

The development and the quality assessment of the dose rate measurement carry in earth surface.

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1. Purpose

The decontamination work of the radioactive material by a nuclear power plant disaster is done, and it is necessary to evaluate correctly the dose rate in the earth surface after decontamination. In this research, the shield which interrupts the radiation from the circumference was manufactured according to the form of a survey meter, and it aimed at verifying the effect. It aimed at developing the measurement carry which can carry a survey meter and a cover object, and performing a quality assessment.

2. Methods

The leaden shield was manufactured according to the probe form of a survey meter (Photo.1-1,1-2), and the shield rate to a ¹³⁷Cs γ -ray was calculated. The survey meter loading type measurement carry (Photo.2) used for dose rate measurement of earth surface was manufactured. In a concrete side or soil, the dose rate was measured using this equipment (Photo.3-1, 3-2), and the effect was verified.



Photo.1-1, 1-2 The leaden shield for the survey meter. The leaden shield with a thickness of 3cm covers 90% of γ -ray.



Photo.2 The measurement carry. Measurement carry puts a lead shield and is movable. There are four tires and there is little vibration.



Photo.3-1, 3-2 The present condition of measurement. In the measurement on concrete, the distance of the ground and a survey meter is kept exact. It can measure in measurement of soil, without shaking.

3. Results and discussion

Shield thickness of 3cm is suitable and mass is in about 15kg. As a result of shielding the γ -ray from the circumference using this shield, it was a shield rate exceeding 90%. Measurement carry has four tires and has the structure of reducing vibration of movement. In measurement at the appointed place, as a result of comparing the case where a manual measuring situation and measurement carry are used, there was no great difference in the time concerning measurement. However, fatigue of manual measurement is very large, and a significant difference becomes large in measuring many parts.

4. Conclusions

In order to perform dose rate measurement in earth surface correctly, the shield which covers a surrounding γ -ray was manufactured, and the measurement carry which can carry it has been developed. The measurement person's burden was able to be reduced in verification of monitoring using this equipment.