

Radiocesium transfer by water and sediment discharge through river networks after the Fukushima NPP accident

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Our research team has been monitoring the environmental consequences of radioactive contamination just after the Fukushima Daiichi NPP accident in Yamakiya-district, Kawamata town, Fukushima prefecture. Research items are listed below.

1. Radiocesium wash-off from the runoff-erosion plot under different land use.
2. Measurement of radiocesium transfer in forest environment by hydrological pathways such as throughfall and overlandflow on hillslope.
3. Monitoring of dissolved and particulate radiocesium concentration in river water, and stream water from the forested catchment.
4. Measurement of radiocesium content in drain water and suspended sediment from paddy field.
5. Continuous monitoring of suspended sediment and river water for 30 locations in abukuma catchments and coastal catchments.

Our monitoring result demonstrated that the Cs-137 concentration in eroded sediment from the runoff-erosion plot has been almost constant for the past 3 years, however the Cs-137 concentration of suspended sediment from the forested catchment showed slight decrease through time. On the other hand, the suspended sediment from paddy field and those in river water from large catchments exhibited rapid decrease in Cs-137 concentration with time. The decreasing trend of Cs-137 concentration were fitted by the two-component exponential model, differences in decreasing rate of the model were compared and discussed among various land uses and catchment scales. The declining trend such analysis can provide important insights into the future prediction of the radiocesium wash-off from catchments with different land uses.

Keywords: Fukushima Dai-ichi Nuclear Power Plant accident, Radiocesium, River system, water and sediment discharge, transfer