

Problems discussed in the videos:

Videos (7)-(9)

Strontium-90 is a radioactive byproduct of nuclear reactors that behaves biologically like calcium, the element above it in group 2A. When  $^{90}\text{Sr}$  is ingested by mammals, it is found in their milk and eventually in the bones of those drinking the milk. If a sample of  $^{90}\text{Sr}$  has an activity of  $1.2 \times 10^{12}$  decays/second, what are the activity and the fraction of nuclei that have decayed after 59 years?  $t_{1/2}$  of strontium-90 is 29 years.

Videos (10)-(11)

Sodium-24 (half-life 15 hours) is used to study blood circulation. If a patient is injected with an aqueous solution of  $^{24}\text{NaCl}$  whose activity is  $2.5 \times 10^9$  d/s, how much of the activity is present in the patient's body in excreted fluids after 4.0 days?