Environmental effects of radiation

171 Isotopic Ratio of Depleted Uranium Used in IRAQ WAR

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Since the Gulf-Bay war in 1991, usage of depleted uranium was big problem which may cause severe health effects. DU bullets were used in the Iraq War in 2003, however, isotopic evidence has not been reported. In the present work, U-235/U-238 isotopic ratios were measured by gamma spectrometry for the samples collected just after the end of Iraq War. The samples are black powderfrom desgtroyed factory, powder collected by smear method from inner wall of tank and bullets surface. U-238 and U-235 were determined by 63 keV gamma ray from Th-234 and 186 keV one from U-235 by Ge detectors in Ogoya Underground Laboratory. The U-235/U-238 isotopic ratios were measured to be 0.209 ± 0.04% for black powder, 0.186 ± 0.006% for fine powder from inner wall of tank and 0.197 ± 0.011% for bullet surface. These values agree with those measured by Kosovo samples indicating that DU were used in the Iraq War.

172 Characteristics of tritium gas oxidizing bacteria, isolated from cultivated soils, which were classified to belong to the genus *Kitasatospora*

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The tritium gas (HT) oxidizing bacteria were isolated from cultivated soils in Ibaraki Prefecture. Among 963 isolates, 92% were actinomycetes, and its one-tenth were actinomycetes with meso-DAP in their cell wall. The isolated strains with meso-DAP were divided into 4 groups according to morphological and chemotaxonomic analyses. 16S rRNA sequence analyses were also conducted for some representative isolated strains. The several strains belonged to the group with gray colony color, smooth-surface spores, long straight spore chains, meso-DAP, galactose and mannose as whole-cell sugars, phospholipid type of II, non-mycolic acids, and menaquinones were classified to the genus *Kitasatospora*. Their tritium gas oxidizing activities were somewhat higher than those of the other isolates.

173 Tritium Concentrations in Rain at Kumamoto

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We evaluated separation factors of deuterium and tritium on SPE (Solid Polymer Electrolyte) electrolytic enrichment. Enrichment of 6.3 and 8.4 times was observed for deuterium and tritium, respectively, when 1000 ml water was reduced to 61 ml. The isotopic equilibrium of tritium and hydrogen atom between molecular hydrogen and water vapor determined the separation factor because the obtained separation factor is close to the reported value for the isotopic equilibrium. Chemical composition of rain before and after the electrolytic enrichment showed elevation of H^+ and Na^+ and reduction of Mg^{2+} and Ca^{2+} concentrations. F^-, which was not contained in the sample, was observed after the enrichment with reduction of SO_4^{2-}, Cl^- and NO_3^- concentrations. The change of ionic composition is attributed to the material of SPE, which uses F-type cation-exchange membrane. The tritium concentrations in Kumamoto City was mostly less than 1 Bq/L and showed a relationship with pH, probably suggesting a long rage transport from the China continent.

174 Silber-108m in Marine Mollusks

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Squids, a member of marine mollusks, have been used as a "biological monitor" for evaluating the Ag-108m contamination in the marine environment, since the presence of the nuclide in the lever of squids was firstly reported in 1970. We reported that not only squids but also snails(gastropods), another member of mollusks, could be used successfully for the purpose, and showed that Ag-108m was possibly distributed rather uniformly from coast to coast and from surface to bottom in the coastal sea of Japan on the basis of the consistent values of the specific activity of the nuclide in the viscera of the mollusks. The present study reports the results of additional analyses of the Ag-108m specific activity in another species of mollusks including a species of octopus obtained in the fishry ports different from the previous study. The need for a more conprehensive investigation was also stressed in order to prepare information on the backgound level of Ag-108m in the marine environment of concern for the commencement of operation of the spent fuel reprocessing plant in due time.