

GCSE Physics B (Twenty First Century Science)
J259/03 Depth in physics (Higher Tier)

Question Set 16

Multiple Choice answers

1 Beth works at a nuclear power station.

She is asked to investigate the risk caused by radioactive isotopes accidentally coming into contact with food.

(a) Would swallowing this food be a contamination effect or an irradiation effect?

Contamination effect

Irradiation effect

Explain your answer.

[2]

(b) Explain why it is hazardous if radioactive isotopes enter the body.

[1]

(c) Information about three isotopes is shown in the table.

| Isotope | Type of decay | Half-life | Biological effects |
|----------------|---------------|------------|---------------------------|
| Plutonium-241 | beta | 14 years | absorbed by the bones |
| Radium-226 | alpha | 1600 years | absorbed by the bones |
| Technetium-99m | gamma | 6 hours | excreted after a few days |

Which isotope is most hazardous when inside the body?

Explain your answer.

[2]

Total Marks for Question Set 16: 5

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