

§8. Tritium Inventory in the Large Helical Device

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A series of discussion meetings on the tritium issues in the LHD experimental program has been organized.

1. Scope of the meeting

It is expected that the DD experiment with Large Helical Device, beginning at 2000, will produce tritium amounting to 12Ci/year (430GBq/year). A part of it will be removed with tritium recovering system, but another part will be captured by the first wall, the divertor, walls of pipe lines and so on. The objective of this discussion meeting is to find out the problems on evaluating tritium inventory distribution on the system and to analyse the present status of tritium-material interaction studies, accumulation of data base and R&Ds concerning to the tritium handling in the LHD.

2. Meeting in this fiscal year

The first meeting was held on August 25 and the second was on December 17 in 1993. At the first meeting, major topics were the LHD operation modes and established tritium production rate. Discussions were followed by the issues concerning to contamination and decontamination, tritium waste handling, monitoring and exposure control. The topics at the second meeting were experiences of DD and DT shots in the JT-60U and the TFTR, respectively, and environmental aspects at the Toki-site.

3. Meeting summaries

Tritium behavior in the LHD is belonging to the problems of low level tritium in a large complex volume. This does not mean, however, the ease of the tritium handling, because tritium release to the environment is expected to be severely limited at the Toki-site. The experiences of the JT-60U and the TFTR could be properly utilized to design the tritium handling system of the LHD. With this respect, evaluation of tritium inventory distribution is desirable with use of available data base at present and it is important to establish the principle of tritium hazard protection appropriate to the LHD device and the site environment, according to which suitable tritium handling systems could be applied

It should be also recognized that the LHD device is a model machine to investigate tritium behavior in larger and more complex DT burning experimental machines such as the ITER.