Radiation Biology, Protection and Applications

(PHYS-450)

Quiz No. 4

Week 13

Problem 1:

The density of an NaCl crystal is 2.17 g/cm^3. Compute the atom densities of Na and Cl. *(The atomic weight of the Na and Cl are 22.990 and 35.453, respectively).*

Problem 2:

What is the intensity of gamma rays (cm^{-2}.s^{-1}) from a 10 curie source of ^{22}Na surrounded by 5 cm of lead ? *(The build-up factor is 2.1 ; the ^{22}Na gamma energy is 1.28 MeV and the corresponding total linear absorption coefficient is 0.66 cm^{-1}).*

N.B. : *1 Ci = 3.7 x 10^{10} Bq*

Problem 3:

Calculate the mass attenuation coefficient of UO_2 for 1MeV γ-rays. *(The density of UO_2 is about 10 g/cm^3. For 1 MeV γ-rays μ/ρ is 0.0757 cm^2/g and 0.0636 cm^2/g for uranium and oxygen, respectively).*

N.B. : *Consider ^{238}U in UO_2*