

4. Adapting Eq. 43-20, there are

$$N_{\text{Pu}} = \frac{M_{\text{sam}}}{M_{\text{Pu}}} N_{\text{A}} = \left( \frac{1000 \text{ g}}{239 \text{ g/mol}} \right) (6.02 \times 10^{23} / \text{mol}) = 2.5 \times 10^{24}$$

plutonium nuclei in the sample. If they all fission (each releasing 180 MeV), then the total energy release is  $4.5 \times 10^{26}$  MeV.