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| **Before** | **Objectives** | **After** |
|  | **114 Show** an **awareness** of the existence and origin of background radiation, past and present. |  |
|  | **115 Investigate** and **recognise** nuclear radiations (alpha, beta and gamma) from their penetrating power and ionising ability. |  |
|  | **116 Describe** the spontaneous and random nature of nuclear decay. |  |
|  | **117 Determine** the half lives of radioactive isotopes graphically and **recognise** and **use** the expressions for radioactive decay:  d*N*/dt = -λ*N*, λ= ln 2/t1/2 and *N* = *N0* e-λt. |  |
|  | **118 Discuss** the applications of radioactive materials, including ethical and environmental issues. |  |