

Time, Location and Weather Dependence of Radiation of Cs-origin in Fukushima Prefecture due to the Accident at the Fukushima Daiichi Nuclear Power Plant

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Summary

The data on air dose rates of Cs-origin acquired at 155 points in central and eastern Fukushima prefecture by the central and local governments during the period of June 10th through December 5th (the summer and the fall) in 2011 are analyzed to investigate their temporal as well as locational variations. The average air dose rate in the region had declined at a remarkably swift pace with the half-life of 1.4 years, showing the importance of weathering effects. The average reduction rate was twice as large as that due to radioactive decay of Cs. Owing to the strong weathering effects, the reduction rate tends to sensitively depend on the season; the average reduction rate in the summer was twice as large as that in the fall. Several locations with extreme behaviors were introduced and analyzed. It is also found that extensive areas in Fukushima were still being weakly contaminated. The possible sources of this secondary contamination may include forests, farmlands and roads from where radio-aerosols were resuspended and transported presumably via wind, rainwater etc. As the wind effects are extensive, and sensitive to geographical features, detailed work will be needed to predict future dose rates with reasonable precision.

Key Words : Fukushima Daiichi Nuclear Power Plant, dose rate, space-time dependence, wind transport, resuspension, secondary contamination