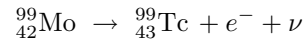


79. (a) Molybdenum beta decays into Technetium:



- (b) Each decay corresponds to a photon produced when the Technetium nucleus de-excites [note that the de-excitation half-life is much less than the beta decay half-life]. Thus, the gamma rate is the same as the decay rate:  $8.2 \times 10^7/\text{s}$ .
- (c) Eq. 43-19 leads to

$$N = \frac{RT_{1/2}}{\ln 2} = \frac{(38/\text{s})(6.0\text{ h})(3600\text{ s/h})}{\ln 2} = 1.2 \times 10^6 .$$