NIES Letter FUKUSHIMA

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Website

The latest news on environmental emergency research at the National Institute for Environmental Studies (NIES)

Public lectures held in two Fukushima Prefecture towns (Mishima town, Miharu town)!

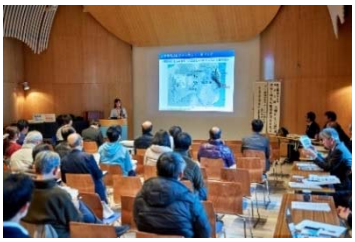
We held NIES public lectures in Mishima's Yamabiko Community Center on December 17, 2017, and Miharu's Mahora Community Hall on January 14, 2018.

Public Lecture Report Mishima: Thinking About Community-Based Energy

NIES and Mishima signed a Basic Cooperation Agreement in August 2017, and have since conducted joint research on environmentally sustainable community development based on the use of local resources. Organized jointly with Mishima, the public lecture presented the results of research to date to an audience of local residents. The lecture was followed by a panel discussion on community-based energy. Mishima Mayor Gensei Yazawa (left) joined the other panelists to discuss the importance of utilizing local resources as renewable energy and related issues. Attendance was unfortunately affected by snowy weather, but the event nevertheless drew an audience of 27 people from Mishima and surrounding municipalities. Participants commented that the event had helped to deepen their understanding of NIES activities, community-based energy and the utilization of forest resources. It also served to highlight future challenges and the need for deeper discussion of specific actions.

For further details of the Mishima public lecture, click here: http://www.nies.go.jp/fukushima/demaekoza.html#tab3

Public Lecture Report Miharu: Thinking About Today's and Tomorrow's Local Environment



We joined the town of Miharu, where the NIES Fukushima Branch is located, to hold a public lecture titled "Thinking About Today's and Tomorrow's Local Environment." After we introduced our ongoing research on the movement of radiocesium in fish and other aquatic organisms in rivers and lakes, and on simulation models for considering the future of the local community and environment, Kazuo Anzai of the Miharu-no-Sato Becquerel Center talked about trends in the concentration of radioactive substances in foodstuffs based on the results of inspections carried out at the Center. We also staged various side events, including the demonstration during the break of a viewer-friendly 3D projection mapping exhibit of the regional environment (photo on right). The lecture drew an audience of 36 people from Miharu Town and the neighboring city of Koriyama. The participants' keen interest in the local environment was evident from both the question time and questionnaire responses, impressing upon us the need to continue to communicate our findings to the local community.

For further details of the Miharu public lecture, click here:http://www.nies.go.jp/fukushima/demaekoza.html

Recent events

December: Four groups visited NIES Fukushima Branch and toured the facilities, including 13 Fukushima Prefecture high school science teachers (Dec. 1), and Tadahiko Ito, State Minister of the Environment (Dec. 20).

We also held a NIES public lecture for Mishima in the town's Yamabiko Community Center (Dec. 17).

January: We held a NIES public lecture for Miharu in the town's Mahora Community Hall (Jan. 14).

A group of two including a former vice president of Chubu Electric Power (Jan. 16) and 25 members of the Nuclear & Radiation Division of the Institution of Professional Engineers, Japan (Jan. 26) visited our facility.

ShibuShibu-kun's advice

To what extent should we deal with environmental risks when disaster strikes?

Ryo Tajima, Senior Researcher, Strategic Environmental Emergency Management Section,Fukushima Branch

Environmental impacts matter even when disaster strikes

Our lives are affected in many ways when we suffer a disaster. We find ourselves suddenly faced with numerous worries, including our own safety, the wellbeing of loved ones, food, clothing, and shelter, and earning a living. But does the word "environment" figure anywhere in your list of potential worries?

Experience gained from past disasters has taught us that disasters invariably impact the environment in various ways. The nuclear power plant accident that occurred as a consequence of the Great East Japan Earthquake scattered radioactive substances into the surrounding environment, bringing various impacts. Disasters can bring all sorts of other environmental impacts as well, including the scattering of asbestos dust when demolishing buildings struck by disasters; the impact of restoration and reconstruction projects on wildlife habitat; and foul odors, noise and vibration from temporary storage areas used for initial sorting of accumulated disaster waste. Objective and scientific risk assessment is vital to considering how we deal with environmental risks (the likelihood of such environmental impacts occurring). However, objective assessment alone cannot provide an answer to the question of what level of environmental risk should require active regulation, since this is a matter that also involves subjective judgments. As such, in addition to risk assessment, we need to think about how people subjectively or intuitively perceive risk (= risk perception).

Perception of environmental risks accompanying disasters

Many different studies have been carried out on risk perception from long ago, and various factors are known to affect our risk perception. These include, for example, whether or not one is voluntarily exposed to undesirable circumstances (e.g. active smoking vs passive smoking), whether one can control circumstances to avoid undesirable outcomes (e.g. driving a car oneself, or sitting in the front passenger seat), whether the mechanism leading to undesirable outcomes is scientifically evident (e.g. a scientifically well-known chemical vs a novel chemical). In addition to the above-mentioned risk perception, the decision to take action to avoid a certain risk is known to be decided by a great many mechanisms, being influenced both by other psychological factors such as perception of the cost of action to avoid risk (such as labor), and by external factors such as exposure to information via mass media or Facebook and other social media.

Given that these factors apply to both disaster situations and normal times, are there any distinctive factors that apply only to disasters? Our research to date has revealed the following:

(1) Many people feel that environmental risks are inevitable when disaster strikes (Fig. 1).

(2) The feeling that disasters inevitably engender environmental risks tends to make people think that environmental risks needn't be addressed when disaster strikes.

