

Name: _____

Class: _____

ACTIVITY SHEET

3.7 Medical uses of radioisotopes

1 Whether naturally or artificially, all elements form isotopes.

a What is an isotope?

b What is a radioisotope?

c What is a metastable isotope?

d How do metastable isotopes come into being?

2 Define the half-life of a radioisotope.

3 The half-life of iodine-123 is 13 hours. Use a line graph to plot the amount of iodine-123 remaining from an original quantity of 100 g over 65 hours.



4 Recall alpha, beta and gamma radiation.

a Fill in the following table.

Radiation type	Symbol	Physical entity	Charge	Penetration
Alpha				
Beta				
Gamma				

- b** What type of radiation is used in medical diagnoses?
- 5** Medical imaging using techniques such as ultrasound, X-rays and CAT scans reveal structural information. How does the use of radioisotopes differ from these techniques? Give an example.
- 6** Other than half-life, what considerations should be taken into account when selecting an appropriate radioisotope?

7 How are radioisotopes delivered to their targets?

8 How is the diagnostic radiation detected?

9 List four types of cancer that are suitable for treatment with radiotherapy.

10 What are radiosensitisers?

11 How does radiotherapy work?

12 What is a key difference between radiotherapy and chemotherapy?

13 a What are the two main sources of radioisotopes?

b What are the two main sources of radioisotopes in Australia?

14 What is an important advantage of having sources of radioisotopes in Australia?