

# Environmental Dose Rate Monitoring System for the Field of Dispersed Cesium-137

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## INTRODUCTION

Although there are two cases where the integrated value and dose rate can be determined for environmental measurement, integrated measurement is not suitable in an emergency. A scintillation survey meter is instantaneously effective and is often used as the measurement instrument, and KURAMA, which is a vehicle-borne survey system developed by Kyoto University, has also been used. The dose rate measurement with GPS function is adopted, and is performing radiation dosimetry.

## OBJECTIVE

It is investigating the usefulness that the response characteristics accompanying movement are measured using a GM-type survey meter, which performed energy calibration by Cs-137.

## METHODS

The dose rates of the every place point around Kanazawa university and tunnels in Kanazawa (about 380 km from Fukushima) were measured, because there have been many reports that the dose rates in the tunnel were higher than within the city. The dose rates of the every place point and tunnels were also measured in Fukushima. In addition, the dose rates of the tunnels in Fukushima and on the expressway from Kanazawa to Fukushima were measured.

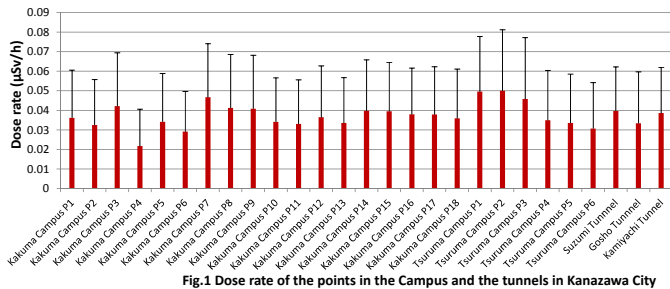


Fig.1 Dose rate of the points in the Campus and the tunnels in Kanazawa City

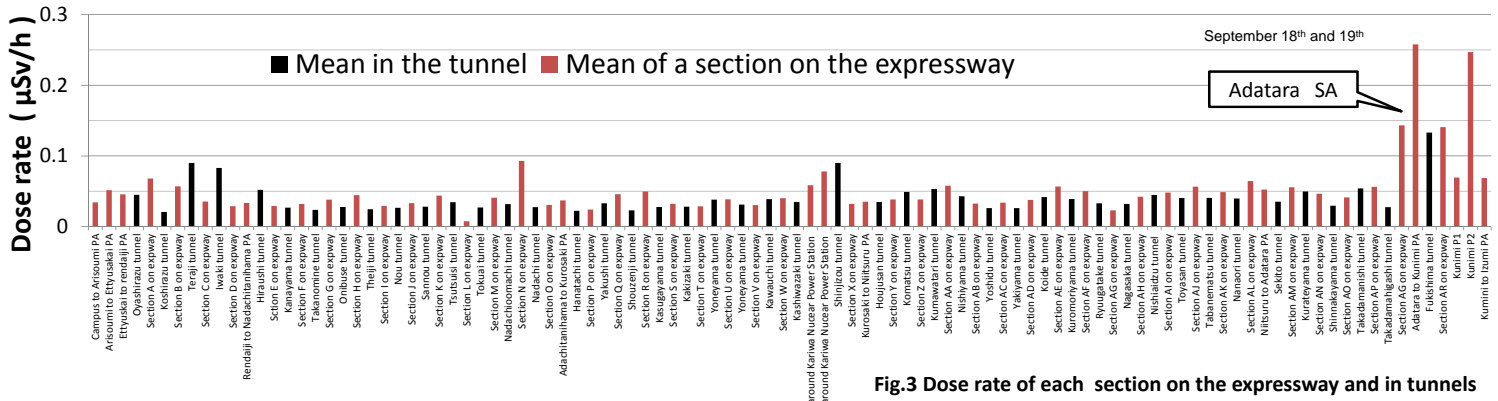


Fig.2 Dose rate comparison between MEXT and our measurements in Fukushima City



Fig.3 Dose rate of each section on the expressway and in tunnels

## CONCLUSIONS

The officially released distribution and the values determined with the GM survey meter showed relatively good agreement. Therefore, in an emergency, dose rate measurement is possible using the GM survey meter. During the process of soil withdrawal and decontamination work, it is necessary to carry out continuous monitoring of contamination levels.

## RESULTS

Based on the measurements obtained at the every place point around Kanazawa university and in the tunnels in Kanazawa City, there were no significant differences in dose rates between the city and the tunnels. These observations were in agreement with the official values for Fukushima City released by MEXT. Hot spots were observed on the expressway, and dose rates in the tunnels increased from Adataro service area. Dose rates in the tunnels were lower than those on the road in Fukushima City. Thus, dose rate appeared to be markedly influenced by exposure to the rain.

## DISCUSSION

The dose rates were lower inside compared to those outside of the tunnels between Kanazawa and Fukushima. As the background was especially high around Fukushima, the differences between the inside and outside of the tunnels were large. In an emergency, therefore, tunnels may be appropriate refuges. As the measurement results obtained with the GM survey meter and the official dose rate map were in agreement, this meter appears to be sufficient for obtaining a rough measure of the dose rate in an emergency. An increase in dose rate by rain was observed. The changes in dose rate around Fukushima nuclear power plant were large, and were particularly high in cultivated fields. This must be taken into consideration in radiation dosimetry.