

Topics Fukushima introduces JAEA's activities related to Fukushima.

Support for a survey by University of Fukui of doses in buildings

On October 5, University of Fukui conducted a survey of radiation doses in buildings in Date City, Fukushima Prefecture. The purpose of the survey was to find the cause of the high doses in these buildings, and the survey was conducted with the cooperation of Date City and the Japan Atomic Energy Agency (JAEA).

The subjects of the survey were the Oguni Community Center and two private homes in Date City. On the day of the survey, Professor Yoichi Tamagawa and three other investigators from the Department of Nuclear Power and Energy Safety Engineering, Graduate School of Engineering, University of Fukui, measured indoor radiation doses (lower photograph), and four staff from the JAEA Fukushima Environmental Safety Center measured the radiation dose outside the buildings (upper photograph). The surveyed buildings are scheduled to be decontaminated by Date City sometime around November, and the indoor radiation dose will be measured again after the decontamination to confirm the effectiveness of the decontamination. At University of Fukui, studies will be conducted on methods of reducing future exposure by simulating factors such as effectiveness of radiation shielding based on the obtained measurement data.

In addition, JAEA measured the radiation dose outside using independently developed gamma plotters, and showed University of Fukui students how the radiation measurement results are immediately mapped.

University of Fukui and JAEA have signed a comprehensive cooperation agreement, and have previously worked together, in areas such as joint research and special-interest group activities staffed by members from both organizations, and the above mentioned survey was conducted under this cooperative framework.





Gamma plotter

A large amount of radioactive cesium was released into the environment due to the accident at the Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi Nuclear Power Station. In order to formulate a decontamination plan for restoring the environment, it is extremely important to ascertain the air dose rate of the fields and trees in any local area. However, measuring radiation doses over a vast environment requires tremendous labor and time. In response to the request for tools to enable easy visualization of the environmental contamination from technical staff working at decontamination sites, with the cooperation of Japan Radiation Engineering Co., Ltd., JAEA has developed, through on-site tests, two types of equipment which can efficiently measure the air dose rates around homes, fields and trees, and map the radiation dose distribution.

The gamma plotter H (Horizontal) shown in the photograph at right has two plastic scintillators built into a stick-shaped body. By walking around with this stick, it is possible to simultaneously measure the radiation dose rates at 5 cm and 100 cm from the ground surface. The device is also equipped with high-performance GPS, and thus measurement position information is also automatically acquired, and the measured radiation dose rate can be mapped in real time onto an electronic map. The unit is lightweight at 2 kg, and can easily be carried over uneven terrain such as decontamination sites.



The gamma plotter V (Vertical) has detectors mounted at the ends of a rod extending to 6 m, and is used to measure the radiation dose rate at high locations such as trees, and building walls, etc. By sensing the position of the detector using infrared rays, and combining this with the visible image, it is possible to display the measurement position and radiation dose rate on a PC screen. The weight of the unit is 2.8 kg, and it can be collapsed to a size of about 1 m, and thus is easily portable.

Using these two types of mapping system, it is possible to dramatically reduce the time and labor involved in recording and plotting measurements results, which were previously done by hand, and eliminate the risk of working at high places. These devices have already been commercialized by Japan Radiation Engineering Co., Ltd.

Aerial photo plotted with
gamma plotter H

