

Solutions

2.1 B Subtract background counts measured over the same time interval. Distinguish irradiation from contamination. Shielding, distance and reduced exposure time can reduce risk under a school-controlled procedure.

2.2 After three half-lives: $160 \times (1/2)^3 = 20$ counts/min.

2.3 False. An irradiated object is not automatically radioactive. A half-life does not predict the exact decay time of one nucleus.

2.4 half-life. half-life means Time for activity or undecayed population to halve.

3.1 $90 - b = 2(50 - b)$, so $b = 10$ counts/min. Source rates are 80 then 40. Background does not decay with the source and must be subtracted; counting uncertainty remains.