10th International
Mine Water Association Congress

FINAL PROGRAMME

Mine Water and the Environment
June 2-5, 2008, Karlovy Vary, Czech Republic
## IMWA 2008 Congress Programme

### Overview: Monday-Thursday, 2 – 5 June 2008

<table>
<thead>
<tr>
<th>Sun 1 June</th>
<th>17.00-20.00 Registration</th>
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<tr>
<td>9.30 - 9.10</td>
<td>18.00-20.00 Welcome drink</td>
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<tr>
<th>Mon 2 June</th>
<th>8.30 - 17.20</th>
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<tr>
<td>8.30 - 9.10</td>
<td>17:30 - 19.30 IMWA Executive Council Meeting</td>
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<tr>
<td>9.10 - 10.00</td>
<td>Session 2</td>
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<td>10.00 - 10.20</td>
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<td>10.20 - 12.20</td>
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<td>12.20 - 14.00</td>
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<td>14.00 - 15.20</td>
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<td>15.20 - 15.40</td>
<td>Session 9</td>
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<td>15.40 - 17.20</td>
<td>Session 9</td>
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<tr>
<th>Tue 3 June</th>
<th>9.00 - 14.00</th>
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<tr>
<td>9.00 - 10.20</td>
<td>Session 5</td>
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<td>10.20 - 10.50</td>
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<td>10.50 - 12.30</td>
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<td>12.30 - 14.00</td>
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<td>14.00 - 17.00</td>
<td>Session 9</td>
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<tr>
<th>Wed 4 June</th>
<th>9.00 - 18.00 (bus departure) 22.30</th>
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<tr>
<td>9.00 - 10.20</td>
<td>Session 5</td>
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<td>10.20 - 10.50</td>
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<td>10.50 - 12.30</td>
<td>Session 7</td>
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<tr>
<td>12.30 - 14.00</td>
<td>IMWA General Assembly</td>
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<tr>
<td>14.00 - 15.20</td>
<td>Conference Dinner</td>
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<td>15.20 - 15.30</td>
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<th>Thu 5 June</th>
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<tr>
<td>9.00 - 10.20</td>
<td>Session 7</td>
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<td>10.20 - 10.40</td>
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<td>10.40 - 12.30</td>
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<td>12.30 - 14.00</td>
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<tr>
<td>14.00 - 15.00</td>
<td>Session 8</td>
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<tr>
<td>15.00 - 15.00</td>
<td>Closure</td>
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</table>

Oral presentations: 20 minutes (suggested 15 + 5 min discussion) ☕️ coffee break ☀️ lunch

Poster session block 1: continuation

Posters on display for poster session block 2

Plenary visit to posters

Conference dinner

Sessions:
- Session 1
- Session 2
- Session 3
- Session 4
- Session 5
- Session 6
- Session 7
- Session 8
- Session 9
- Session 10
- Session 11
- Session 12
- Session 13
- Session 14
- Session 15
- Session 16
- Session 17
- Session 18

Location:
- Hall A
- Hall B
- Hall C
Congress Programme

Sunday, June 1

Registration at the venue (Thermal Hotel), 17.00-20.00 o’clock

Welcome Reception at the venue (Thermal Hotel), 18.00-20.00 o’clock

Monday, June 2

Registration, from 7.30 o’clock
Authors of the entire day are requested to hand in their CD with oral presentation at the registration desk before 8.30 o’clock, or preferably Sunday afternoon. Thank you!

