

## The radioactivity of cesium in stream water during base flow from a small watershed in forested headwaters

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The radiocaesium was released by the accident in Fukushima Dai-ichi nuclear power plant. Although the woodland is thought to have strong tendency to maintain radiocaesium within a forest ecosystem, the very small amount of radiocaesium flows downwards through stream water. As stream water was used for agriculture and transported nutrient materials to river and lake. Therefore, radiocaesium discharged from headwaters may influence the ecosystem in river and lake or agriculture, like rice crop. In this time, we report the radioactivity of cesium in stream water during base flow from a small catchment in forested headwaters, Fukushima Prefecture.

The investigation was carried out in a small catchment (drainage area 1.2 ha) in the Tadano experimental forest of the Fukushima Prefecture forestry research center in Koriyama city, Fukushima Prefecture ( Annual rainfall 1163 mm and mean air temperature 12.1 °C; the elevation 358 to 409 m, and the relief 0.42 ). The geology is a sedimentary rock (sandstone and tuff). As for the vegetation, the deciduous broad-leaved species such as *Quercus serratas* exists together with the Japanese red pine woods in the *Cryptomeria japonica* and the *Chamaecyparis obtusa* plantation (about the 48 years old). The runoff was observed by setting up the v-notched weir and the water level gauge in the catchment end. Stream water was collected twice a month (volume; about 10L) near the weir. The radiocaesium was divided to particulate and dissolved fractions by filtration (Glass fiber filter, 0.7µm). Dissolved cesium-137 was measured after concentration by extraction disk(Sumitomo 3M, Empore Raddisk Cesium)

Based on results obtained from June 2012 to March 2013, the radioactivity of cesium-137 tended to be higher in summer and lower in winter. In January and February, the radioactivity of cesium-137 was not detected, but it began increasing in March. There is a possibility that variation in the radioactivity of dissolved cesium-137 has a relation with the decomposition of organic matter according to the temperature elevation. The change in radioactivity of particulate cesium-137 was almost same way as dissolved cesium-137. This is because the discharge of suspended solid was increasing during high flow and because suspended solid concentration kept low while a catchment was covered by snow.

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