

CEMENT AND CEMENTITIOUS MATERIALS IN GEOLOGICAL DISPOSAL OF RADIOACTIVE WASTE

Switzerland, 15-19 December, 2008

Monday 15 th December	
	Introduction and registration
0930 – 1000	<i>Coffee/tea and registration</i>
1000 - 1020	Opening of the course and organisational aspects
	Introduction to the ITC
	Introduction of participants
1020 - 1030	Course orientation (pre-assignment)
	Module I: Basics of Cement Chemistry
1030 - 1130	Introduction to the basics of cement chemistry: part I
1130 – 1145	<i>Coffee/tea</i>
1145 - 1245	Introduction to the basics of cement chemistry: part II
1245 – 1300	Module I wrap-up
1300 - 1400	Lunch
	Module II: Application of cementitious materials in geological disposal – conceptual view of the use of cementitious materials
1400 - 1500	L/ILW disposal designs – shallow and deep repositories
1500-1600	HLW/SF/MOX disposal designs
1600 - 1630	<i>Coffee/tea</i>
1630 – 1715	Long-lived ILW and special features of co-location with HLW/SF/MOX
1715 – 1730	Module II wrap-up
Tuesday 16 th December	
	Module III: Long-term safety evaluation of cementitious materials in geological disposal
0830 - 0930	SA aspects of cementitious systems
0930 - 1030	Cement related FEPs
1030 – 1100	<i>Coffee/tea</i>
1100 - 1200	Natural and archaeological analogues
1200 – 1215	Module III wrap-up
1215 - 1315	Lunch
	Module IV: Understanding of interactions – cement, the EBS, the geosphere etc
1315 - 1415	Cement degradation reactions and modelling
1415-1530	Cement leachate interactions with the EBS: laboratory and modelling
1530 - 1600	<i>Coffee/tea</i>

1600 – 1700	Cement leachate interactions with the geosphere: laboratory and modelling
1700 – 1715	Module IV wrap-up
1715 - 1800	Briefing for field visits I and II
Wednesday 17th December	
	Module V: Field visit I
0900 - 1000	Operational safety – can we really live without concrete in a HLW/SF repository?
1005	Departure for the Hagerbach Test Gallery (Flums)
1030	Arrival, coffee, introduction to site
1100 – 1200	Structural support (focussed on concrete or sprayed concrete) and sealing of tunnels: based on experience from the Gotthard Base and Uetliberg Tunnels
1200 – 1300	Lunch in Hagerbach's own underground restaurant (the Bergmannsstube)
1300 - 1330	Aspects of the application of sprayed concrete
1330 - 1500	Site visit with demonstrations of: <ul style="list-style-type: none"> • Production of concrete (different mixes, with/without steel fibres) • Quality control of fresh concrete (does the concrete attain the design requirements?) • Working with sprayed concrete (application, use and dosage of accelerator, rebound) • Quality control of sprayed concrete (early age strength, methods of measuring quality) • Testing and investigation of concrete in the laboratory (strength, water-tightness, durability)
1500	Coffee
1530 - 1630	Group exercise I: preparation for group presentations on operational safety
1630 - 1730	Group presentations: 4 groups, two topics
Thursday 18th December	
	Module VI: Design of permanent and removable cement/concrete structures and applications
0830 - 0930	Design and construction techniques
0930 - 1000	<i>Coffee/tea</i>
1000 - 1130	Types of structures and materials
1130 - 1200	Group exercise II (requirements for structures and materials): introduction
1200 - 1300	Lunch
1300 - 1600	Working in groups (<i>coffee/tea break during group work</i>)
1600 - 1800	Group presentations: 4 groups, two topics
1930	Course dinner
Friday 19th December	
	Module VI (cont.): practical aspects of underground construction: Field visit II
0730	Departure for Mont Terri URL (St Ursanne)
Ca. 1030	Arrival, coffee
1100 – 1200	Introduction to the site

1200 – 1245	Lunch
1245 – 1500	Site visit: rock support, tunnelling, concrete silos, grouting, etc
	Module VII: Development of new cement materials and products- low alkali/low pH materials
1500 – 1545	Historical overview and recent progress
1545 - 1600	<i>Coffee/tea</i>
1600 - 1700	Applications and long-term safety and performance aspects
1700 – 1715	Modules V & VI wrap-up
1715	End of course, transport to Delémont Railway Station (direct link with Basel Main Station and from there to Basel and Zürich airports) or back to the hotel