|  |
| --- |
| **Lesson Number: 26.5** |
| **Lesson Title: Radioactive Decay** |
| **Specification Reference** | **3.8.1.3** |
| **Learning Objectives** |
| Random nature of radioactive decayQuestions may also involve use of molar mass or the Avogadro constantApplications 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 understandingSlide #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 meaningSlide #5 extends the half-life understanding to activity – Research on Becquerel and his work could form a homeworkSlide #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)