



## **Technical college students learned radiation, decontamination and risk communication**

### **Report on the cooperative project of Fukushima Prefecture and Fukushima National College of Technology**

The Japan Atomic Energy Agency (JAEA) conducted lecture and practical training course concerning radiation and decontamination for the students of the Fukushima National College of Technology three times (from November to December, 2014), as a part of “Fukushima-Prefecture/University Cooperative Project for Risk Communication”.

The first training course held on 8<sup>th</sup> November, 2014 was focused on the fundamental knowledge about radiation and measurement of radiation. At the beginning, Mr. Atsushi Katayama of the Nuclear Plant Decommissioning Safety Research Establishment (the office is located in the campus of the Fukushima National College of Technology) gave a lecture entitled “Fundamentals of Radiation”. The students learned kinds of radiation, decay and half-life of radiation, natural radiation in the environment and in our body, and its effect on our health. They also learned about radiation measurement, such as how to choose correct instruments for different kinds of radiation, the principle of radiation measurements, and measurement of radiation energy spectra.



Next, the students experienced the observation of radiation with cloud chamber, and practiced the radiation measurement using radiation detectors. Using a cloud chamber, tracks of radiation (lines produced by radiation like vapor trail) can be observed without using radiation source (left photo). The students learned by the observation that there are natural radiation and radiation-emitting materials, and, from the length of the radiation tracks, there are different kinds of radiation around us. They also learned by the observation that alpha-rays are stopped by a thin piece of paper using natural alpha-ray emitting stones.



In the practical training of measurements, the students measured the air dose rates inside and outside of buildings using sodium iodide (NaI) survey meters. They learned that the radiation dose rates are slightly different depending on the position because of the difference in the direction of radiation and the existence of the radiation source. Next, they measured the radiation in tangle (“Kombu” in Japanese), granite, and fertilizer using Geiger Müller (GM) survey meters. They learned that there are many materials such as foods that contain radioactivity around us, and radiation is emitted from these materials (left photo). As a result of measurement, they understood that the measured values were reduced when the detector was moved far away from the radiation source and when a lead/acryl plate was placed between the radiation source and the detector. In addition, they learned the important points for radiation measurements such as the direction of the

detector and periodical calibration of the detector.

In the second course held on 6<sup>th</sup> December, a lecture was given on decontamination and actual measurements at the temporary storage place. Mr. Kawase, Mr. Sanada and the other staff of the Fukushima Environmental Safety Center (the office is located in Fukushima City) lectured on the methods for decontamination and the present status of the decontamination in Fukushima Prefecture. They also explained the Decontamination Technology Demonstrations Project by Fukushima Prefecture and Ministry of Environment, and the current conditions of the development of remote monitoring technology by JAEA. The students learned that the radiation measurements before conducting decontamination is important. They also learned the various decontamination methods and the latest technology of decontamination and radiation monitoring.



After the lectures, the students visited the temporary storage place in Iwaki City, and there they learned the structure and safety of the storage place (left photo). Then, they brought survey meters and stick-type detectors called  $\gamma$ -plotter developed by JAEA, and measured the radiation in temporary storage place and its surrounding (lower-right photo). Through the experience in visiting the temporary storage place and measuring the radiation, many of the students seem to be relieved from anxiety they have felt vaguely about temporary storage place.

In the final course held on 13th December, they learned the risk communication through a mock briefing session for residents. There, the students play roles of residents who have small children, administrative officers, and experts on radiation. The topic of the meeting was “Decontamination and Temporary Storage Place”.

Ms. Yuko Sakita (journalist/environmental counselor of the Ministry of Environment) who is actively working in Fukushima Prefecture instructed the students so that the briefing session for the residents will be a “place for conversation”. Ms. Sakita gave a lecture entitled “Conversation with the residents and communication to understand each other”, and lectured on the necessity of conversation with





residents and how to proceed with the briefing session for residents. Mr. Aoki and the staff members of Fukushima Environmental Safety Center, JAEA, supported the students playing respective roles with the administration staff of Iwaki City Office and Fukushima Prefectural Office.



The students understood many things in a short time in this program through the lectures, practical training for radiation measurements, visit to temporary storage place, radiation measurements there, and the explanation by the administration staff of Iwaki City Office. In the mock briefing session, students playing roles of administration staff and experts answered with slides to students playing residents and asking both simple and difficult questions. They borrowed handmade items that were actually used in the real briefing session for residents from the local governments, and used them in the session (upper-left photo). The students seemed to feel that the scheduled time is too short. They played very well against the anticipation that the roles of administration staff and experts might be difficult for them.



After the mock briefing session for residents, the students in every group exchanged their opinions about what they noticed and considered through the practical training. They discussed about what and how they can do for the residents to reduce anxiety and live at ease. They took notes about the discussion and put them on the panel. At the end of the three-day practice, the leaders of each group presented the result of the discussion (lower-left photo).

In the questionnaire and presentation, the students expressed many opinions, for example, “I was able to understand the decontamination”, “My impression about the temporary storage place has changed”, “It is important to obtain correct knowledge”, and “I learned the importance of conversation and communication”. Also, we were impressed by the high interest of students which was shown by the following questions from them: 1) How is the water produced by the decontamination treated?; 2) Is the decontamination really needed?; 3) How much is the total cost of

the decontamination?; and 4) What should be done to eliminate the reputation damage?.

JAEA is cooperating the Decontamination and Risk Communication Project conducted by Fukushima Prefecture, and sent the lecturers to the symposium and meeting on radiation safety and decontamination held by Fukushima Prefecture. In the briefing session on the temporary storage place, JAEA takes charge in technical explanation about the temporary storage place based on the guideline of the Ministry of Environment. JAEA also takes charge in the measurements of the environmental radiation in the temporary storage place. In the explanatory meeting, the staff of JAEA answer the questions by the visitors, staff of local governments, and workers being engaged in decontamination. In the University Cooperative Project reported here, the lecturers and specialists from JAEA participated. Through the lectures and practices, JAEA is supporting the projects of Fukushima Prefecture.

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