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Radioactive materials deposition in Iwate prefecture, northeast japan, due to the Fukushima dai-ichi nuclear power plant accident.

Hideyuki Itoh

Iwate Prefectural University, Faculty of policy study, Takizawa village, Japan (h-itoh@iwate-pu.ac.jp, +81-19-694-2722)

A catastrophic earthquake occurred in March 11, 2011, and additional tsunami gave the big damage along the pacific coastline of the northeast Japan. Tsunami also caused the accident of Fukushima dai-ichi nuclear power plant (FNPP), released of massive amount of radioactive materials to all over the northeast to central Japan. Ministry of Education, cultural, sports, science and technology (MEXT), Japan, carried out the airborne monitoring survey on several times, however, it is impossible to know the deposition of low level radiation under 0.1μSv/h. On the other hand, radioactive material was detected in Iwate by farm and livestock products, and it was necessary to understand an accurate contamination status in Iwate prefecture.

Behavior of radioactive material is very similar to the ashfall by the volcanic eruption. Therefore, it is possible to apply the knowledge of volcanology to evaluation of the natural radiation dose. The author carried out the detailed contamination mapping across the Iwate prefecture.

To γ–ray measurement, using scintillation counter A2700 of the clearpulse, measured on 1m grass field above ground, for one minute. The total measurement point became more than 800 point whole in Iwate.

Field survey were carried out from April to November, 2011, therefore, it is necessary to consider to the half – life of the radioactive element of the cesium 134 and 137. In this study, the author reconstructed a deposition of April, 2011, just after the accident. In addition, the author also carried out the revision of the natural radiation dose included in the granite and so on.

From the result, Concentration of radioactive materials depend on the topography, it tend to high concentrate in the basin or along the valley. The feeble deposition 0.01-0.2μsv/h with the radioactive material was recognized in whole prefecture. High contamination area distributed over the E-W directions widely in the southern part of the prefecture, and it also existence of the hotspots more than 0.5-0.7μSv/h became clear in the high contamination area.

This result already released on the web (http://www.poly.iwate-pu.ac.jp, in Japanese) and more than 35,500 inhabitants read it so far. They use this result as a hazard map for the radiation dose.