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Topics Fukushima introduces JAEA's activities related to Fukushima.

Lichens for study of radiocesium migration

Basic research commences in collaboration with National Museum of Nature and Science

Grayish patches resembling stains can sometimes be seen on the bark of trees such as cherry and beech. Similar patches can also be seen on rock surfaces. These are called "lichens." Though confused with moss due to their visual similarity (see the picture on the right), lichens belong to the fungi family and grow symbiotically with algae. While plants absorb nutrition and water through the roots, lichens do not have roots and take up nutrition and water directly through their body surfaces. Slow growth in their habitat over a long period of time (several millimeters in a year) is another characteristic of lichens.

Such lichens have become a point of great interest lately due to their nature of accumulating various materials for a long period of time. This also applies to radioactive materials; after nuclear tests in the past and the accident at Chernobyl, it was reported that radioactive materials had accumulated in lichens.

Focusing on this specific characteristic of lichens, JAEA has commenced a study in collaboration with an independent administrative institution, the National Museum of Nature and Science to analyze the parts of lichens absorbing radiocesium discharged due to the accident at the Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi Nuclear Power Station and the amount of the accumulating radiocesium. On December 17th, 2012, some lichen samples were collected for the study from the surfaces of trees and rocks in a park in Fukushima City (see the picture on the left). Measurements of the radiocesium concentration will be carried out on these collected samples.

The investigation area for this research is planned to be extended in Fukushima Prefecture and other areas in order to select the types of lichens suitable for studying the medium- and long-term migration of radiocesium in the environment (environment dynamics). Understanding the tendency of radiocesium accumulation in lichens would be useful for estimating the fallout amount of radiocesium at the time of the accident. Also, it is expected that continuing comparison between the radiocesium concentration in lichens and that in the surrounding trees and soils will allow for assessment of the migration speed of radiocesium for the area.