

NIES Letter FUKUSHIMA

We, at NIES Fukushima Branch, carry out various environmental emergency research in collaboration with researchers within and outside our institution.

The 2nd Fukushima Branch Exchange Seminar in Tsukuba

During the afternoon of August 10 (Friday), the 2nd Fukushima Branch Exchange Seminar in Tsukuba, which took place for the first time last year, was held at NIES Tsukuba Headquarters (Tsukuba City, Ibaraki Prefecture). We invited Dr. Akira WATANABE, a specially appointed professor of Fukushima University, as a keynote speaker to talk about issues of and expectations towards environmental research in Fukushima Prefecture. A Panel discussion and a poster session were held concurrently. The theme of the panel discussion was the New Development in Environmental Research in Fukushima, in which the importance of NIES Fukushima Branch carrying out research in collaboration with local communities was acknowledged, and panelists exchanged opinions regarding the issues and directions of forthcoming studies. At the poster session, the young researchers in particular, introduced the findings of environmental emergency research that NIES Fukushima Branch and the Headquarters are jointly carrying out in collaboration. With over 80 participants, including president and vice presidents, we were able to deepen collaborative exchanges between NIES Headquarters and the Fukushima Branch.

▼ Panel discussion



Event Report

The International Advisory Board (IAB) Meeting

On August 28 (Tuesday) and 29 (Wednesday), we held the International Advisory Board (IAB) Meeting at the Tsukuba International Congress Center. The aim of the Meeting, which is participated by all sections of NIES, was to gain a wide variety of advice and cooperation from international researchers regarding research contents and directions. The target research of this year's meeting was the environmental emergency research mainly being carried out at NIES Fukushima Branch. We had invited three renowned scholars as advisors: Prof. Miranda SCHREURS of the Technical University of Munich (Germany), Prof. Yong-Chil SEO of Yonsei University (Korea), and Dr. Klement TOCKNER of the Austrian Science Fund. At the meeting, we were able to obtain much valuable advice in relation to issues and development of environmental emergency research. On August 30 (Thursday), we invited participants to visit the interim storage site in the Nakadori area (Fukushima Prefecture) and the smart community program site around the Shinchi Station, both of which utilize the study findings of NIES Fukushima Branch, to see the cases of our research's social implementation.

▼ Touring the Shinchi Town Smart Community



Greetings from Hiroyuki FUKUDA, NIES Fukushima Branch Director



Hello everyone, I am Hiroyuki FUKUDA, the Branch Director of NIES Fukushima Branch.

I took this post in July and it has already been almost two months. Before this, I was doing information-related work at NIES Tsukuba Headquarters. Moving to Fukushima for the first time, not only my job but my life itself has changed a great deal (of course, I had visited Fukushima many times for sightseeing in previous years.). Living here, I realize that Miharu Town, where the Branch is located, as well as the surrounding areas has the scent of history and culture and is blessed with rich nature. I am truly grateful to be provided with an opportunity to live and work in this kind of environment.

At the Fukushima Branch, we strive to carry on our research, with the support from local residents, to contribute in environmental recovery and environmental renovation. We truly appreciate your continued support.



Can Radiocesium from the Accident Be Found Indoors?

TAKAGI Mai, Researcher, Environmental Impact Assessment Section, NIES Fukushima Branch

Radiocesium in House Dust

Yes, radiocesium from the accident can be found inside houses in areas exposed to the plume of radioactive material resulting from the accident, albeit in very small quantities.

Between April and June 2012, we investigated the dust (collected from vacuum cleaners) from about 250 houses in southern Ibaraki Prefecture and northwestern Chiba Prefecture. While the variation between houses is very large, around 1,500 becquerels of radiocesium (total for cesium-134 and cesium-137) per kilogram were detected on average (see diagram). While this figure seems high at first glance, because it is expressed in becquerels per kilogram (Bq/kg), the quantity of dust actually gathered in a vacuum cleaner in a month is a few dozen grams at most, which equates to only a small quantity of radiocesium.

Why Do We Need to Worry about House Dust?