(3) However, the mechanism described in (2) does not come into play in the case of people in poor health, or in cases in which environmental risks such as asbestos dust prompt fears of adverse health impacts even in healthy people.

The above suggests that the way we deal with environmental risks associated with disasters needs to be clarified according to the nature of the risks and the people exposed to those risks. We will continue to research environmental risks from both assessment and perception aspects so as to make recommendations on how to deal with the environmental risks associated with disasters.

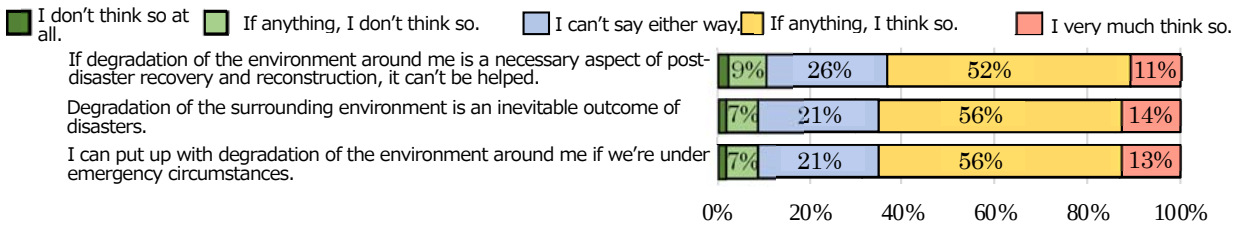


Fig. 1 Thoughts on whether to accept environmental risks when disaster strikes (survey of 1500 people)[Source:Reference (1) p49]

<References>

1. Tajima R, Tasaki T. 2017. *Daikibo shizensaigai ni tomonau kankyo risk no kanri ni taisuru shimintaido* ("Attitudes of the general public toward the management of environmental risks associated with large-scale natural disasters") Environmental Science 30 (2): 44-56 (Japanese only)

2. Nakayachi N. 2012 *Risk no shakai shinrigaku* ("The Social Psychology of Risk") Yuhikaku Publishing, 287p. (Japanese only)

On-site disaster waste responses

Kazuto Endo, Senior Researcher, Center for Material Cycles and Waste Management Research
(concurrently) Fukushima Branch Radiological Contaminated Off-Site Waste Management Section
(concurrently) Fukushima Branch Strategic Environmental Emergency Management Section

Disaster waste sites

When a disaster occurs, it inevitably generates a considerable amount of waste. As a research institute, NIES of course supports the formulation of plans for treating disaster waste through the Ministry of the Environment's Disaster Waste Treatment Support Network (D.Waste-Net), but we will focus here on what we do at the site of a disaster and introduce an example of the initial response in the field when confusion prevails. This initial response is not research itself, but rather technical support by researchers with disaster waste site experience; these researchers engage in specific environmental protection activities. The knowledge and experience gained by providing such support is put to use in disaster waste-related training and the building of support systems (see "From the research front line" in the December 29, 2016 issue of NIES Letter Fukushima).

Managing temporary disaster waste storage sites

When a disaster occurs, temporary storage areas need to be created for interim storage of the generated disaster waste. This is because to rebuild their lives, disaster victims need to clear their properties of damaged buildings and other disaster waste (including waste that may have originated elsewhere) as soon as possible. Once disaster waste is collected in temporary storage areas, it undergoes treatment such as shredding and sorting to recycle resources as much as possible. Effective recycling requires proper sorting in the temporary storage areas in much the same way that ordinary people in Japan are required to sort their garbage. However, both disaster victims and local authorities often face such chaos in the early stages after a disaster that communicating information is difficult, and disaster waste is not properly sorted as a result. We therefore go to help out at temporary storage areas at initial response, supplying municipality officials with various information regarding signage for proper sorting, storage area traffic flow, and how to seed storage area sites with piles of properly sorted waste as a guide for subsequent loads.

Disaster waste that has spontaneously ignited

A heap of disaster waste where we monitored temperature

Investigating disaster waste for asbestos dispersal

If combustible waste, waste straw mats and wood etc. is piled high and nothing is done, it may begin to ferment or oxidize, generating enough heat to spontaneously ignite. Once piles of accumulated disaster waste begin to burn, they can be extremely troublesome to extinguish, so we instruct the managers of temporary storage areas on how to pile up waste in a way that prevents spontaneous ignition. We also sometimes climb such piles of disaster waste to measure temperature and check their safety.

Dealing with asbestos

Asbestos can cause mesothelioma (lung cancer). Asbestos was used in the past as fireproofing for steel-framed buildings. Since it is hidden away beneath roofs, asbestos cannot usually be seen, but when a steel frame coated in asbestos fireproofing is exposed to the wind as a result of a disaster, asbestos may be dispersed into the atmosphere. Roofing and other building materials containing asbestos were also often used for the roofs and other parts of factories, bicycle parking lots and other buildings in the past. Exposure to wind and rain does not cause this asbestos to scatter, but if fragments of such roofing or wall material fall to the ground as a result of the disaster, and are then crushed by vehicles passing over them, this can cause the asbestos they contain to scatter. Although inhaling asbestos does not necessarily cause mesothelioma long-term exposure to asbestos dust over a number of years increases the likelihood of suffering mesothelioma; therefore, prioritizing measures to minimize the scattering of asbestos in the event of a disaster is vital. As such, we may also investigate the extent to which asbestos has been scattered, evaluate results, and inform local authorities about the measures they should prioritize and such like.

<Visit the following websites if you wish to know more.>

1. Ministry of the Environment Disaster Waste Treatment Support Network (D.Waste-Net)
2. National Institute for Environmental Studies Platform of Disaster Waste Information