



THE STUDY OF NATURAL RADIONUCLIDE AND STABLE CAESIUM CYCLING IN RICE PADDY ECOSYSTEM OF THAI FRAGRANT RICE (*Oryza sativa* L. ssp. *indica* cv. Pathum Thani 1)

Thawatchai Itthipoonthanakorn^{1*}, Saroh Niyomdech¹, Patchareewan Pato², Kanokon Yaodam³, Yutthana Tumnoi.¹

¹ Regulatory Technical Support Division, Office of Atoms for Peace, Thailand

² Faculty of Applied Science, King Mongkut's University of Technology North Bangkok

³ Pathum Thani Rice Research Center, Thunyaburi, Pathum Thani

*e-mail: thawatchai.i@oap.go.th

Abstract:

This study focused on investigation the feasibility of using stable isotopes of Cs for useful analogue on study its radioisotopes in long-term cycling for Thai Fragrant Rice (*Oryza sativa* L. ssp. *indica* cv. Pathum Thani 1) in three periods of cultivation. Systematic studies were made of stable Cs and possible competitive elements in soil, rice grain and stalk. Measurements of total concentrations were complemented with determinations of exchangeable fractions of stable Cs. Transfer and translocation factors of pathway within rice paddy ecosystems were calculated. Natural radionuclides were measured and assess for annual committed effective dose of ⁴⁰K ingestion for various group ages of Thai population. It concludes that stable Cs is useful indicators for study on radiocaesium in rice paddy for long-term cycling following the initial deposition of nuclear fallout in Thailand. Moreover, the results show the annual effective dose for ingestion of ⁴⁰K in rice grain was minimised at about 0.080 mSv for 3-5.9 years children and maximum at about 0.672 mSv for 18-34.9 years adult which very small amounts compare to average annual exposure dose from natural source (2.0 mSv).