

The correlation analysis between inorganic components in suspended solids and distribution coefficients of ^{137}Cs in water samples collected from agricultural ponds

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Abstract

In this ongoing study since 2015, we measured the distribution coefficients (K_d) of ^{137}Cs and concentrations of elements in suspended solids (SS) of inflow water and outflow water in small agricultural ponds. Element contents in the SS were determined by PIXE at NMCC. Results are summarized as follows.

- 1) PIXE analysis of the SS of the inflow water and outflow water showed the presence of more than 13 elements (Na, Mg, Al, Si, P, S, Cl, K, Ca, Ti, Mn, Fe and Zn) in almost all samples. The variations of the K_d of ^{137}Cs showed no correlation with the concentration of each element in the SS, although the difference of the K_d values of ^{137}Cs between inflow water and outflow water were more than 10 times.
- 2) We also calculated the relative change ratios (the numerical value in outflow water \div that in inflow water) between the K_d of ^{137}Cs and the concentration of each element in the SS at each sampling site. As a result, the relative change ratios of the concentration of P and Cl indicated a linear correlation with the relative change ratio of K_d of ^{137}Cs .