

25.4

RADIATION IN YOUR LIFE

Section Review

Objectives

- Describe three devices that are used to detect radiation
- List examples of how radioisotopes are used in medicine

Vocabulary

- ionizing radiation
- Geiger counter
- scintillation counter
- film badge
- neutron activation analysis

Part A Completion

Use this completion exercise to check your understanding of the concepts and terms that are introduced in this section. Each blank can be completed with a term, short phrase, or number.

The radiation emitted by radioisotopes is known as 1 **1.** _____
 radiation because of its ability to strip 2 from atoms of a **2.** _____
 bombarded substance. It is not possible to detect ionizing radiation **3.** _____
 with your 3. **4.** _____

A 4 counter uses a 5-filled tube to detect ionizing **5.** _____
 radiation. A 6 counter uses a phosphor-coated surface to **6.** _____
 detect 7 types of ionizing radiation. **7.** _____

Radioisotopes have many practical uses. For example, 8 **8.** _____
 is used to detect thyroid problems, while 9 is used to detect **9.** _____
 skin cancers. 10 analysis is a procedure used to detect trace **10.** _____
 amounts of elements in samples.

Part B True-False

Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

_____ **11.** The film badge is a personal radiation monitor.

_____ **12.** A Geiger counter is the best alpha particle detector.

_____ 13. A scintillation counter is used to detect gamma radiation.

_____ 14. Iodine-131 can detect thyroid problems.

Part C Matching

Match each description in Column B to the correct term in Column A.

Column A

_____ 15. ionizing radiation

_____ 16. Geiger counter

_____ 17. scintillation counter

_____ 18. film badge

_____ 19. neutron activation analysis

Column B

a. radiation detector consisting of several layers of photographic film

b. radiation with enough energy to knock electrons off some of the atoms it strikes

c. device that uses a coated surface called a phosphor to detect ionizing radiation

d. procedure used to detect trace amounts of elements in samples

e. gas-filled tube used to detect radiation

Part D Questions

Answer the following in the space provided.

20. Which of the following is the best means of monitoring radiation for individuals who work with radioactive material? Circle the letter of the correct answer.

- a. Geiger counter
- b. film badge
- c. scintillation counter

21. List applications of radioisotopes in research and medicine.
