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| **Lesson Number: 26.5** | | | | |
| **Lesson Title: Radioactive Decay** | | | | |
| **Specification Reference** | | | **3.8.1.3** | |
| **Learning Objectives** | | | | |
| Random nature of radioactive decay  Questions may also involve use of molar mass or the Avogadro constant  Applications e.g. relevance to storage of radioactive waste, radioactive dating etc. | | | | |
| **Opportunities for Assessment** | | | | |
| Questions page 454 | | | | |
| **Starter:** | Slide #1can start a discussion on statistics – alternatively begin with Einstein’s famous quote “He [God] does not play dice” | | | |
| **Main:** | Slides #2 and #3 recap GCSE half-life understanding  Slide #4 recaps GCSE work on the Avogadro constant – pupils often need to completely rework this! Note that the Avogadro constant can be found by taking 12g and dividing it by 12x*u* where *u* is the subatomic mass unit; this can help pupils understand it’s meaning  Slide #5 extends the half-life understanding to activity – Research on Becquerel and his work could form a homework  Slide #6 links activity to power and gives an example of weighing up the variables in the selection of isotopes for jobs – Pupils seldom realise that many nuclear waste isotopes have relatively short half-lives, or that the fuel rods in nuclear power stations can last between 12 and 20 years | | | |
| **Plenary:** | Slide #7 is a summary | | | |
| **Homework:** | | Questions page 454, investigate half-life of water draining from an open bottle with a hole in the bottom | | |
| **Differentiation / Extension / S&C** | | | | |
| Research the power units in long distance space probes | | | | |
| **Numeracy / Literacy** | | | | **SMSC / Fundamental British Values** |
| Exponential decay | | | | N/A |
| **RESOURCES:** | | | | |
| Optional:   * Dice or coloured discs to perform a half-life experiment | | | | |
| **Risk Assessment** e.g. CLEAPSS card reference | | | | |
| None | | | | |
| **Working Scientifically (HSW)** | | | | |
| N/A | | | | |

Pictures courtesy of:

Slides #1 and #6 – Wikipedia (public domain)