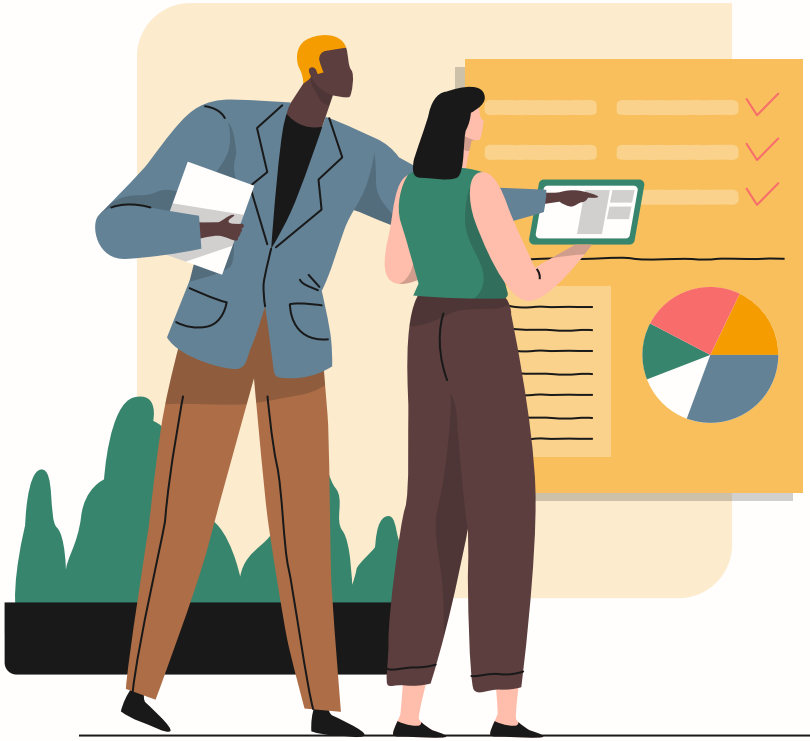

Comprehensive Analysis of Key Scientific Questions and Concerns in Geological Disposal of Nuclear Waste

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01

Scientific questions/concerns

Scientific Questions

1. What is the diffusion and migration rate of radionuclides in groundwater?
2. Is the geological structure of the disposal site physically and chemically stable?
3. How do different types of rocks and soils adsorb radioactive substances?
4. What impact will potential seismic or geological events have on the safety of the waste repository?
5. Can the packaging materials used maintain their integrity over hundreds or even thousands of years?

Scientific Questions

6-1. How do different geological conditions (such as granite, clay layers, etc.) affect the design of the waste repository?

6-2. What is the impact of the chemical composition and flow pattern of groundwater on the safety of the waste repository?

6-3. How will the pH value, temperature, and chemical composition of groundwater affect the migration of radioactive substances?

7. What impact will the construction and operation of deep geological facilities have on the surrounding ecological environment?

