Natural Radiation Detection

The Aim :- Measurement the level of natural radiation detection (background rays).

Work Tools:- Geiger–Müller Counter

Material and Method :-

Background radiation is a measure of the level of ionizing radiation present in the environment at a particular location which is not due to deliberate introduction of radiation sources. Background radiation originates from a variety of sources, both natural and artificial. These include both cosmic radiation and environmental radioactivity from naturally occurring radioactive materials (such as radon and radium), as well as man-made medical X-rays, fallout from nuclear weapons testing and nuclear accidents.

Background radiation is defined by the International Atomic Energy Agency as "Dose or dose rate (or an observed measure related to the dose or dose rate) attributable to all sources other than the one(s) specified.[1] So a distinction is made between dose which is already in a location, which is defined here as being "background", and the dose due to a deliberately introduced and specified source. This is important where radiation measurements are taken of a specified radiation source, where the existing background may affect this measurement. An example would be measurement of radioactive contamination in a gamma radiation background, which could increase the total reading above that expected from the contamination alone.

However, if no radiation source is specified as being of concern, then the total radiation dose measurement at a location is generally called the background radiation, and this is usually the case where an ambient dose rate is measured for environmental purposes.

Standard Deviation (S.D) $\sigma = \sqrt{N_{av}}$

Fractional Standard (F.S.D) $F.S.D = \frac{\sigma}{N_{av.}} \times 100^{0}$

The Method of The Work:-

1. Set the Geiger–Müller Counter to the operating voltage
2. Hold time on 10 Sec then fill in the table.
3. Hold time on 100 Sec then fill in the table.
4. Draw between N , σ and between N , F.S.D

direction	N_1	N_2	N_3	$N_{av.}$	$\sigma_{S.D} = N_{a.v}$	$F.S.D = \frac{\sigma}{N_{av.}} \times 100\%$
Up						
Down						
Right						
Left						
Front						
Back						
				$(N_{av.})_{av}$	$(\sigma_{S.D})_{av.}$	(F.S.D)av.