



Students of Koriyama Women's University explained the features of radiation using a cloud chamber

Students presented radiation and decontamination at the campus festival.

“What is cloud chamber?”

“It is a box in which we can see the track of radiation.”

“Why can we see the radiation?”

“Alcohol vapor is in the box. When radiation enters in the box, the air in the box is ionized. Then alcohol molecules attach to the ion, and it becomes large particles of visible size. They are like alcohol clouds.”

The female students earnestly answered to the children who repeated questions while looking into the equipment they have never seen.

Koriyama Women's University is situated in Koriyama City, Fukushima Prefecture. In the campus festival held there, a booth of "radiation and decontamination" was open in a corner of the campus. There, the demonstration of a cloud chamber was performed by the members of a student club named "Natural Lifestyle Club (NLS)". When a student was at a loss for an answer, the staff of the Japan Atomic Energy Agency (JAEA) sometimes helped the student.



Koriyama Women's University held a campus festival on 4th and 5th October. This festival is called "Momiji-Kai", which means "maple party". In the festival, students presented outcomes of their study in each department. Also there were various attractions such as concerts by music clubs and refreshment booths that both children and adults could enjoy.



As one of those events, a project with the theme of radiation and decontamination was carried out this year. This project was conducted in cooperation with Fukushima Prefecture. At this special booth, they presented the results of the measurements of the air dose rates in the campus and gave demonstrations of how to make and use the cloud chamber.



Students measured air dose rates in the campus and presented the results

For presenting the results, the students measured air dose rates, in advance, throughout the campus under the guidance of the staff of JAEA. The instruments they used were stick-type detectors called "γ plotter", which was developed by the Fukushima Environmental Safety Center, JAEA. Using γ plotter, air dose rates of 5 cm and 1 m above the ground can be measured simultaneously. The information of the measured position is automatically recorded since it is equipped with high-performance GPS. The measured results are shown in the map on a display of PC at real time.

In the corners of the athletic ground and parking lot of the campus, soil produced by the

decontamination work is stored. There, the students measured the air dose rates. As a result, it was clarified that the air dose rates near the stored soil is not so different from those in the other places. The students presented this result at the booth using panels.

Seeing radiation with a cloud chamber

Then, they demonstrated the cloud chamber. With a cloud chamber placed in the booth, the students explained the mechanism of the cloud chamber. High-energy radiation always comes to the earth. The students explained why the tracks of radiation could be seen as plainly as possible, by taking an example of artificial cloud created by an aircraft. For example, they explained, “There is a sky in the box”, and “The cloud of alcohol is produced”. Further, the features of α -ray were explained. They successfully demonstrated that α -ray is stopped by a thin sheet of paper.

Finally, they demonstrated the fabrication of a cloud chamber. The materials are a transparent cup, black paper put on the bottom of the cup, airtight tapes that fill the gaps, and alcohol, all of which we can obtain easily. As a radiation source, a mantle¹ for a lantern was used. The students who learned how to make a cloud chamber in advance explained the method to visitors, and made it together with them. Children could also



¹ Light-emitting material used in an oil lamp. It sometimes contains radioactive thorium.

make it well and were able to see the radiation.

The Fukushima Environmental Safety Center of JAEA participated in this project from the planning stage with Fukushima Prefecture and the club members of Koriyama Women's University. JAEA cooperated by providing the measuring equipment, and instructing the measurement training and the demonstration of a cloud chamber, etc. Through these activities, the students learned kinds and features of radiation. They also learned the difficulty in plain explanation which is necessary for risk communication. The visitors also seemed to understand kinds and features of radiation through the students' earnest explanation and demonstration.

The Fukushima Environmental Safety Center, JAEA, will continue answering the questions about radiation, and contribute to the better understanding of radiation through supporting universities and technical colleges in cooperation with Fukushima Prefecture.

TOPICS Fukushima No.55

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