We ingest house dust without realizing it. Small children in particular often put their hands and various objects in their mouths, leading to the possibility of their consuming dust as they do so. In addition, dust that has been stirred up can be inhaled and adhere to the inside of the mouth and nose, ultimately entering the digestive tract in our saliva. One overseas study found that children ingest an average of about 60 milligrams (mg) of dust per day, while the figure for adults is about 20 mg/day⁽¹⁾. Someone ingesting 60 mg/day of dust with a radiocesium content of 1,500 Bq/kg would have had an internal exposure dose of 0.001 millisieverts (mSv) per year through house dust as of 2012, when the samples were collected. (A Japanese person's average exposure dose from natural background radiation is 2.1 mSv.)

How Can We Reduce Radiocesium in Our Homes?

While ingesting dust makes only a small contribution to radiation exposure, we are conducting research aimed at examining ways to further reduce the quantity ingested, to enable people to live their lives with peace of mind. From our research to date, we have learned that repeated ordinary cleaning (using a vacuum cleaner) gradually reduces the concentration of radiocesium in dust. The results of the aforementioned study of 250 homes also showed that the concentration of radiocesium in dust was lower in homes where peo-

ple methodically wiped the floors with a damp cloth than in homes where they did not. Diligent cleaning also helps to prevent dust from being stirred up and from becoming attached to children's hands and toys. House dust contains not only radioactive material, but also various chemical substances that can be harmful to our health. We particularly recommend diligent floor cleaning (preferably including wiping floors with a damp cloth) in homes with small children.

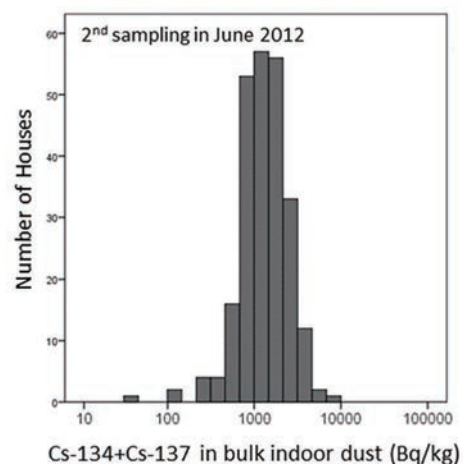


Figure Frequency distribution of radiocesium in dust (vacuum cleaner dust) collected from homes in southern Ibaraki Prefecture and northwestern Chiba Prefecture in June 2012

Current and Future Studies

We are currently undertaking a study of homes in areas of Fukushima Prefecture to which people are expected to return following the lifting of evacuation orders. There are reports that insoluble radiocesium-bearing microparticles have been found inside homes near the Fukushima Daiichi Nuclear Power Station⁽²⁾. To ensure that citizens can enjoy greater peace of mind in their daily lives, we are investigating the routes via which radiocesium can enter homes and the places and forms in which radioactive material has the potential to build up within the home.

Reference

- (1) US EPA, (2011) Exposure Factors Handbook
- (2) Higaki et al., (2017) Journal of Environmental Radioactivity, 177, 65-70



Entering Difficult-to-Return Zones for Ecosystem Studies

YOSHIOKA Akira, Senior Researcher, Environmental Impact Assessment Section, NIES Fukushima Branch

The National Institute for Environmental Studies (NIES) conducts ecosystem studies in the Difficult-to-Return zones in areas subject to evacuation orders. Difficult-to-Return zones are the areas to which entry is tightly restricted, because there is a risk of the cumulative annual dose not falling below 20 mSv for several years after the accident. These studies mainly involve the use of equipment that functions without the need for a person to be present, such as automatic wildlife cameras and special traps, but it is still necessary for people to enter the zones to install and recover such equipment. This article outlines the procedures required for this from the perspective of those working in the field.



Trap installed in a Difficult-to-Return zone for an insect study

Process Established by NIES

NIES has prescribed various rules to ensure safety when entering evacuation order areas. Anyone wishing to enter such an area to carry out duties associated with their research must first draw up a research protocol and have it approved by the President of NIES after submitting it to the institute's Disaster and Radiation Research Safety Committee. Once this has been done, individual researchers are registered on the approved research protocol as Disaster and Radiation Research Workers, enabling them to enter the areas in question. Naturally, form-filling alone does not guarantee safety. Disaster and Radiation Research Workers are obliged to attend one training course per year, undergo two special health examinations per year, and wear a personal dosimeter to measure their exposure dose during working hours.

Each time they actually go to one of these areas to conduct a study, research workers submit details to the institute, including the study dates and content, and their address in the area being studied. Some biosurveys involve traveling around several sites without a specific address in a single day, so research workers draw the route they plan to take on a map and hand this over, as well. Only once all these procedures have been completed does the institute permit research workers to enter the areas in question.



