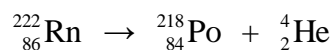


- Radon gas decays into polonium with a half-life of 3.82 days via the following mechanism:



Give three reasons why ${}_{86}^{222}\text{Rn}$ is biologically a very harmful nuclide.

The half-life is relatively short and therefore it is highly radioactive.

The radioactive element is a gas and can therefore easily be inhaled into the lungs.

It produces alpha particles which are ionizing. They are stopped by tissue and do not escape the body: they do internal damage, especially to the lungs.