

Isotopes

1) Explain, in your own words, the difference between an isotope and a radioisotope.

2) Google the article “Global Supply Under Pressure” and answer the following questions:

- a) What are medical isotopes?
- b) Where is the NRU reactor located?
- c) When did it go fully online?
- d) What isotope was supplied worldwide from NRU and what is the isotope used for?
- e) Describe what happened on May 14, 2009
- f) What percentage of reactors worldwide are under 20 years old?
- g) How many people are treated per day and per year from the isotopes produced at Chalk River?
- h) What medical isotope does McMaster University produce?
- i) Why is there a concern about the five nuclear reactors that supply 85% of the world's cobalt-60 and almost all of the Mo-99 and Tc-99? Name the country these reactors are located in.
- j) Explain how medical isotopes are useful in diagnosing illness?
- k) How are medical isotopes used in cancer treatment?
- l) Briefly describe: Brachytherapy, Radioimmunotherapy (RIT), and Chemical Phosphonate Carriers.
- m) What percentage of nuclear medicine procedures uses Mo-99 and Tc-99?
- n) Describe one of the key problems of using medical isotopes.