



Oxford Cambridge and RSA

GCSE Physics B (Twenty First Century Science)

J259/01 Breadth in Physics (Foundation Tier)

Question Set 27

Multiple Choice Questions

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]

It's inside the body

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

They emit ionising radiation that can cause mutations and cancer

[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]

Radium 226 as it has the longest half-life so stays radioactive for longer, and it emits alpha radiation which is highly ionising

Total Marks for Question Set 27: 5

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