Opening of the Conference
8.30-9.10 Welcome on behalf of the Organizers and IMWA
9.10-9.40 Chris Wolkersdorfer
   Keynote lecture We don't have a Mine Water Problem - Do we?
9.40-10.00 Tomáš Vylíta
   Contemporary Problems of Prospective Protection of Karlovy Vary Thermal Water Structure with respect to mining activities in Sokolov Coal Basin

10.00-10.20 Coffee break

Session 2 Water issues in open pit mining  Chairperson John Waterhouse
10.20-10.40 S. J. Leech, M. P. McGann
   Open Pit Slope Depressurization using Horizontal Drains – a Case Study
10.40-11.00 M. Palmroth, H. Huttunen, R. Rissanen, L. Rantala, I. Niskanen
   Real-time Monitoring of Surface Water Quality Water Downstream of a Mine
11.00-11.20 T. Kuchovský, A. Říčka, J. Červenková
   Impact of Gravel Pits on Ground Water: Case Study of Gravel Pits near the Mohelnice City, Czech Republic
11.20-11.40 L. Breckenridge, A.L. Hudson
   Hydrogeologic Modelling to Improve Pit Slope Stability
11.40-12.00 D. Dimitrakopoulos, I. Koumantakis
   Hydrogeological Conditions in Amynteon Open Lignite Mine and Design of Dewatering Measures
12.00-12.20 J. Waterhouse, J. Crisostomo, D. Nolan, A. Dutton
   An Integration of Hydrogeology and Geotechnical Engineering for the Design of the Tutupan Coal Mine T100 Low Wall, South Kalimantan, Indonesia

Session 1 Water issues in underground mining  Chairperson Thomas Ruede
10.20-10.40 S. J. Leech, E. Breuer
   Using MODFLOW with TMR to Model Hydrologic Effects and Recovery in the Shallow Aquifer System Above Longwall Coal Mining
10.40-11.00 S. Veltman, A. R. Wilke
   Groundwater Flow Mechanisms at Margaret Shaft, KOSH Gold Mining Area
11.00-11.20 G. Ziegenbalg
   Directed and Controlled Crystallisation of Slightly Soluble Minerals - a New Technology to Seal Water Inflows and to Immobilise Contaminants
11.40-12.00 Ch. Wolkersdorfer, C. Kubiak
   Low Density Sludge Storage In A Flooded Underground Mine
12.00-12.20 F. Pendas, P. Cienfuegos, J. Loredo
   Hydrochemical Signature of Formation Waters Associated to Unconventional Gas Resources. Application to Central Coal Basin (Spain)
### Session 9 Special session – pit lakes  
**Chairperson Martin Schultze**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
<th>Title</th>
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<tbody>
<tr>
<td>10.20-10.40</td>
<td>I. Svoboda, E. Pecharová, I. Štěpánková, I. Kašparová</td>
<td>Variant Solutions for the Development of Future Lakes Formed in Opencast Mine Residual Pits</td>
</tr>
<tr>
<td>10.40-11.00</td>
<td>I. Štěpánková, L. Havel, I. Svoboda</td>
<td>Lake Ecosystem Development Monitoring in Barbora and Chabařovice Pits (Ústecký Region, Czech Republic)</td>
</tr>
<tr>
<td>11.00-11.20</td>
<td>E. Von Sperling, C.A.P. Grandchamp</td>
<td>Water Quality of a Deep Pit Lake: Case Study of Aguas Claras, Brazil</td>
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#### 12.20-14.00 Lunch

### Session 5a Geochemical and biogeochemical processes  
**Chairperson Rosa Cidu**

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>14.00-14.20</td>
<td>F. Bilek, S. Wagner, T. Schorschmidt</td>
<td>Bench Scale Reactor to Test In-situ Remediation of Mining Influenced Groundwaters by Autotrophic Sulphate Reduction and Sulphide Stripping</td>
</tr>
<tr>
<td>14.20-14.40</td>
<td>A. Brown</td>
<td>Treatment of Metal-Containing Water using Processed Electric Arc Furnace Cinder</td>
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<td>14.40-15.00</td>
<td>M.A. Caraballo, F. Macías, T.S. Rötting, J.M. Nieto, C. Ayora</td>
<td>First Results of a Full Scaled Passive Treatment System for High Metal Concentration AMD at the Iberian Pyrite Belt, SW Spain</td>
</tr>
<tr>
<td>15.00-15.20</td>
<td>J.A. Davis</td>
<td>Modeling Uranium(VI) Retardation in Groundwater</td>
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### Session 1 Water issues in underground mining  
**Chairperson Colin Booth**

