Another way to approach radioactivity is to calculate the total BHP over the life time of an isotope (a long lived isotope could effect many generations)

Integrated BHP = IBHP

$$IBHP^{(i)} = (BHP)^{i} \cdot_{t=0} \int \exp(-\lambda t)\, dt$$

$$\text{where } \lambda = \frac{0.693}{t_{\frac{1}{2}}^{P_i}}$$

$$IBHP^{(i)} = BHP^{(i)}{}_{t=0} \; \frac{t_{\frac{1}{2}}^{P_i}}{0.693}$$

Since we are interested in long lived isotopes(much longer than a lifetime)

$$t^{p}_{1/2} >> t^{B}_{1/2}$$

$$IBHP \;\; \alpha \;\; t^{p}_{1/2} \cdot t^{B}_{1/2}$$

Summary of IBHP for Irradiated Fusion Materials for H_2O Dilutent

Material	$\frac{10,000\ km^3 of\ H_2O - s}{cc\ of\ first\ wall}$
2024 Al	46
TZM	24
316SS	23
Nb-1Zr	17
V-20 Ti	1.6
Natural U	0.2

Comparison of Integrated BHP For Fusion Reactor and LMFBR

	IBHP $\frac{km^3_{H_2O} - s}{kW_{th}}\ x\ 10^{-5}$
Fission	60
2024 Al	10
316 SS	5
TZM	5
Nb-1Zr	4
V-20Ti	0.4