

Stable & Radioactive

# ISOTOPES WORKSHEET

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1. What is a radioactive isotope?
2. How does a radioactive isotope become stable?
3. What happens to unstable atoms when they release an  $\alpha$  or  $\beta$  particle and the number of protons changes?
4. What are the uses of radioactive isotopes?

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Answers

1. What is a radioactive isotope?

An isotope with excess energy, which makes it unstable, is referred to as a radioactive isotope.

2. How does a radioactive isotope become stable?

A radioactive isotope can achieve stability in several ways. These include releasing the excess energy through gamma radiation, ejecting protons or neutrons, or undergoing nuclear decay until completely stable.

3. What happens to unstable atoms when they release an  $\alpha$  or  $\beta$  particle and the number of protons changes?

If the release of energy changes the number of protons, the element changes into a new element. This will continue until the unstable atoms form a stable isotope.

4. What are the uses of radioactive isotopes?

Some uses of radioactive isotopes include:

- Industrial uses - Tracers, smoke detectors, sterilization of food, etc.
- Medical uses - PET scan, imaging, therapeutic radiation, etc.