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<tr>
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<tr>
<td>14.00-14.20</td>
<td>C.L. Waring, M.A. Peterson</td>
<td>Mine Subsidence Induced Hydraulic Connection tested by Geochemical and Geophysical Tracing Techniques</td>
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<tr>
<td>14.20-14.40</td>
<td>Ch. Wang, Y. Sun, X. Miao, G. Yang</td>
<td>History of Water Conservation in Shandong Mining Area, China</td>
</tr>
<tr>
<td>14.40-15.00</td>
<td>A. Rička, T. Kuchovský, Josef Zeman</td>
<td>Stream Thermometry as an Effective Tool for Revealing Communication Areas between Mine Water and Surface Streams: Uranium Mine Rozna Case Study (Czech Republic)</td>
</tr>
<tr>
<td>15.00-15.20</td>
<td>D. Beattie, R. Bashir, J. Hatley</td>
<td>Impact of Geotechnical and Hydrogeological Parameters upon Shaft Sinking Performance in the Athabasca Basin Canada</td>
</tr>
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### Session 9 Special session – pit lakes  
**Chairperson Mark Lund**

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<tr>
<td>14.00-14.20</td>
<td>Ch. Koch, B. Graupner, F. Werner</td>
<td>Pit Lake Treatment Using Fly Ash Deposits and Carbon Dioxide</td>
</tr>
<tr>
<td>14.20-14.40</td>
<td>J. May, C. McCullough, M. Lund</td>
<td>Starting down the path of pit lake bioremediation at an operational mine (and progressing along the long road to sustainability?)</td>
</tr>
<tr>
<td>15.00-15.20</td>
<td>B. Boehler, M. Schultze</td>
<td>Meromixis in Mine Lakes</td>
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#### 15.20-15.40 Coffee break
**Session 5a Geochemical and biogeochemical processes**  
Chairperson Robert Kleinmann  
15.40-16.00 B. Plante, M. Benzaazoua, B. Bussière, G. Pepin, D. Laflame  
Geochemical Behaviour of Nickel Contained in Tio Mine Waste Rocks  
16.00-16.20 G. Pepin, B. Bussière, M. Aubertin, M. Benzaazoua, B. Plante, D. Laflamme, G. J. Zagury  
Field Experimental Cells to Evaluate the Generation of Contaminated Neutral Drainage by Waste Rock at the Tio Mine, Quebec, Canada  
16.20-16.40 R. Marandi, F.D. Ardejani, M. Safaei  
Biosorption of Lead and Zinc Ions by Phanerocheat Chrysasporium—Research on Fixed Bed Column  
16.40-17.00 M. Koschorreck, K. Wendt-Potthoff, A. Trosiener, W. Geller, S. Kleinsteuber, V. Preuss, M. Horn  
Microbiology of an In-lake Reactor to Treat an Acidic Pit Lake  
17.00-17.20 T. Harck, R. Reynecke, N. Bezuidenhout, K. Govender, P. Gunther  
Managing the Groundwater Impact of Mine Water Treatment Waste

**Session 3 Mine water uses – mineral water, geothermal energy**  
Chairperson Don Armstrong  
15.40-16.00 W. Rühaak, P. Schätzl, A. Renz, H. J. G. Diersch  
Numerical Modeling of Geothermal Processes: Issues and Examples  
16.00-16.20 J. Raymond, R. Therrien, F. Hassani  
Overview of Geothermal Energy Resources in Quebec (Canada) Mining Environments  
16.20-16.40 G. Wieber, S. Pohl  
16.40-17.00 D. Vermeulen, B. Usher  
Operation and Monitoring Guidelines for Irrigating with Coal Mine Water in South Africa  
17.00-17.20 L. Razowska-Jaworek, I. Pluta, A. Chmura  
Usage of Mine Waters in the Upper Silesia in Poland

