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Original

Estimation of Exposure Dose at the Time of Return Which is Risk Equivalent to the Dose Limit for General Public

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Summary

Evacuation orders after the Fukushima Dai-ichi Nuclear Power Plant Accident will be lifted with the condition that annual cumulative dose estimated from the air dose rates monitored in the evacuation areas must be 20 mSv/year or lower and primary living infrastructure has been sufficiently restored. However, it is possible that evacuees might hesitate to return because the value 20 mSv/year exceeds the annual dose limit for the general public: 1mSv. And additional exposure dose which an individual person is exposed after returning home will show a wide range depending on age and lifestyle. With regard to these situations, we created some scenarios for evacuees' lifestyle after returning home classified by gender, age and working status and estimated the ambient radiation dose rate in the place to return which led to be equivalent to the dose limit for general public: 1mSv. We calculated individual external dose directly using cumulative ambient radiation dose and ignored an internal exposure and an effect of biological half-life of ^{137}Cs. As a result, it is revealed that the ambient radiation dose rate in the case of return by aged evacuees or people who will spend long time indoor like office worker or the unemployed after returning is higher than that in the other cases. The estimation result in this study can show evacuees a criterion for deciding to return.

Key Words: Fukushima Dai-ichi Nuclear Power Plant accident, Return for evacuees, Exposure dose after return, Multiplicative risk model, Individual future scenarios