

2021

HSI Radioactive waste management (online)

<Schedule>

8/24 (Tue):

1. Introduction to Nuclear Fuel Cycle
2. Video lecture 1-1 (on demand)
Radioactive Waste Management Overview
 - Radioactive waste
 - Surface storage
 - Subsurface disposal
 - Multi-barrier system
 - Host rock

8/25 (Wed):

3. Questions and Discussions on video lecture 1-1
4. Video lecture 1-2 (on demand)
 - Repository safety
 - Glass
 - Spent fuel
 - Radionuclide mobility

8/26 (Thur):

5. Questions and Discussions about the video lecture 1-2
6. Video lecture 2 (on demand)
Low level waste: choosing a disposal site

8/27 (Fri):

7. Questions and Discussions about the video lecture 2
8. Student presentations

Example topics for student presentation

1. How can Japan manage high level radioactive waste?
2. What are the challenges in realizing HLW repositories?
3. What are the roles of deep underground laboratories?

2022

HSI Radioactive waste management (online)

<Schedule>

8/1 (Mon):

1. Introduction to Nuclear Fuel Cycle
2. Video lecture 1-1 (on demand)
Radioactive Waste Management Overview
 - Radioactive waste
 - Surface storage
 - Subsurface disposal
 - Multi-barrier system
 - Host rock

8/2 (Tue):

3. Questions and Discussions on video lecture 1-1
4. Video lecture 1-2 (on demand)
 - Repository safety
 - Glass
 - Spent fuel
 - Radionuclide mobility

8/3 (Wed):

5. Questions and Discussions about the video lecture 1-2
6. Video lecture 2 (on demand)
Disposal of nuclear waste in Belgium: status and research

8/4 (Thur):

7. Questions and Discussions about the video lecture 2
8. Student presentations

Example topics for student presentation

1. What is the policy and the framework of radioactive waste management in your country? Explain them considering what is explained in the lectures, i.e. rationales behind classification.
2. How much radioactive waste is generated and stored in your country? How much is expected to be generated? Consider all types of waste.
3. What types of host formation are included in consideration of nuclear waste repositories in your country? What are the advantages and inconveniences of those host formations?

4. Choose an example of an engineered barrier, and explain how the barrier contributes to the safety function of the repository. What are the potential limitations of the barrier you chose?
5. Choose a mechanism of radionuclide retention, and explain how it works. What is the role of radionuclide retention in nuclear waste disposal concepts?

Which mechanism controls the release of radionuclides from spent nuclear fuel, if it is disposed as waste? Compare and contrast with the release mechanism of radionuclides from glass.

2023

HSI Radioactive waste management (online)

<Schedule>

7/31 (Mon):

1. Introduction to Nuclear Fuel Cycle
2. Spent Fuel

8/1 (Tue):

3. Nuclear Glass
4. Decommissioning waste, Fukushima Daiichi Nuclear Power Station

8/2 (Wed):

5. Disposal Concept
6. Engineered Barriers - Clay

8/3 (Thur):

7. High Level Radioactive Waste Management in France, Taiwan, and in Japan
8. Student presentations

Example topics for student presentation

Summarize how your country deals with the following and discuss similarities/differences, advantages/disadvantages, challenges.

1. Spent fuel management
2. Repository design (deep geological/shallow, engineered barriers)
3. Decommissioning waste management (accelerators, research reactors, etc.)
4. Legacy waste management
5. History and evolution of radioactive waste management framework
6. Choose a type of waste from Fukushima Daiichi Nuclear Power Station and discuss how it is managed.