

Determination of the atmospheric HTO concentration around the nuclear fuel reprocessing plant in Rokkasho by using a passive type sampler

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The first commercial spent nuclear fuel reprocessing plant in Japan, located in Rokkasho, Aomori Prefecture, is now undergoing its final testing using actual fuels, and releases a controlled small amount of ^3H into the surrounding environment. We have measured ^3H concentrations in air and precipitation at our institute, which located 2.6 km away from the plant, for studying the effect of the release on the environmental ^3H level. Since the areal distribution of ^3H in the air around the plant is also important for the study, a passive type sampler of atmospheric water vapour was adopted.

A polyethylene cylinder bottle whose opening is mounted with a porous polyethylene membrane at the top was used as a sampler. The bottle contained 250 g of molecular sieve 3A (MS-3A) inside for adsorbing water vapour passing through the membrane. Tritium concentration in water recovered from the MS-3A in the bottle was compared with that obtained by active sampling method. Both ^3H concentrations agreed well with each other, which showed that the method was practical and effective. We observed monthly horizontal distribution of ^3H concentration in atmospheric water vapour using the passive type sampler around the nuclear fuel reprocessing plant.

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