

## Temporal and Spatial Transport of Radiocesium on a Slope after Scraping Surface Soil Off

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In March 2011, radioactive materials, including radiocesium (Cs) were released into the surrounding environments by the accident of Fukushima Daiichi Nuclear Power Plant and contaminated forests and houses. To reduce external gamma exposure, Cs on houses including the surrounding area within a 20m distance from the houses was removed. However, areas beyond the 20m distance at a higher elevation on the backyard mountain slope remained uncleaned. Remaining Cs at the higher elevation on the backyard mountain slope might move down on the slope surface to the lower elevation, where Cs had been removed, by the surface runoff. The objective of this study was to investigate how Cs was transported on the slope after the removal of Cs. On the south-facing slope located in the north of the houses in Iitate Village, Fukushima Prefecture, topsoil with a litter was collected several times a year from April 2015 to November 2019. The concentrations of <sup>134</sup>Cs and <sup>137</sup>Cs were measured using a  $\gamma$ -ray spectrometer equipped with a Ge semiconductor detector. The topsoil sampling locations were chosen at Cs-remained, upper Cs-removed, middle Cs-removed, and lower Cs-removed areas along the backyard hill slope, and the lowest Cs-removed area was added in April 2016. Sampling locations were triplicated at a similar elevation to one another. Since the temporal gradients of cumulative rainfall and Cs concentrations at all the locations tended to correspond, Cs might be transported along the slope with surface runoff. When the half-lives of <sup>137</sup>Cs (approximately 30 years) were taken into account, the concentration of <sup>137</sup>Cs at the lower and the lowest Cs-removed area was often lower than estimates accounting for natural decay. Since the slope of the graph of accumulated <sup>137</sup>Cs concentration after 2017 is small at the same areas, Cs might move vertically in the soil while flowing down the slope surface.

Keywords: Radiocesium, Decontamination, Slope