E1-08 Levels of Cs-137 & K-40 in some marketed food items

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Determination of radioactivity levels in food items is important for the protection of public health. Protection of public health from ingestion of radioactive material is optimized by setting permissible levels of radioactivity. The levels are usually determined by the National Authority responsible for Radiation Protection.

The objective of this study, was to ascertain the presence of radionuclides in some selected marketed food items with emphasis on Cs-137. Measurement of K-40 levels was included to determine the range of this naturally occurring radioisotope in the selected food items.Milk powder, rice and grain were selected for this study, as they are widely consumed by Sri Lankans.

The simultaneous detection of Cs-137 and K-40 gamma emitters was carried out with a shielded High Purity Germanium detector coupled to a 4096 multichannel analyzer. The efficiencies of Cs-137 at 661.6 keV and K-40 at

1460 keV were 0.434 ± 0.31% and 0.40 ± 0.01% respectively. The minimum detectable limit estimated for Cs-137 and K-40 of the above energies were 0.32 Bq/kg and 10.5 Bq/kg respectively.

10 milk powder samples out of the 14 tested recorded Cs-137 and K-40 in the range of 0.59 - 3.75 Bq/kg and 305 - 537.6 Bq/kg respectively. 06 grain flour samples out of 08 tested recorded CS-137 and K-40 in range of 0.34 - 1.36 Bq/kg and 39.6. - 501.9 Bq/kg respectively.

The maximum permissible concentration of Cs-137 in milk powder imported to Sri Lanka for general consumption is 20 Bq/kg. as imposed by the Atomic Energy Authority (AEA). Maximum permissible concentration of Cs-137 in milk powder imposed by AEA can be considered reasonable as less contaminated foods are easily available in international trade and this would ensure the principle of keeping the radiation dose as low as reasonably achievable.