

What could be the consequences of the Fukushima Dai-ichi releases over mountainous areas?

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Getting a precise idea of the environmental consequences of the accidental nuclear releases like those of Fukushima Dai-ichi on mountainous area required a specific environmental monitoring program. This one could be comparable to that followed in France which mountainous areas have undergone the deposition of man-made radionuclides after the Chernobyl releases...

Field works were carried in mountainous areas where the distribution of artificial radionuclides is extremely heterogeneous. Thus patches or "hot spots" concentrating radiocesium (over 100 kBq.m⁻²) were identified soon after Chernobyl accident in the topographic depressions occurring in meadow areas (over 2,000 m altitude). The aims of the project were (1) to identify the processes which have concentrated the released radionuclides (2) to develop a methodology for the mapping of the contamination of mountainous area. Thus the effect of geomorphology (i.e. the occurrence of snow drifts at glacial terrains depressions, where patches occurred) and the influence of vegetation cover (meadow/forest areas) on the distribution of ¹³⁷Cs have been studied.

In addition, sampling and measurement of the local foodstuff products (such as milk, cheese, berries and games) as well as in situ gamma radiation monitoring were carried out to evaluate the dosimetric consequences for local inhabitants. A special attention has been paid on the activity recorded by milk and cheeses which has been studied at different scales (a single farm, a mountainous region, several massifs, etc.). Also at several stations the activity of ¹³⁷Cs and ⁹⁰Sr has been determined in the soil/plant/milk/cheese continuum, demonstrating the sensitivity of the transfer of such man-made radionuclides with respect to environmental conditions and agricultural practices.

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