

July 10, 2023

ANEC Office

Practical training at JAEA Horonobe Underground Research Center and  
Horonobe Research Institute for the Subsurface Environment, Northern Advancement Center for  
Science & Technology

1. Summary

The purpose of this tour is to deepen understanding of research and development on geological disposal of high-level radioactive waste by experiencing some aspects of research and development in underground facilities.

At the Horonobe Underground Research Center of the Japan Atomic Energy Agency (JAEA) in Horonobe, Hokkaido, participants will visit the underground research tunnels and other facilities. The participants will also exchange opinions with the staff of the center.

At the Horonobe Research Institute for the Subsurface Environment, also in Horonobe, participants will learn about the current status of research on microorganisms, groundwater, sedimentary rocks, etc. conducted at the institute. (See Attachment 1)

2. Date and Time

Sunday, August 6, 2023, 12:50 p.m. - Tuesday, August 8, 2023, 7:30 p.m.

3. Practice Location

• Monday, August 7

Japan Atomic Energy Agency

Horonobe Underground Research Center

432-2 Hokushin, Horonobe, Hokkaido 098-3224, Japan

<https://www.jaea.go.jp/english/04/horonobe/index.html>

• Tuesday, August 8

Northern Advancement Center for Science & Technology

Horonobe Research Institute for the Subsurface Environment

5-3 Sakaemachi, Horonobe-cho, Teshio-gun, Hokkaido, 098-3221, Japan

[http://www.h-rise.jp/la\\_en/index.php](http://www.h-rise.jp/la_en/index.php)

See Attachments 2 and 3 for detailed practical training schedule and group assignment.

4. Itinerary

See Attachment 4 for detailed itinerary.

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**Meeting time and date: Sunday, August 6, 12:50 p.m.**

**Meeting place: In front of the main entrance of the Faculty of Engineering, Hokkaido University** (See Attachment 5: Campus Map)

Faculty, Graduate School and School of Engineering Hokkaido University

Kita 13, Nishi 8, Kita-ku, Sapporo, Hokkaido 060-8628, Japan

<https://www.global.hokudai.ac.jp/>

**It takes about 10 minutes from the nearest subway station (Kita 12-jo Station), so please be very careful.**

Emergency Contact

Hiroshi Nakashima

#### 5. Accommodations

• The following accommodations will be available on August 6 and 7 (the secretariat has already made reservations for all participants).

Hotel Toyotomi

Aza Onsen, Toyotomi Town, Teshio-gun, Hokkaido

(1510-2, Aza-Kami-Sarobetsu, Toyotomi Town, Teshio-gun, Hokkaido)

TEL: 0162-82-1055

<http://www.hotel-toyotomi.co.jp/kannai.htm>

• Please make your own payment on accommodation fee (9,800 yen per night with 2 meals) to the hotel.

• Those coming from far away should stay overnight in Sapporo on August 5. Please make your own arrangements for accommodation in Sapporo. **Please inform the secretariat by July 21 of the name of the hotel where you will be staying. If you do not notify us, we will not be able to pay your travel expenses.**

• Lunch (1000 yen each on August 7 and 8) will be collected, so please prepare cash.

Please bring your own drinks.

## 7. Prior learning

**Before participating in the practical training, please study the following study materials in advance. At that time, please be sure to raise at least two or three points of interest and question, and be sure to respond to the ANEC office. The deadline is Friday, July 21. Failure to submit the materials will result in the denial of travel expenses.**

- Link to video of tunnel excavation

Horonobe Research Institute for the Subsurface Environment Introduction to Underground Tunneling (prepared in December 2012) – YouTube (In Japanese)

[https://www.youtube.com/watch?v=cS8C\\_UMaXMY](https://www.youtube.com/watch?v=cS8C_UMaXMY)

- Nuclear Human Resource Development Project (\*) #03 "Radioactive Waste Disposal Engineering

Lecture 7: Research and Development in the Deep Underground Research Laboratory

(Dr. Asao Fujita, Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry \*Formerly with Japan Atomic Energy Agency)

(In Japanese)

<https://ocw.hokudai.ac.jp/lecture/backend-radioactive-waste-disposal-engineering>

< Other reference materials >

- Nuclear Power Human Resources Development Project (\*) #03 "Radioactive Waste Treatment Engineering

Lecture 1 and 2:

(Mr. Toshiaki Oe, formerly of the Department of Atomic Energy Engineering, Tokai University)

(In Japanese)

<https://ocw.hokudai.ac.jp/lecture/backend-radioactive-waste-disposal-engineering>

- Nuclear Human Resource Development Project (\*) #03 "Radioactive Waste Disposal Engineering

Lecture 4: Radioactive Waste Disposal Engineering 3

(Dr. Satoru Suzuki, Nuclear Power Environmental Improvement Organization)

(In Japanese)

<https://ocw.hokudai.ac.jp/lecture/backend-radioactive-waste-disposal-engineering>

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•Lecture 1: Scientific Characteristics Map for Geological Disposal of High-Level Radioactive Waste

(Dr. Hideaki Hyodo, Nuclear Power Environmental Improvement Organization of Japan)

(In Japanese)

<https://ocw.hokudai.ac.jp/lecture/nucl-eng-open-ed>

#### 8. Precautions

•If you have a body temperature of 37.5 degrees Celsius or higher, have lost your sense of taste, or otherwise feel unwell, please contact us immediately. If you have reservations for transportation, lodging, etc., please cancel them. If a cancellation fee will be charged, please request it later to the secretariat along with a receipt.

