**R 6.1 RESEARCH TASK - USES OF RADIOACTIVE ISOTOPES**

**For this research task you need to choose one radioactive isotope which has a medical use and one radioactive isotope which has a non-medical use.**

**For each isotope:**

* **Give its name (including its mass number)**
* **State the type of radiation emitted**
* **State the half-life**
* **Explain briefly what the isotope is used for**
* **Explain how the type of radiation and the half-life is related to the use**

**The grading scheme is on the next page**

**Example - once you have read the examples, delete the red text and type your research into the cells below. You should also delete all of this grey text after reading it.**

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| --- | --- | --- |
| **category** | **medical** | **non-medical** |
| **Name of isotope** | iodine-131 | americium-241 |
| **application** | treatment of thyroid cancer | smoke detectors |
| **Type of radiation emitted** | beta | alpha |
| **half-life** | 8 days | 432 years |
| **description** | Iodine atoms are absorbed by the thyroid, so when iodine-131 is injected into the bloodstream it gets immediately absorbed by the thyroid gland, where it emits beta radiation, killing the tumor | A steady stream of alpha particles travels a short distance through air to a detector. If there is smoke in the air, the smoke particles stop the alpha particles from reaching the detector. This sets off the alarm. |
| **Significance of radiation type** | Beta as it is quite highly ionizing so will treat the tumor effectively, and it is not penetrating enough to damage other parts of the body | Alpha as it can travel a small distance through air but is stopped by smoke |
| **Significance of half-life** | Short, so it emits radiation quickly and does not linger | Long so the alarm does not need to be regularly replaced |

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| This task is worth 10 points in the “projects” category2 points are available for a submission5 points are available for complete and accurate research3 points are available for an original choice (ie not covered in detail in the course notes or chosen by anyone else) | /2/5/3 |
| TOTAL | /10 |

[**Exit ticket for Mon May 18th**](https://docs.google.com/forms/d/e/1FAIpQLSf26IDGMQIc5-lq-b-_KNhiGkAYOihmdM2u149Tow02N_8bpg/viewform?usp=sf_link)