Natural and archaeological analogues in waste disposal

Held : 23-27, April 2007, Meiringen, Switzerland

Course Programme : PDF file 49 kb
Course Outline

This is a novel course for the ITC on the uses of information from natural and archaeological systems (or natural analogues) in radioactive waste disposal . The 5 day programme for 2007 features:

- Lectures on the fundamentals of using information from nature’s laboratories in support of radioactive waste disposal, with examples on near- and far-field processes, integration with laboratory and underground rock laboratory data and overviews of some of the major national analogue studies of the last two decades. Sufficient time will be allocated for questions and discussions in each presentation module.

- Two extended sessions will encourage more active roles for the participants: designing a national natural analogue programme using the top-down methodology and setting up a national communication campaign using data from natural analogues. These will then be presented and discussed with tutors and other participants from around the world.

- The final part of the course focusses on using natural and archaeological data in an integrated safety assessment – what to do and what not to do – and giving examples of how to use natural analogues in staff training.

The course is ideal for those involved in any component of a national waste programmes who are looking to learn how to utilise information from both nature and archaeology to improve our understanding of the long-term development of a repository and who are open to finding ways of improving public confidence in our ability to safely dispose of radioactive waste.
Course Organiser

The course is organised by the ITC-School, supported by a range of organisations and individuals who have been active in the natural analogue field for many years, including several founding and active members of NAWG (Natural Analaogue Working Group – see www.natural-analogues.com).
Teaching

The course will be held in an informal, workshop atmosphere and participants will be encouraged to interact and question at all times. Each course topic will be taught by highly qualified and internationally recognised specialists from a range of organisations active in the field of radioactive waste disposal. They will provide the most up to date and comprehensive information and discussions. Course materials will be provided for each topic. Modules will generally be taught throughout the day but there will also be two, focussed, group sessions where the participants will be split into small groups and encouraged to develop their own national NA programme and to design their own confidence building programme based on NA information.
Course Programme

Monday 23rd April

0830 - 0900

Introduction

N Chapman

R Alexander

0900 - 1030

The concept of geological disposal

N Chapman

1100 - 1230

Principles of the analogue approach

I McKinley

1230 - 1330

Lunch

1330 - 1500

Varieties of analogue studies (geochemical, archaeological, anthropogenic, radwaste, chemo-toxic, CO2 sequestration etc)

R Alexander

1530 - 1730

Video presentation and discussion

Participants and N.Chapman, I.McKinley, R.Alexander

Tuesday 24th April

Analogues of repository materials

0830 - 1000

Waste forms (volcanic glass, U ore, natural bitumen, novel wasteforms)

U Nosek

1030 - 1200

EBS (copper and iron artefacts, bentonite deposits, natural cement)

R Alexander

1200 - 1300

Archaeological analogues: examples from arid environments

N Chapman

1300 - 1400

Lunch

Analogues of far-field processes

1400 - 1600

Radionuclide retardation processes (geosphere sorption, matrix diffusion in crystalline and sedimentary rocks, redox fronts, colloids etc)

M Mazurek

1630 - 1730

How to design a national NA programme – bottom-up vs top-down

I McKinley

Wednesday 25th April

0830 - 1030

Group exercise: design a national NA programme

Participants and I.McKinley, R.Alexander

1030 - 1200

Group presentations: national NA programme

Participants

1200 - 1330

Lunch

Case Studies I – international NA studies

1330 - 1430

Cigar Lake

R Alexander

1500 -1630

Alligator Rivers

U Nosek

1700 - 1800

Poços de Caldas

I McKinley

Thursday 26th April

Case Studies II – international NA studies

0900 - 1000

Natural analogues of clay host rocks

1030 - 1130

Jordan cementitious analogues

L Trotignon

1130 - 1230

Loch Lomond and Needle’s Eye

J West

1230 - 1330

Lunch

Case Studies III – international NA studies

1330 - 1500

Tono Analogue Project (TAP)

K Ota

1530 - 1630

Oklo

R Alexander

1630 - 1800

Use of natural analogues for public communication

J West

Friday 27th April

0830 - 1030

Group exercise: design a national communication campaign using analogues

Participants and J.West, K.Ota

1030 - 1230

Group presentations: national communication campaign

Participants

1230 - 1330

Lunch

Analogues in perspective

1330 – 1430

Use in an integrated safety assessment

I McKinley

1500 - 1600

Challenges for the future

N Chapman

End of course