

STUDY TOUR TO SLOVAK REPUBLIC

AGENDA

1st day – 25.10.2009

Arrival to Bratislava, transport of participants from airport to Hotel SUZA (near Faculty of Natural Sciences; Comenius University of Bratislava), sightseeing of historical centre of Bratislava (in dependence of arrival time)

2nd day – 26.10.2009

Workshop "Geology, mineral deposits and waste management legislative in Slovakia"

9.00 registration of participant,

All participants will receive the field trip guidebook with information about localities that will be visited, and also a database of Slovak experts and relevant institutions which can be used for further consultations and networking.

9.15 Opening lecture (Prof. RNDr. Anton Gáplovský, DrSc., dean of Faculty of Natural Sciences UK Bratislava)

***Section I:** Legislative framework and policy framework of mining waste management, identification and prioritisation process of mining waste.*

9.45 RNDr. Vlasta Janová, PhD. (Ministry of Environment of SR): "Implementation of EP and EC directive 2006/21/ES on the management of waste from extractive industries in Slovakia."

10.15 RNDr. Milan Piovarci (HYDEKO, s.r.o.): "Inventarization of mining waste in Slovak republic."

10.45 Coffebreak

11.00 RNDr. Stanislav Šoltés (State Geological Institute of Dionyz Stur): "Inventarization of old mine objects in Slovakia."

11.30 Marián Zlocha (Z-line s.r.o.): “Application of remote sensing methodology in identification of mining waste”

12.00 Discussion

12.15 Lunch

Section II.: Application of remediation technologies

13.30 RNDr. Peter Koděra, PhD. (Faculty of Natural Sciences, CO): “Ore mineralization in Slovakia – a review”

14.00 Bronislava Lalinská (Faculty of Natural Sciences, CO): “Application of zero valent Fe in remediation technologies of As and Sb contaminated areas”

14.30 Peter Šottník (Faculty of Natural Sciences, CO): “Passive treatment of acid mine drainage – experiences in Slovakia”

15.00 Coffebreak

15.30 Doc. RNDr. Stanislav Rapant, CSc. (State Geological Institute of Dionyz Stur) : “Environmental and health risk of contamination from mining activities in Spišsko-gemerské rudohorie area (eastern Slovakia)”

16.00 RNDr. Katarina Krčmova (State Geological Institute of Dionyz Stur): “Environmental and health risk of contamination from mining activities in Horna Nitra area (central Slovakia)”

16.30 Marek Vaculik (Faculty of Natural Sciences, CO): “Phytoremediation in areas affected by mining activities”

17.00 Roundtables discussion and technical information for field trip

18.00 Social event (with wine sample tasting)

3rd day - 27.10.2009

Field trip "Slovak experience in environmental management and remediation of mine sites with focus on acid mine drainage and heavy metal treatment."

7.30 Breakfast

8.00 **Departure** from Bratislava (Hotel SUZA)

9.00 – 11.00 Pezinok - Kolársky vrch + Trojárová and Augustín adits: abandoned Sb, Au and pyrite deposit; acidification of small creek, natural oxyhydroxides wetland, two tailings impoundments as the biggest sources of Sb and As contamination in the area; lecturers will perform poster presentation of obtained scientific results focused on all parts of the environment, level of contamination and remediation project.

13.00 – 14.00 Lunch, Donovaly (“Penzion u Marsa”)

15.00 – 17.00 Dúbrava – the biggest Sb deposit in Slovakia closed in 1991; Closed adits, mining dumps and large tailing impoundments are the source of Sb and As contamination of waters, soils and stream sediments in the whole valley. Poster presentation with results from ongoing project will be provided directly at locality.

18.30 Arrival to **Spišská Nová Ves** (old mining town, centre of Spiš region), accommodation and dinner in Hotel Metropol

19.30 Dinner

4th day – 28.10.2009

8.00 Breakfast

8.30 departure from Spišská Nová Ves

9.00 – 12.00 Rudňany - Fe, Cu, Hg (and other metals), Ba deposit with hydrothermal siderite–sulfides mineralization, visiting of Poráč mine area – last active part of mining area with barite exploitation, tailing impoundment - approximately 12 mil. tones of tailing material is deposited here (after more that 100 year of ore mining) which is actually reprocessing as a barite deposit, revitalization of area affected by mercury exploitation and processing.

13.00 – 14.00 Lunch – Krompachy

15.30. – 17.30 Smolník – abandoned and overflowed volcano-sedimentary Cu deposit exploited from 14th. centuries to the 1990, acid mine waters with high mineralization outflowing from drainage shaft (and old waste dumps) directly to the Smolník creek, effect of acid mine water to the Smolník creek catchment – transport of contamination in form of solid phase to the

Hnilec river and consequently the water reservoir Ružín, pilot scale study results of passive treatment (constructed anaerobic wetland) of acid mine water on this locality. Participants could see here the management of tailings dumps, re-vegetation technologies of tailing impoundment and the role of environmental and performance monitoring on this locality.

19.00 arrival to the **Rožňava** (old mining town, centre of Gemer region) – accommodation and dinner in Hotel Kras

5th day – 29.10.2009

7.30 Breakfast

8.00 departure from Rožňava

9.00 – 12.00 Jelšava – metasomatic magnesite deposit “Dúbravský masív”, visiting of the biggest magnesite mine in Slovakia exploited at first from surface (old quarry) and from 1965 by underground mining. New (actually used) mining method utilize the material from old waste dumps as a fundament and material from dumps is transported back to the mine – excellent example of increasing value of waste. Comparison of old mining method producing waste and new mining methodology consuming waste.

13.00 – 14.00 Lunch – Revúca

18.00 – arrival to Banská Štiavnica - the most important mining area in Slovakia (UNESCO protected, first mining academy on the world) , accommodation in Pension Sv. Juraja and Pension Nostalgia.

19.00 Dinner and social event - informal meeting - discussion with experts and lecturers

6th day – 30.10.2009

8.00. Breakfast

8.30 departure from Banská Štiavnica

9.00 – 12.30 Hodruša-Hámre - visiting of historical gold (and Pb-Zn) mine from 14th century “Všech svatých” (“All saints”), visiting of actual gold processing factory and tailing impoundment

13.00 – 14.00 Lunch – Banská Štiavnica

14.30 – 17.00 Šobov – exploitation in quartzite quarry, hydrothermal altered parts which obtain pyrite are stored on waste dumps, oxidation of pyrite caused acidification of environment, there will be described problems connected with decomposition of clay minerals (sours of Al contamination of area) and degradation of soil bellow the dump, result of acid mine drainage remediation by passive treatment (constructed wetlands) in pilot scale on locality

Practical exercises – water, soils and stream sediments sampling, measurement of pH, Eh and conductivity in field condition, performance of field measurement of some geochemical characteristic of waters

19.00 arrival to Bratislava, accommodation and dinner in Hotel SUZA

7th day – 31.10.2009

Transportation of participants to airport, departure from Bratislava