

Evaluation of trapping of suspended Cs-137 in reservoir lakes in river systems in Fukushima

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Radiocaesiums released by TEPCO's Fukushima Daiichi Nuclear Power Plant accident were deposited and adsorbed to fine particles of the surface soils such as silts and clays. The contaminated soils were eroded by rainfall events, and then transported through river systems. We have measured the activity concentrations and fluxes of suspended Cs-137 at 30 monitoring points in located in 10 river systems in the area affected by the accident. In order to evaluate the trapping effect of the large reservoir lakes on the riverine transport of suspended Cs-137, the suspended Cs-137 flux normalized by the water discharge and initial deposition of Cs-137 in the watershed (L/QD) were compared with the coverages of the land use types and the proportion of the catchment area by reservoir lakes to the total basin area.

L/QD values at the sites without reservoir(s) showed positive correlations with the coverage of paddy field, urban area and farmland, and a negative correlation with the forest coverage. L/QD values at the sites with reservoir(s) were 48–84 % of the values estimated by the land use coverages, and showed negative correlation with the proportion of the catchment area by reservoir lakes to the total basin area.

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