Criteria B and C - Radioactivity

Shreeji Education

Learning goals : Students will be able to design an investigation on various parameters of emitted radiations

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1. **Criteria B**

Goal - A scientist wished to determine the type of radiation emitted by a radioisotope. Material list. She had a source of radiation, three sheets of different material (paper, plastic and lead) and an instrument called a Geiger counter, which detects nuclear radiation.
Method - She covered the radioisotope with each material turn by turn and measured the radiation that passed through each material.

a. Identify the independent variable in this experiment.
b. Identify the dependent variable in this experiment.
c. Identify a controlled variable in this experiment.
d. Complete the table to determine whether certain variables should be controlled in this experiment.

Variables	How could the variable affect the DV ?	Should this variable be controlled ? (yes / no)
The thickness of the material covering the radioisotope		
The distance of geiger counter from the source		
The scientist wore her lab coat for only some measurements.		

e. Suggest your hypothesis for this experiment.

Criteria C

Results of the above experiment are tabulated below

Material	Effect on Geiger counter readings
paper	No effect on readings
plastic	Readings fell by ⅔ rd
lead	Large fall in readings

a. Interpret the data table above and suggest what type of radiation does this radioisotope emit.
b. Validate your hypothesis based on the data table
c. Validate the method based on the data table
d. Suggest one improvement to the investigation.

2. **Criteria B**

Goal - To investigate the relation between the distance and radiation intensity from a source of radiation.

Plan an investigation using any source from day to day devices and a suitable mobile app to find the intensity of radiation.

In your investigation you must include - independent variable, dependent variable, two controlled variables, safe method on how will to collect the required data for investigation.

Criteria C

- Record your data in the tabular form and plot suitable graph using any graphing app/software.
- Interpret your data
- Validate your hypothesis based on data collected.
- Validata your method based on data collected.
- Suggest one improvement to your investigation.

Resources -

-Science Quest 9 - Jacaranda - second edition
- MYP 4 and 5 - Oxford
- MYP 4 and 5 - Hodder
- IGCSE Physics - Duncan
- Physics for cambridge IGCSE - workbook - David Sang and Darrell Hamilton
- Physics - principles and problems - Glencoe Science.