§11. Research on Oxidation Factors of Molecular Tritium and Fluctuation Factors of Tritium Level in the Environment

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In the future nuclear fusion reactors a large amount of molecular tritium (HT) will be used on as fuel. Although HT itself is much less radiotoxic than tritiated water (HTO), it is easily converted to HTO by microbial action in surface soil when it is released into the environment. We have conducted several heavy water (D_2O) release field experiments using deuterium as a substitute for tritium to obtain parameters as for tritium transfer from air to the crops and tritium retention during their growth phase and at harvest.

The meeting on the environmental behavior of tritium and its biological effects was held at NIFS on December 8, gathering with tritium researchers. The titles and contents of the meeting were as follows and some of research details were described in the following references.

1. Tritium safety management on LHD and the research programs in Safety Research Center. T. Uda (NIFS)
2. Evaluation of low dose of tritium on cellular DNA damage by comet assay. Y. Ichimasa (Ibaraki Univ.)
3. D_2O transfer and OBD formation in soybean under different growth phase. M. Ichimasa (Ibaraki Univ.)
4. D_2O transfer to withered leaves of trees.
   N. Momoshima (Kumamoto Univ.)
5. Assay and evaluation of stable isotope ratio of hydrogen as an index of water history of rivers.
   H. Amano, M. Andoh (JAERI)
6. Dose assessment of environmental tritium by TriStat. M. Saito (Kyoto Univ.)
7. Tritium dosimetry study: Intracellular behavior of organically bound tritium. H. Takeda (NIRS)
8. IAEA EMRAS, tritium and C-14 working group. Meeting report I. K. Miyamoto (NIRS)
9. Changes of tritium concentration of environmental water samples around KUR. M. Fukui (Kyoto Univ.)
10. An improved determination of tritium concentration in environmental samples. Y. Sakuma (NIFS)
11. Biological effects of tritium and 137Cs-γrays on mouse testis. A. Watanabe (Hiroshima Univ.)
12. Evaluation of a bystander effect of tritium beta particles. K.Komatsu (Kyoto Univ.)
13. A hyper-sensitive detection system for assessment of low dose rate of tritium. H. Tauchi (Ibaraki Univ.)
14. Application of polyimide membrane module to tritium monitor. K. Okuno (Shizuoka Univ.)

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