Chapter 27 Practice Problems

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0.1 Problem 1

What daughter nucleus would be formed if $^{238}_{92}U$ could undergo α decay? β^- decay? γ decay?

0.2 Problem 2

Radioactive isotopes of strontium are known to be dangerous to animals, since it chemically behaves like calcium and is taken up by the body and deposited in bone. Much of the radioactive strontium in the atmosphere is Sr-90 which was mostly released by atmospheric nuclear bomb testing in the 20th century. Assume no new strontium has been introduced to the atmosphere for 28 years. What percentage of the original nuclei remain in the atmosphere? Strontium has a half life of 28.5 years.

0.3 Problem 3

The shroud of Turin was originally believed to be about two thousand years old, but was determined by radioactive dating to be about 700 years old. Assuming the shroud had a carbon-14 activity of 0.23 Bq per gram when it was made, what is its activity now?