

§3. A Simplified Method for Tritium Measurement in the Environmental Water Samples

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1. Abstract

Liquid scintillation counting is the most popular method to measure the tritium concentration in the low-level water samples, such as environmental water samples. Lately in Japan, the tritium concentration has become very low, and the value is within the detective limit by the low background liquid scintillation counter. Then, we have developed a simplified and accurate procedure with the electrolysis enrichment ¹⁾²⁾³⁾. By means of this procedure, we have been measuring tritium concentration of several samples for two years.

2. Experimental and Results

The measurement was carried out as follows;

**SAMPLING⇒RO FILTRATION⇒ENRICHMENT⇒
 LS COCKTAIL MIXING⇒LS COUNTING**

To determine the tritium enrichment factor, the heavy water concentration was also measured before and after the enrichment using a mass spectrometer. The results were shown in Fig. 1. All most all of the measured values were between 0.1 and 0.5 Bq/kg. The values of the vapor samples in the air were significantly higher than the others.

3. Conclusion

- (1) The tritium concentration in the environmental water samples was successfully measured by the new measurement procedure.
- (2) The values were 0.1-0.5 Bq/kg-water except vapor samples.

References

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- 3) Y. SAKUMA et al., J. Radioanalytical and Nuclear Chemistry, Vol.255, No.2 (2003) 325.

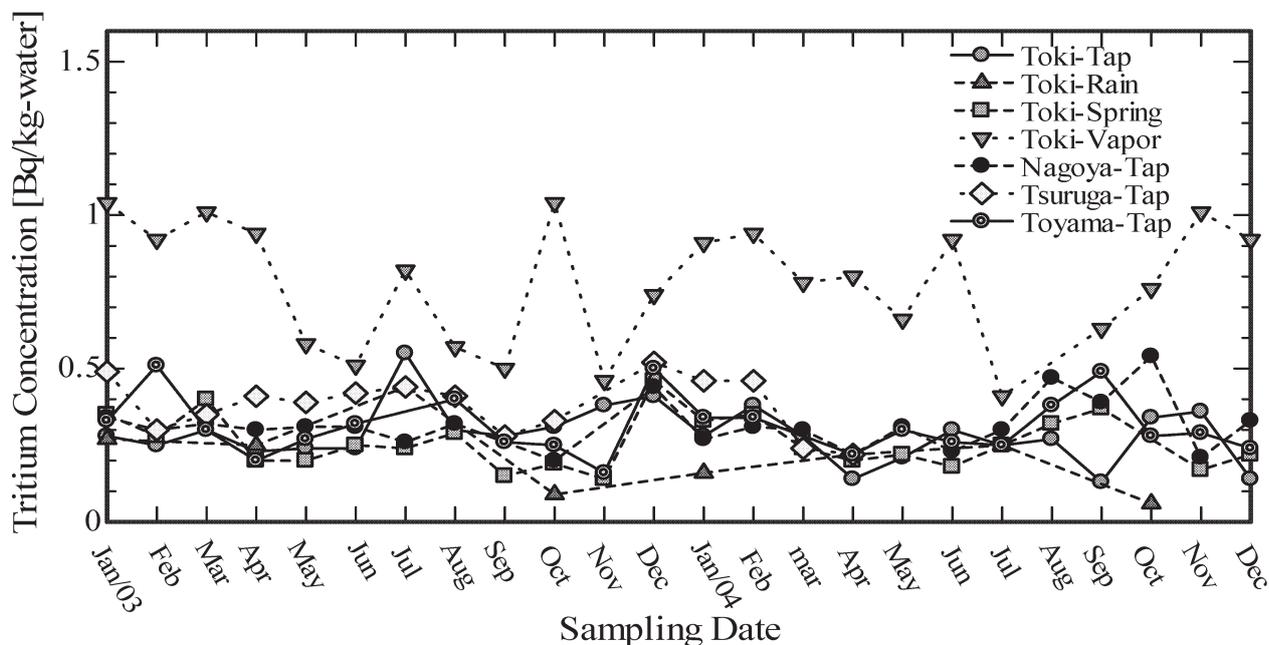


Fig. 1 Results of measurement.