

**Summarize:** Based on the reading and your knowledge of chemistry, fill out the following chart summarizing the uses of the types of radiation mentioned in the article.

Isotope	Primary Uses
Carbon-14	used to determine approx. age of previously living matter
Uranium-238	used to date rocks/geologic formations
Iodine-131	used to treat thyroid disorders
Cobalt-60	used to treat cancer
Technetium-99m	used for medical diagnosis to detect + treat brain tumors
Americium-241	used in smoke detectors

**Regents Practice:**

d 1. Brain tumors can be located by using an isotope of

- a) uranium-238                      c) iodine-131  
b) carbon-14                          d) technetium-99

c 2. Iodine-131 is used for diagnosing thyroid disorders because it is absorbed by the thyroid gland and

- a) emits alpha radiation              c) has a short half life  
b) emits gamma radiation            d) has a long half life

c 3. The ratio of uranium-238 to lead-206 in a mineral is used to determine

- a) solubility                              c) age  
b) composition                          d) density

d 4. Which isotope may be used as a tracer to study the way in which an organic reaction takes place?

- a) strontium-90                          c) strontium-88  
b) carbon-12                              d) carbon-14

c 5. Radioisotopes used for medical diagnoses must have

- a) Long half-lives and be quickly eliminated  
b) Long half lives and be slowly eliminated  
c) Short half lives and be quickly eliminated  
d) Short half lives and be slowly eliminated

a 6. What element is used for dating archeological discoveries?

- a) carbon-14                              c) carbon-12  
b) carbon-13                              d) carbon-15

a 7. Radiated food can be safely stored for a longer time because radiation

- a) Kills bacteria  
b) prevents air reduction  
c) prevents air oxidation  
d) causes bacteria to mutate

d 8. The course of a chemical reaction can be traced by using a

- a) polar molecule                      c) diatomic molecule  
b) stable isotope                          d) radioactive isotope