

Outline of the Report of Tritiated Water Task Force

This report presents the results of technical evaluations conducted by the Tritiated Water Task Force aiming to provide basic reference for decision making on the long-term management of “tritiated water” (waters once treated by the Multi-nuclide removal equipment), which is one of the issues regarding the contaminated water management at TEPCO’s Fukushima Daiichi Nuclear Power Station (NPS). (This evaluation report does not intend to consolidate different views among stakeholders or to narrow down options to be taken.)

Organizing Basic Information

The Task Force organized information related to tritium, a radioisotope of hydrogen, including its physical property, environmental behavior, and impacts on natural environment and human bodies. The Task Force also gathered basic information, such as existing conditions of tritium in the site of Fukushima Daiichi NPS, relevant regulatory standards on treatments of tritium, examples of tritium management both in Japan and abroad.

Options for Tritiated Water Management and Evaluation on them

The Task Force made technical evaluations on 11 options (five treatment methods combined with different pre-treatments), taking into account examples including those in foreign countries. To ensure comparability of the results, concrete “evaluation cases” were set up under equal conditions.

(11 options)

- Geological injection (Without pre-treatment/After dilution/After isotope separation)
- Discharge into the ocean (After dilution/After separation)
- Atmospheric emission as vapor (Without pre-treatment/After dilution/After isotope separation)
- Atmospheric emission as hydrogen gas (Without pre-treatment/After isotope separation)
- Underground installation (Without pre-treatment)

(Principal conditions)

Amount to be treated: 800 thousand m³ in total (400 m³ per day)

Concentration level of tritium in the water: before treatment: 4.2 million Bq/L or 0.5 million Bq/L,
after treatment: legal discharge limit

Evaluations were conducted from the viewpoints of basic prerequisite and potential constraints. Basic prerequisite includes technical feasibilities and legal feasibilities. Potential constraints includes time periods, financial costs and the size of the land/sea area necessary for the treatment, kinds and the volume of secondary wastes if any, level of radiation-exposure of the workers and other factors.

The report does not refer to the time period and costs necessary for isotope separation, since there are no separation methods verified for immediate practical application, according to the result of the Demonstration Project for Verification Tests of Tritium Separation Technology.