**Session 9 Special session – pit lakes**  
Chairperson Thomas Pedersen  
15.40-16.00 M. Schultze, B. Boehrer  
Development of Two Meromictic Pit Lakes – a Case Study from the Former Lignite Mine Merseburg-Ost, Germany  
16.00-16.20 Czop, J. Motyka, M. Szuwarzyński  
Chemical Composition of the Extremely Alkaline Water within “Górka” Pit Lake (Chrzanow Region, South Poland)  
16.20-16.40 J. Sanchez España, E. Lopez Pamo, M. Diez, E. Santofimia  
Monimolimnetic Gradients in Meromictic Pit Lakes of the Iberian Pyrite Belt (SW Spain): Physico-chemical Description  
16.40-17.00 F.C. Benthaus, H. Mandel, J. Grossmann  
Water Management – Modelling the Lauchhammer Region  
17.00-17.20 M. A. A. Arias, J. L. D. Fernández  
Water Quality Models in Limeisa Mining Lake

**17.30 IMWA Executive Council Meeting**

**Plenary visit to posters**
Tuesday, June 3

**Session 5a Geochemical and biogeochemical processes**  
Chairperson Jorge Loredo
9.00-9.20  W.M. Gitari, O.O. Fatoba, L.F. Petrik  
Towards the Development of Sustainable Salt Sinks: Fundamental Chemical Studies
A Comparison of Kinetic NAG tests with Static and Humidity Cell Tests for the Prediction of ARD
9.40-10.00  C. Ardau, R. Cidu, S. Da Pelo, C. Dadea, L. Fanfani, F. Frau, E. Musu, P. Lattanzi  
Arsenic in Mining Environments: Evidences from Sardinia (Italy)
10.00-10.20 A. Barnes, D. Sapsford, M. Dey, K. Williams  
Non Oxidisable Sorbed Fe(II): Indicator of Strong and Weak Site Adsorption at the Goethite Surface

**Session 4 Mine closure**  
Chairperson Andrzej Witkowski
9.00-9.20  G. Beale, R. Boak  
Mine Closure and Reclamation – Practical Examples of Options and Issues
Mine Water Stratification at Abandoned Mines and its Geochemical Model
9.40-10.00  W. F. Ewert, G. Heerten, M. Lersow  
Using Geosynthetics for Safety Mine Closure, Closure of Mining and Milling Residues and for Groundwater Protection
10.00-10.20  T. Kauppila  
Transport of As from the Former Ylöjärvi Cu-W-As Mine – Sediment Chemical and Algal Records along a 7 km Watercourse

**Session 9 Special session – pit lakes**  
Chairperson Kurt Friese
9.00-9.20  A. Conly, P. F. Lee, A. Goold, A. Godwin  
Experimental, Geochemical and Stable Isotopic Constraints on the Source and Fate of Sulfate Toxicity for the Hogarth and Caland Pit Lakes, Steep Rock Iron Mine, Northwestern Ontario, Canada
9.20-9.40  P.F. Lee, M. Van Cook, A.G. Conly  
Predicting Discharge Water Quality from Steeprock Pit Lakes in Atikokan, Ontario, Canada
9.40-10.00  M. Müller, F. Werner, K. Eulitz, B. Graupner  
Water Quality Modeling of Pit Lakes: Development of a Multiply-Coupled Groundwater Lake Circulation and Chemical Model
10.00-10.20  F. Werner, K. Eulitz, B. Graupner, M. Müller  
Pit Lake Baerwalde Revisited: Comparing Predictions to Reality

