

Assessment of Contamination of Natural and Anthropogenic Radionuclides in Rice Samples Collected from Songkhla Province, Thailand

Study on assessment of contamination of natural and artificial radionuclides in agricultural products samples are very important to all human being as a consumer. In the present study, we have measured and evaluated the specific activities of natural (^{40}K , ^{226}Ra and ^{232}Th) and anthropogenic (^{137}Cs) radionuclide in rice samples. The 30 rice samples were collected from from general and department stores at Songkhla province in the south of Thailand. The high-purity germanium (HPGe) detector and gamma-ray spectrometry analysis system which were set-up in advanced laboratory in Thailand Institute of Nuclear Technology (public Organization) or TINT were employed to perform all of measurements and analysis for this study. The frequency distribution of specific activities of ^{40}K , ^{226}Ra , ^{232}Th and ^{137}Cs for this study were also studied and found to be asymmetrical distribution with the skewness of 1.29, 1.43, 2.32 and 0.82, respectively. For this reason, the median values of specific activities of ^{40}K , ^{226}Ra and ^{232}Th which were 620.04 22.62, 3.73 1.08 and 2.44 0.88 Bq/kg respectively, should be selected and also used to calculate some related radiological hazard indices in this study. Furthermore, the excess lifetime cancer risk (ELCR) would be also evaluated and presented. Moreover, the results of present study were taken to compare with some data and studies in Thailand and global measurement and calculations. It was found that the outcomes satisfied the standards of IAEA.

Primary author: Dr KESSATIKOON, Prasong (Department of Basic Science and Mathematics, Faculty of Science, Thaksin University, Songkhla, 90000, Thailand)

Co-authors: Ms RIYAPUNT, Dusanee (Undergraduate Student, B.Ed. (Science-Physics) Program, Faculty of Education, Thaksin University, Songkhla, 90000, Thailand); Ms BOONKRONGCHEEP, Ruthairat (Research Assistance, Nuclear and Material Physics Research Unit, Department of Basic Science and Mathematics, Faculty of Science, Thaksin University, Songkhla, 90000, Thailand); Mr CHANGKIT, Nopparit (Nuclear Scientist, Thailand Institute of Nuclear Technology (Public Organization), Nakhon Nayok, 26120, Thailand)

Presenter: Dr KESSATIKOON, Prasong (Department of Basic Science and Mathematics, Faculty of Science, Thaksin University, Songkhla, 90000, Thailand)

Track Classification: Nuclear and Radiation Physics