Student of Fukushima College experienced practical training on environmental dynamics research

On a day of sweltering heat in July, a student of the National Institute of Technology (NIT), Fukushima College joined a summer training program on the "Environmental Dynamics Research" for understanding how radioactive materials move in forests. This program was held as a part of the Japan Atomic Energy Agency (JAEA)'s projects, aiming to give internship opportunities for students during summer vacation season. This is a report on the student who experienced to enter the forest, take soil and tree samples, and measure/analyze the radiation dose.

◇ Widening students' horizon by experiencing the practical training

In order to promote the understanding of nuclear energy and the development of human resources in nuclear energy field, JAEA has been inviting students to join summer practical training programs covering a wide range of subjects. The programs are also expected to facilitate the interaction between JAEA and universities/colleges, and also develop mutual collaboration and cooperation through accepting the internship students.

In this summer, one student of the NIT Fukushima College joined the training program on the topic of the "Environmental Dynamics Research on Radioactive Cesium in Fukushima Forests" organized by the Fukushima Environmental Research Group, Fukushima Environmental Safety Center.

◇ Preparation finished, then let's go to the first forest survey

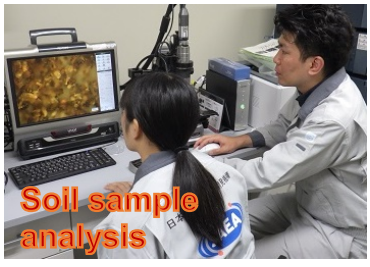
On the first day of the training, the orientation was held as to the aim and the previous work of the environmental dynamics research, the purpose of the training, procedure of the investigation, dangerous places, and precautions. This was followed by the practice of checking various instruments and confirming how to use them (right photo) towards the field research from the next day.

On the next day, the team went to a forest in Kawauchi Village, which is one of the research fields of the environmental dynamics research, to take soil and cedar samples. Although the temperature was near 30 degrees Celsius, they collected test samples of litter layer (fallen leaves and branches) and soil. Then, they peeled off the tree bark to make cylindrical trunk samples using a tool called "increment borer". They worked at the same site on the third day to measure the heights and diameters of the sample cedar trees. As information about the surroundings, they measured the air dose rate using a sodium iodide (NaI) survey meter and the contamination density of the soil and tree surface using a Geiger-Müller (GM) counter.

The result showed that the air dose rate inside the forest changes with various factors such as the angle/orientation of the slope and the distance from the soil. Finally, the team sampled cedar branches and leaves using high-reaching shears.

◇ Analyzing samples with state-of-the-art devices

Soil and tree fragment samples were taken back from the forest to the Miharu laboratory for detailed analysis. Before the instrumental analysis, various pre-processes are needed such as drying, pulverizing, and sieving. The student conducted these pre-processes persistently. After the pre-processing, the student measured the concentration of radioactive cesium in the samples using a germanium (Ge) semiconductor detector. The data were summarized by converting the results to the values corresponding to a stump



with a standard thickness. Then, they calculated the estimated air dose rate inside of a house made of these woods. From these practices, the student learned how to utilize the measured data. In addition, the student analyzed tree bark and leaves, together with soil taken from different areas using autoradiography that can visualize radiation. The student also identified the minerals contained in the forest soil based on the analysis by an X-ray diffractometer.

In the free time, the student exchanged information with the interns in the other programs. The student also interacted with and the other university/college students, and visited the other instruments used by the other training groups. Through these trainings, the student began to be interested in various fields and acquired the related knowledge.

◇ What was learned by the training

On the final day, the student gave a 20-minute presentation on the two-week program concerning the field investigation and the analysis as well as the impression of the training. The student said, “I was able to compare various samples in this training. Together with what I had learned in my previous program (a river research internship), this training has furthered my knowledge on the environmental dynamics of radioactive cesium. This was also an opportunity to discuss and share ideas directly with the staff of JAEA and the other interns. It was really a great experience. If there is a chance, I would like to join again another program.”

When I heard this talk, I had an impression that the student was further interested in the environmental dynamics research and JAEA.

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