

Thunyras Akharawutchayanon 2013: Absorption and Distribution of Cs-134 in Two Vetiver Ecotypes. Master of Science (Applied Radiation and Isotopes), Major Field: Applied Radiation and Isotopes, Department of Applied Radiation and Isotopes. Thesis Advisor: Professor Nualchavee Roongtanakiat, Ph.D. 88 pages.

Absorption and distribution of Cs-134 in Ratchaburi and Surat Thani vetiver ecotypes were investigated. The plantlets of both vetiver ecotypes were cultured in 3 different levels of Cs-134 solutions and various periods before performing autoradiograph using an imaging plate MS 2040 (Fujifilm) and Fujifilm BAS 2500 imaging plate reader. The specific activities of vetivers' shoot and root parts also were determined by a gamma ray spectrometer using the High Purity Germanium (HPGe) detector. The results revealed that both vetiver ecotypes could absorb Cs-134 and accumulated more in roots than in shoots. The specific activity values in root and shoot parts ranged from 70.36-144.09 and 19.80-86.21 kBq g<sup>-1</sup>, respectively. The Cs-134 absorption ability of vetiver as shown by a photo-stimulated luminescence (PSL) signals (PSL mm<sup>-2</sup>) increased as Cs-134 concentration in culture solution increased. After culture in Cs-134 concentrations of 2.5, 5.0 and 7.5 MBq L<sup>-1</sup> for 5 days, the Surat Thani ecotype reduced Cs-134 concentration to 44.08, 30.79 and 30.33 %, respectively, which was higher than that of Rachaburi ecotype (35.38, 23.18 and 21.28 %, respectively). The Surathani vetiver ecotype plantlets were also cultivated in Cs-134 solution with activity of 278.50 Bq for 3, 6, 9, 12, 15 and 18 days. It was shown that the vetiver could absorb Cs-134 higher amount with longer cultivating time and reduced Cs-134 activity 1.99, 6.81, 11.41, 21.86, 29.30 and 34.52 %, respectively.

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Thesis Advisor's signature