

## Variation of Tritium Concentration in Coastal Sea Water Collected along the Pacific Coast in Aomori Prefecture

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Nuclear fuel reprocessing test is started on March in 2006 at Rokkasho, Aomori in Japan. Waste water contaminated by tritium is released underwater from a point about 3km far from the sea shore near the plant and is diluted by the surrounding sea water. The dilution process is complicated depending on the temporal weather condition such as the direction of sea water current and/or low and high tide near the releasing sea area. So it is important to monitor the variation of tritium concentration in sea water along the Pacific coast in Aomori prefecture.

The monitoring of tritium concentration is started on January, 2006, just before the reprocessing test is opened. Coastal sea water samples were collected two or three times in a year from 2006 to 2008 at four sites of Shirahama beach in Hachinohe and Misawa fishing port located in the south direction from the plant, Tomari beach in Rokkasho located in the north direction from the facility and Lake Obuchi situated near the plant.

Sample water is distilled to remove the dissolved salts and is enriched by “Two-stage electrolysis”<sup>1)</sup> to avoid the memory effect. The total volume reduction factor is fifteen. Tritium concentration was estimated by a low background liquid scintillation counter (LB or LB , Aloka). Deuterium concentrations in water samples were also measured by an isotope ratio mass spectrometer (Delta plus, Thermo Fisher Scientific) before and after the enrichment.

Tritium concentration in the collected water samples usually showed below 0.5 Bq/L. But increased tritium concentrations more than 1.0 Bq/L were sometimes observed in water samples collected at these four sites on separate date. Tritium concentration increased on April 2007 at Lake Obuchi, on October 2007 at Tomari beach and on January 2008 at Shirahama beach and Misawa fishing port. From these results it will be estimated that the tritium contaminated waste water released from the plant is diluted by sea water around the releasing point or is drifted to the north or the south direction by the dominant sea water current at that time.

1) T. Muranaka and N. Shima: *Fusion Science and Technology*, 54, 297(2008).