

THE DISTRIBUTION OF BERYLLIUM-7 CONCENTRATION IN RAINWATER IN TWO SEASONS

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Abstract

There has been no study of the distribution of Beryllium-7, ⁷Be concentrations in rainwater in Peninsular Malaysia that has been fully conducted by researchers to date. Therefore, the main objective of this study is to obtain and collect data from three different sampling stations in Peninsular Malaysia based on the amount of rainfall received throughout the year. This study involved collecting individual rainwater samples using rainwater collection funnels for both seasons over a six month study period. All rainwater samples were taken to the Radiochemistry and Environment Group (RAS), Nuclear Malaysia for preparation and analysis. All rainwater samples were analyzed using various procedures involving chemicals used and filtered using Whatman qualitative filter paper. Calculation of the activity of dry filter paper containing ⁷Be concentration in rainwater that has been analyzed with a Gamma Spectrometry for 24 hours counting with a detection efficiency of 20% and the uncertainty used to calculate the gamma detector error, γ is the 95% confidence level, which is within $\pm 10\%$. The overall study results provided a range of ⁷Be concentrations that did not differ significantly between the dry and wet seasons for both seasons from all study stations, , 0.21 to 3.59 Bq/L and 0.24 to 3.14 Bq/L each respectively. Meanwhile, the ⁷Be concentration values from this study are not significantly different from several results reported by other researchers. In conclusion, both seasons did not have a statistically significant effect on the concentration of ⁷Be in rainwater in this study from all three sampling stations (p value > 0.05). However, further studies need to be conducted so that more data can be collected to be used as reference data for the concentration of ⁷Be in Peninsular Malaysia.

Keywords: Distribution, Beryllium-7, Rainwater, Gamma Spectrometry, Reference Data