YEAR 9 SCIENCE 2021 – EVIDENCE BASED OPINION:

RADIOACTIVITY – FRIEND OR FOE?

Due: **Friday 21st May 2021 at 9.30 am**

Weighting: **25%**

Task Nature: **Secondary source investigation report**

Outcomes assessed: **SC5-15LW, SC5-17CW, C5-3VA, SC5-8WS, SC5-9WS**

THE TASK

Advances in scientific understanding often rely on developments in technology, and technological advances in areas such as atomic structure, nuclear radiation and radioisotopes are often linked to scientific discoveries. The use of these discoveries and technologies often have social and ethical considerations, and individuals will have varied opinions. Critical thinking is the ability to analyse and evaluate information to make an evidence-based decision.

Use secondary sources to investigate the uses and dangers of radioactivity. Issues around radioactivity that could be investigated include but are not limited to:

- **Medical uses of radioactivity**
- **Use of nuclear reactors for power generation**
- **Radiocarbon dating**
- **Radioactive tracers**
- **Radiation sickness**
- **Mutation**
- **Nuclear waste**
- **Nuclear war fare**

Produce a presentation, either a report, power point or poster on this topic which follows the plan outlined in the table below:

Table: Presentation plan

Task details
Introduction: Explain radioisotopes and radioactivity Identify and outline radioactivity/radioisotopes. Describe how it happens. Explain why it is used.
Discuss the use of radioactivity. All parts of society do not agree on the use of the radioactivity for various purposes. **Identify**, **describe**, and **explain** the arguments in support of its use. **Identify**, **describe**, and **explain** the arguments opposing its use. **Outline** and **justify** your opinion: **explain** the main points that have influenced your decision.
Conclusion: Briefly explain the evidence-based opinion you now hold about the topic you are investigating
Reference list Use the scaffold provided below to create a reference list for sources used to gather information for this assessment. If you are creating a poster your references can be put on the back of the poster. Reference Author: Reference Title: Reference URL or Publisher: Date last updated: Date accessed:

ASSESSMENT RUBRIC

Outcome assessed	**A(9-10)**	**B (7-8)**	**C (5-6)**	**D (3-4)**	**E (1-2)**
SC5-15LW **SC5-17CW** Discuss some advantages and disadvantages of the use and applications of radioactivity, including social and ethical considerations	**Explanations** and **descriptions** demonstrate extensive scientific understanding of the use of radioactivity, and the issues surrounding it	**Explanations** and **descriptions** demonstrate clear scientific understanding of the use of radioactivity, and the issues surrounding it	**Descriptions** demonstrate some scientific understanding of the of the use of radioactivity, and the issues surrounding it may include limited **explanations**	**Outlines** some understanding of the of the use of radioactivity, and the issues surrounding it limited **descriptions**	Includes some information about radioactivity, and the issues surrounding it
SC5-9WS constructing evidence-based arguments and using appropriate scientific language, conventions and representations	Well-structured and coherent report or poster using headings. Precise and correct use of scientific terminology; spelling, grammar and punctuation are correct. Any diagrams, tables, pictures or graphs are labelled	Structured report or poster using headings. Precise and correct use of scientific terminology; spelling, grammar and punctuation are mostly correct. Any diagrams, tables, pictures or graphs are labelled Significant errors in 2-3 areas of presentation	Report or poster uses headings, scientific terminology; spelling, grammar and punctuation are mostly correct; Any diagrams, tables, pictures or graphs are labelled Significant errors in 3-5 areas of presentation	Basic report or poster that uses some key terminology; significant issues with spelling and/or grammar and/or punctuation Any diagrams, tables, pictures or graphs are not labelled	Information report or poster is submitted. Significant errors or omissions
SC5-8WS applying critical thinking in considering suggested proposals, solutions and conclusions, including a consideration of risk	Effectively gathers, selects, organises and processes information from a wide range of sources to present an evidence-based discussion of the technology, the surrounding issues, and justification of their opinion; sources are referenced	Gathers, selects, organises and processes information from a range of sources to present an informed discussion of the technology, the surrounding issues, and support of their opinion; sources are referenced	Gathers and selects information from sources to present information about the technology and the surrounding issues; outlines their opinion; sources are referenced	Uses information; may identify an opinion	Uses provided information with assistance; may identify an opinion

SC5-3VA Demonstrates confidence in making reasoned, evidence-based decisions about the current and future use including ethical considerations.	Communicates scientific understanding effectively and is able to construct evidence-based arguments and engage in peer/teacher feedback to evaluate an argument or conclusion.	Communicates scientific understanding effectively and is able to construct evidence-based arguments and engage in peer/teacher feedback.	Communicates scientific understanding using suitable language and terminology with limited attempt to construct an evidence-based argument	Communicates scientific understanding of at least two of current or future use or ethical considerations for their chosen topic	Attempts to communicate some understanding about either the current or future use or ethical considerations for their chosen topic