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Verification of ^{90}Sr determination in marine animals

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Abstract. ^{90}Sr is considered as a hazardous radionuclide for humans. When it is consumed, it would be eventually accumulated in bone and its daughter, ^{90}Y, could then harm bone marrow. To monitor ^{90}Sr in the environment especially in marine food samples it is very important for Thailand as the consumption of marine animals is high and these animals are also exported all over the world and play an important part of the economy. To measure ^{90}Sr in our food samples, a liquid extraction technique using bis-2-etylhexyl-phosphoric acid to separate and purify yttrium followed by Cherenkov counting to determine ^{90}Y in secular equilibrium to ^{90}Sr were developed at the Office of Atoms for Peace's laboratory. The analytical performance was validated for all criteria i.e. accuracy, precision and trueness. ^{90}Sr determination in spiked mussel samples with various activity concentrations in a range of 2 – 1000 Bq kg^{-1} dry weight were performed for statistical evaluation. The results had a relative bias within the accepted relative bias of ± 25% i.e. in the range from 10.36 to 16.98 and passed all criteria. This could confirm our analytical approach for ^{90}Sr determination in marine animals and foodstuffs was accepted. Moreover the method is cost-efficient, simple and fast to analyse ^{90}Sr in the samples.