Personal dosimeter worn by Disaster and Radiation Research Workers

Local Government Procedures

As well as completing the procedures prescribed by the institute, it is necessary to obtain approval from the local government with authority over the study area. In studies focused on insects, which are the main responsibility

of the author, survey equipment is installed in the grounds of elementary schools or meeting halls. Accordingly, before the studies began in 2014, the research team explained the research protocol to relevant departments, including the boards of education of all the municipalities in the study area, and obtained their consent (this procedure is the same as for study sites outside areas subject to evacuation orders). These procedures are required each time research workers enter the area to conduct studies.

Ecosystem studies mainly involve entering the Difficult-to-Return zone in the town of Namie and the department responsible has granted permission for this on the grounds that such visits constitute "temporary entry in the public interest." When entering the zone for this purpose, it is necessary to submit several weeks beforehand an application that includes such information as the nature of the work to be carried out, a list of the individuals who are due to enter the area and their contact details, and the number plate of the vehicle to be used. If there are no problems, a permit is issued, which must be carried in the vehicle specified in the application, without fail, while conducting the study. Following the reopening of National Route 114 in September 2017, barricades have been installed on a number of side roads, so it is necessary to make a reservation for a specified time of entry by the morning of a day before the entry if one wishes to enter a study location beyond one of these barricades.

The Day of the Study and Afterwards

On the day of the study, the research workers install or recover their survey equipment, while ensuring that they take the safety precautions specified in the institute's rules, such as wearing protective clothing.



Barricade installed on a side road off Route 114

When conducting studies in summer, great care must be taken to avoid heat stroke, as it becomes very hot when working in protective clothing. If research workers need to enter areas beyond the barricades, they must swiftly carry out tasks at each site and move from place to place, as being late would inconvenience the security guards who come to unlock the barricades. Once the study has been completed, the research workers must go to the designated screening site, without fail, to undergo tests to ensure that vehicle surfaces and the researchers themselves are not contaminated. After returning to NIES, the research team tests the dose inside the car and in the samples, records their exposure dose, and submits an entry report to the Tsukuba headquarters and the town government.

Thus, studies in the Difficult-to-Return zone require various procedures and the cooperation of relevant stakeholders. All members of NIES are keen to do their utmost to ensure that the precious data gathered as a result of this process is utilized effectively.

Recent events

August

Aug.
7

Six members including those of the Management Strategy Conference Executive Board of Fukushima Prefectural Centre for Environmental Creation and the head of the Environmental Research and Technology Office, General Policy Division, the Ministry of the Environment Minister's Secretariat toured our facility.

Aug.
10

The 2nd Fukushima Branch Exchange Seminar in Tsukuba was held at the NIES' Tsukuba headquarters (Tsukuba City, Ibaraki Prefecture).

Aug.
23

About 26 participants of the Fukushima Field Monitoring Seminar hosted by the Atomic Bomb Disease Institute, Nagasaki University toured our facility.

Aug.
28-30

The International Advisory Board (IAB) Meeting was held in Tsukuba City, and the participants toured the related facilities in Fukushima Prefecture on Aug. 30.

Akira WATANABE, a specially appointed professor of Fukushima University, gave a lecture on the theme of "Fukushima's lessons and issues" at the Fukushima Branch Exchange Seminar in Tsukuba.



The members introduced the development of their research programs, and exchanged opinions with the other members at the IAB Meeting in Tsukuba City.

September

Sep.
20

The Sustainable Development Goals (SDGs) Workshop was held in Koriyama City hosted by the NIES, the Utsukushima NPO Network, and Koriyama City.

Sep.
21

Five members of the Life Environment Division of Koriyama City, Fukushima Prefecture, and the Climate Change Policy Headquarters of Yokohama City toured our facility.



The workshop was held on the theme of "Utilization of the SDGs for Sustainable Regional Development."

NIES Fukushima Branch News Letter No.5 2018

Date of issue October 17,2018

(Every other month bimonthly publication)

Edit / issue NIES Fukushima Branch

10-2 Fukasaku, Miharu, Tamura District, Fukushima,
963-7700, Japan

E-MAIL fukushima-po@nies.go.jp

Website <http://www.nies.go.jp/fukushima/>



Website



ACCESS
MAP

You can also read
the past NIES letter
Fukushima on the
Website

