

Tritium Activity Concentration Study in Seawater Samples in the Gulf of Tonkin, Vietnam

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This work presents measurements of the activity concentration of Tritium (^3H) in seawater samples in the Gulf of Tonkin, Vietnam, using electrolytic enrichment and liquid scintillation counting. Three sites were investigated Tra Co (Quang Ninh Province), Bach Long Vi (Hai Phong Province), and Ky Anh (Ha Tinh Province), from December 2018 to October 2020 with six surveys. The ranges of ^3H radioactivity in seawater at three sites were $1.25 \div 1.74$ TU ($0.15 \div 0.21$ Bq/L), $1.12 \div 1.65$ TU ($0.13 \div 0.20$ Bq/L), and $0.99 \div 1.47$ TU ($0.12 \div 0.17$ Bq/L), with the average values of 1.47 TU (0.17 Bq/L), 1.42 TU (0.17 Bq/L), 1.16 TU (0.14 Bq/L), respectively. The reliability of the analytical results was validated through interlaboratory comparisons - the proficiency test for Tritium in seawater organized by the International Atomic Energy Agency (IAEA). The results of the ^3H activity concentrations obtained in the study were in correspondence with the value range of other studies in Vietnam and Asia–Pacific. These values show that the ^3H radioactivity in seawater in the survey area is low and mainly generated from natural processes through fallout.

Keywords: *Tritium, Seawater, Liquid scintillation counting.*