Chapter One – Problems: 58

Michael Brodskiy
Instructor: Mr. Morgan

August 24, 2020

59. Radiation exposure to human beings is usually given in rems (radiations equivalent for man). In SI units, the exposure is measured in sieverts (Sv). One rem equals .0100[Sv]. At one time, the exposure due to the nuclear reactors in Japan was measured to be 8217[mSv h^{-1}]. How many rems would a person exposed to the radiation for 35[min] have absorbed? If one mammogram gives off .30[rem], how many mammograms would that exposure be equivalent to?

$$\frac{1[rem]}{.01[\cancel{Sv}]} \cdot \frac{8.217[\cancel{Sv}]}{60[\cancel{min}]} \cdot 35[\cancel{min}] = 479[rem]$$

The dose would be equal to $479[rem]$, or $479[\cancel{rem}] \cdot \frac{1[mam]}{.3[\cancel{rem}]} = 1.6 \cdot 10^3$ mammograms