

Original

Development of Remediation/Decontamination Strategies Reflecting Local Conditions by the EU Long-term Radiation Exposure Model for Inhabited Areas (ERMIN)

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Summary

The European model for inhabited areas (ERMIN), developed for prediction of radioactive compounds towards Chernobyl accident, was applied at Tomioka in Fukushima Prefecture as a model region for decontamination to investigate its feasibility. The application of ERMIN to eight compartments with each 100×100 m in this region, where decontamination was actually performed, confirmed that observed air dose rates were within the calculated counterparts irrespective of presence or absence of a term on environment half life for two months. With simulation sets capable of reproducing an air dose rate during a decontamination term, decontamination strategies incorporating five evaluation items, i.e. reduction of radiation exposure to inhabitants, cost for decontamination, the amount of waste, work effort, and the amount of radiation exposure for a worker, were proposed and compared. By initiating decontamination 9 months after the accident in Fukushima, radiation exposure to inhabitants, who continue to live at the modeled region, is reduced by about 24 mSv for the ensuing 15 months. Furthermore, decontamination strategies were compared by prioritizing the five evaluation items.

Key Words: Decontamination strategy, Simulation, Radiation exposure to inhabitants, Decontamination cost