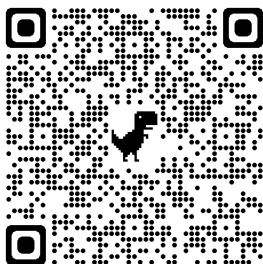
•Please refrain from participating in practical training if you have a fever or other illness in the two weeks prior to the training.

•Sterilization, etc. should be done frequently to prevent infection.

•Please follow the precautions for the practical training at Horonobe Underground Research Center.

#### 9. Questionnaire carried out in advance

**Please cooperate with us by filling out the preliminary questionnaire. Please scan the QR code below with your smartphone and respond by Wednesday, August 2.**



We will also ask for your cooperation after the tour, as we will conduct a questionnaire after the tour to see the effects of the tour.

Thank you for your cooperation.

## Tour of the Horonobe Research Institute for the Subsurface Environment

### 1. Objective

Northern Advancement Center for Science & Technology Horonobe Research Institute for the Subsurface Environment (H-RISE) : Horonobe Research Institute for the Subsurface Environment), JAEA The Horonobe Underground Research Center (URL) was established in June 2003 to conduct research on geo environmental remediation using the geosphere and its characteristics. We are conducting basic research on the geosphere environment and its engineering applications in the Horonobe and Tenhoku areas from the three viewpoints of subsurface microbiological environment, groundwater environment, and sedimentary rock properties.

The Institute has conducted both basic research aimed at obtaining scientific results from a long-term perspective and project research to revitalize local economies by applying basic research to improve local industries and living environments.

Therefore, this institute will learn about the results of these researches and their future prospects.

### 2. Contents

#### ① Overall Description

At the JAEA Horonobe Underground Research Center International Exchange Facility, you will receive an overall explanation of the Hokkaido Science and Technology Promotion Center and Horonobe Underground Research Center.

#### ② Visit to the laboratory of the Horonobe Research Institute for the Subsurface Environment

Three research groups, the Subsurface Microbial Environment Research Group, the Groundwater Environment Research Group, and the Sedimentary Rock Characterization Research Group, are conducting research on field science to understand the subsurface environment of diatomaceous rock formations and coal seams, and on the development of elemental technologies to realize methane gas deposit development and CO<sub>2</sub> storage using these underground environments, utilizing the Horonobe Underground Research Laboratory, which is under construction in a sedimentary rock formation, and the Tenhoku coal fields located in the northern Hokkaido.

We will visit the laboratories related to these activities.

#### ③ Question

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Please feel free to ask questions about our research on subsurface microbiological environment, groundwater environment, and sedimentary rock properties.

It can also be from the perspective of cooperation with the community, etc.

## Practice Training Schedule

	Group A (8 persons)	Group B (9 persons)
9:00	Explanation of the general situation, video of the tunnel excavation, and notes on entering the mine 9:00~9:40 [40]	
	Curriculum Description 9:40~9:50 [10]	
	Change of clothes 9:50~10:00 [10]	
10:00	Visiting the Zuri Pit 10:00~10:10 [10]	Tour of the Yume chisoukan/full-scale facility/observation deck 10:00~10:30 [30] Groundwater measurement practice (250m) 10:30~12:00 [90]
	Hands-on practice of elastic wave exploration (140m) 10:10~11:50 [100]	
11:00		
	Tour of wastewater treatment facility 11:50~12:00 [10]	
12:00	Lunch 12:00~13:00 [60]	
13:00	Tour of the Yume chisoukan/full-scale facility/observation deck 13:00~13:30 [30]	Visiting the Zuri Pit 13:00~13:10 [10] Hands-on practice of elastic wave exploration (140m) 13:10~14:50 [100] Tour of wastewater treatment facility 14:50~15:00 [10]
	Groundwater measurement practice (250m) 13:30~15:00 [90]	
14:00		
15:00	Change of clothes + rest 15:00~15:20 [20]	
	Lecture (Groundwater) 15:20~16:00 [40]	
16:00	Rest 16:00~16:10 [10]	
	Lecture (Drilling Impacts) 16:10~16:50 [40]	
17:00	Business communication	

Grouping

Group A	Group B
Hsueh, Pei-Tung	浅田 尚輝
Lin, Yi-Xuan	佐藤 文香
CHEN, BO-YUAN	川崎 敦基
Chen, Shang-Ying	河合 潤
Chang, Yu-Ru	鈴木 涼斗
Chong Hong Fatt	森田 大
大瀧 亮祐	石橋 賢人
三浦 劍士郎	荏戸 虎太郎
	小澤 諒弥



## Itinerary

August 6 (Sun.)

12:50 Gather at the main entrance of Faculty of Engineering, Hokkaido University

13:00 Departure from the main entrance of Faculty of Engineering, Hokkaido University  
(by chartered bus)

18:00 Arrival at Hotel Toyotomi

August 7 (Monday)

7:30 Breakfast

8:30 Departure from Hotel Toyotomi

8:50 Arrive at Horonobe Underground Research Center

9:00 Tour and practical training

12:00 Lunch

13:00 Tour and practice

15:00 Lecture

17:00 Departure from Horonobe Underground Research Center

17:20 Arrival at Hotel Toyotomi

August 8 (Tuesday)

7:30 Breakfast

8:30 Depart Hotel Toyotomi

Via Toyotomi Town Large Grassland Ranch

9:30 Arrive at Horonobe Underground Research Center

Group discussion

12:00 Lunch

12:50 Departure from Horonobe Underground Research Center

13:00 Arrival at Horonobe Research Institute for the Subsurface Environment

14:00 Departure from Horonobe Research Institute for the Subsurface Environment

14:20 Arrival at Horonobe Wind Power Station

14:40 Departure from Horonobe Wind Power Station

19:30 Arrival at Faculty of Engineering, Hokkaido University

Dismissal

