



Arsenic, cadmium and lead contents in polished rice samples

Wanee Srinuttrakul^{1*}, Vorapot Permmamtip² and Satoshi Yoshida³

¹*Research and Development Division, Thailand Institute of Nuclear Technology (Public Organization), Nakhon Nayok, Thailand*

²*Nuclear Technology Service Center, Thailand Institute of Nuclear Technology (Public Organization), Nakhon Nayok, Thailand*

³*Department of Management and Planning, National Institutes for Quantum and Radiological Science and Technology, Chiba, Japan*

*e-mail: neesrinut@yahoo.com

Rice (*Oryza sativa*) is a diet staple for almost half of the world's population including Thailand. Although rice is a major source of nutrition for human, toxic elements could be found in rice samples. In this work, forty Thai Jasmine rice samples collected from the paddy field in the northeast of Thailand were analyzed for arsenic (As), cadmium (Cd) and lead (Pb) contents by inductively coupled plasma mass spectrometry. The mean concentration of As, Cd and Pb in polished rice samples was 0.116, 0.019, 0.055 mg kg⁻¹, respectively. Compared to the results among sampling provinces, As was highest in samples from Si Sa Ket and Cd was highest in samples from Yasothon. Almost all of the samples showed Pb lower than 0.034 mg kg⁻¹. The estimated daily intake (EDI) of As, Cd, and Pb resulting from rice consumption was 0.027, 0.004 and 0.013 mg day⁻¹, respectively. The percentage contribution to Provisional Tolerable Weekly Intake (PTWI) values of As, Cd and Pb for male (body weight of 65 kg) was 18.3%, 6.5% and 5.2%, respectively, and for female (body weight of 57 kg) was 22.1%, 7.8% and 6.3%, respectively. The results indicated Thai polished rice samples are safe for consumption.

Keywords: Arsenic; Cadmium; Lead; Rice; Inductively coupled plasma mass spectrometry