8. How to apply the prospective radiological risk assessment of the geological facility to the general public

Concerns

Long-term safety and monitoring

Compliance with policies and regulations

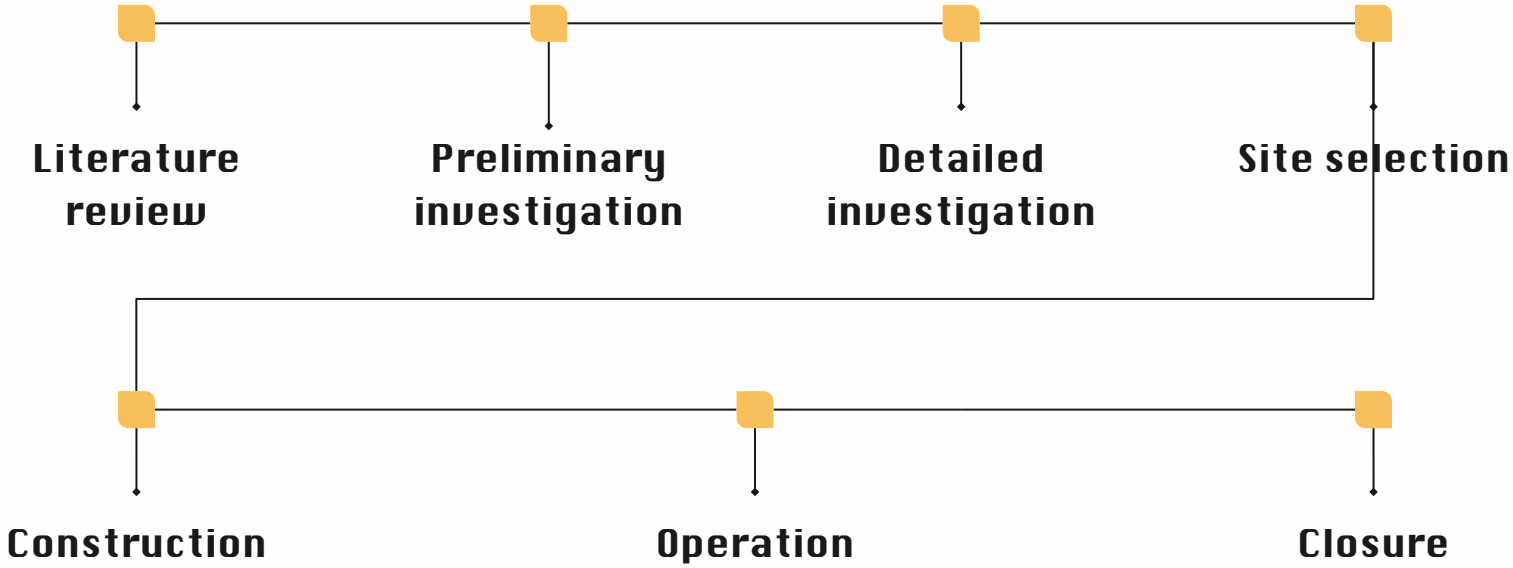
Social and public acceptance

Technical and economic feasibility

02

Timeline of Geological disposal

Timeline of Geological Disposal



03

In Horonobe URL

In Horonobe URL

Geological investigation

- Is the geological structure of the disposal site physically and chemically stable? the geological structure of the disposal site
- How do different types of rocks and soils adsorb radioactive substances? different types of rocks and soils adsorb radioactive substances
- How do different geological conditions (such as granite, clay layers, etc.) affect the design of the waste repository?

Elastic wave measurement

- What impact will potential seismic or geological events have on the safety of the waste repository?
- Can the packaging materials used maintain their integrity over hundreds or even thousands of years?

Water sampling&measurement

- What is the diffusion and migration rate of radionuclides in groundwater?
- What is the impact of the chemical composition and flow pattern of groundwater on the safety of the waste repository?
- How will the pH value, temperature, and chemical composition of groundwater affect the migration of radioactive substances?

04

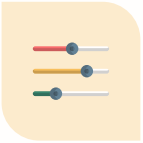
Answered the question

Lab experiments

Natural analogue study(ex. column experiment, batch experiment, field test)

What impact will potential seismic or geological events have on the safety of the waste repository?

Can the packaging materials used maintain their integrity over hundreds or even thousands of years?



How will the pH value, temperature, and chemical composition of groundwater affect the migration of radioactive substances?

Research at generic deep geological facilities

What is the diffusion and migration rate of radionuclides in groundwater?

Is the geological structure of the disposal site physically and chemically stable?

How do different types of rocks and soils adsorb radioactive substances?

Research at site-specific geological facilities

Is the geological structure of the disposal site physically and chemically stable?

How do different types of rocks and soils adsorb radioactive substances?

What impact will potential seismic or geological events have on the safety of the waste repository?

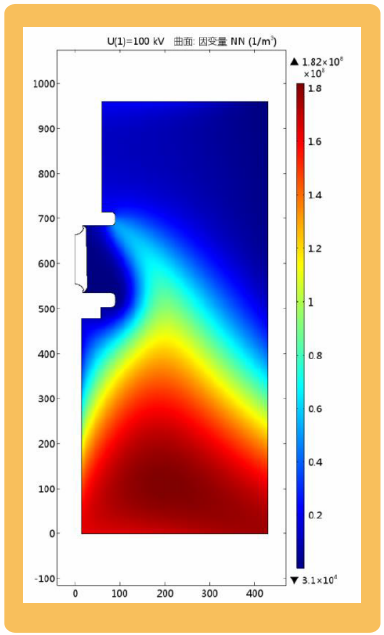
How do different geological conditions (such as granite, clay layers, etc.) affect the design of the waste repository?

Simulation calculation

What is the diffusion and migration rate of radionuclides in groundwater?

Can the packaging materials used maintain their integrity over hundreds or even thousands of years?

What is the impact of the chemical composition and flow pattern of groundwater on the safety of the waste repository?



How will the pH value, temperature, and chemical composition of groundwater affect the migration of radioactive substances?

What impact will the construction and operation of deep geological facilities have on the surrounding ecological environment?

How to apply the prospective radiological risk assessment of the geological facility to the general public?

05

Roles of URL

Roles of URL

Horonobe URL provides a generic research spot for geological structures and relative aspects. It also provides real data for further simulation and calculation models, which can also verify and improve the current existing model relating to geological disposal.

Thank You!!!

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