium and recognition of her groundbreaking research. Becquerel's accidental discovery of uranium's radioactivity paved the way for further exploration of this phenomenon.
4. Radioactive decay can impact the environment through nuclear accidents and waste disposal. Measures like safety protocols, containment structures, and proper waste management are critical. Nuclear power plants aim to minimize environmental impact and prevent radiation release.

