Radioactivity in industry: choosing a method

Teacher / technician

YEAR 11 / LESSON 98 / PHYSICS + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Record actual measurements separately from labelled practice examples.

Coverage and delivery

Shared Physics / Double Award: 7.14. Industrial uses of radioactivity.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, working in 15 pairs

Item	Per pair / setup	Class total
Booklets and diagrams	1 set per learner	30 sets
Calculators	1 per pair	15

Immediate safety

Paper models only. No industrial source, radioactive tracer, smoke alarm, steriliser or shielding material is handled or dismantled.

Preparation and delivery

Read alongside the student method

YEAR 11 / LESSON 98 / PHYSICS + SCIENCE (DOUBLE AWARD)

1. Keep the calibration labelled arbitrary and nonlinear; do not extrapolate a real sheet thickness.

2. Use the activity to explain selection principles, not prescribe an isotope or industrial safety procedure.

Close of lesson

• Keep the application comparison and return calculators.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

YEAR 11 / LESSON 98 / PHYSICS + SCIENCE (DOUBLE AWARD)

- Partial absorption makes the detected rate sensitive to thickness.
- Thinner paper when other conditions are fixed.
- No; it suggests thinner paper.
- Otherwise its location cannot be inferred externally.
- It must last long enough for measurement without unnecessary persistence.
- No; irradiation and contamination are different.

References and provenance

Pearson Physics specification

IOP: teaching radioactivity

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.