10.20-10.50 Coffee break

**Session 5a Geochemical and biogeochemical processes**  
Chairperson Jacek Motyka
10.50-11.10  K. Vanbroekhoven, S. Van Roy, L. Diels, J. Gemoets  
Stability of Metalprecipitates Formed after in Situ Bioprecipitation Induced by Sulfidogenesis
11.10-11.30  James D. Navratil  
Mine Water Treatment Using Iron Ferrites and Magnetite
11.30-11.50  F. Barrez F., Carlier E., Carlier J. P., Shahrour I.  
Hydrochemical Evolution of the Chalk Aquifer through the Coal Mine Basin of the Nord-Pas-de Calais Region (France)
11.50-12.10  L. Fanfani, R. Biddau, G. Lecca, F. Murgia  
AQUAGRID: A Problem Solving Platform for Contaminated Groundwater (A Case Study in a Mining Area in Sardinia)
12.10-12.30  N.C. Balci  
Effects of Bacterial Activity on the Release of Trace Metals from Sphalerite Oxidation

**Session 4 Mine closure**  
Chairperson Josef Zeman
10.50-11.10 O. Del Greco, C.A. Garzonio, C. Oggeri  
Stability and Environmental Problems due to Groundwater Level Raising in the Abandoned Gavorrano Mine
Mine Water Hydrology of the Schneeberg Mine (Saxony) Fifty Years after Flooding

11.30-11.50 C. Sena, J. Molinero
Water Resources and Hydrogeological Modelling as a Tool for the Feasibility Assessment of the Closure Plan of an Open Pit (La Respina Mine, Spain)

11.50-12.10 R. Cidu, L. Fanfani, F. Frau, R. Biddau, R. Cabras, S. Da Pelo
The Abandoned Antimony-mines of SE Sardinia: Impact on Surface Waters

12.10-12.30 S. Reshetnyak, G. Melikhova, Y. Fedotova, M. Melikhov
Problems of Deep Open Pits Closure in the Kola Peninsula

Session 9 Special session – pit lakes  
Chairperson Martin Schultze
10.50-11.10  D. Dunbar, R. Pieters
Modeling a Physical Mechanism for Removal of Trace Elements From Pit Lake Surface Waters

Session 10a Special session – water mangement in uranium  
Chairperson Jan Slezák
11.10-11.30 J. Slezák
Recent Problems with Water Management in Uranium Mines
Environmental Impacts of Mine Waters from Chemical and Deep Uranium Mining – Straz pod Ralskem, Czech Republic

11.30-11.50 B. Jeuken, H. Maerten, R. Phillips
Uranium ISL Operation and Water Management under the Arid Climate Conditions at Beverley, Australia

11.50-12.10 D. Milenic, V. Dragisic, N. Savic, A. Vranjes
Environmental Impact of Uranium Mine Waters in Eastern Serbia

12.10-12.30 H. Liu, J. Hatley, R. Bashir, L. Atkinson
Depressurising an Underground Ore Body at the McArthur River Mine in Northern Saskatchewan, Canada

12.30-14.00 Lunch

14.00-17.00 Mid-conference excursion
## Wednesday, June 4

### Session 5b Geochemical processes AMD Chairperson Walter Geller
9.00-9.20 R.S. Gautama, G.J. Kusuma  
Evaluation of Geochemical Tests in Predicting Acid Mine Drainage Potential in Coal Surface Mine

9.20-9.40 R. Schöpke  
Experimental Development and Testing of an in situ Technology to Reduce the Acidity of AMD-laden Groundwater in the Aquifer

9.40-10.00 D. T. Suryaningtyas, R. S. Gautama  
Acid Mine Drainage Treatment of Overburden for the Removal of Cation Metals

10.00-10.20 M. Martins, E.S. Santos, R.J. Barros, M.C. Costa  
Treatment of Acid Mine Drainage with Sulphate-reducing Bacteria Using a Two-stage Bioremediation Process

### Session 4 Mine closure Chairperson Josef Zeman
9.00-9.20 I. Djokic, G. Letic, M. Cekic, S. Nuhovic, V. Canic, N. Djokic  
Restoration and Revitalization of the Abandoned “Suvo Rudiste” Mine Site on Kopaonik, Incorporating Collection, Treatment and Multipurpose Use of the Mine Waters

### Session 6 Mine tailings Chairperson Adam Jarvis
Assessment of the Mobility of Toxic Elements in Gold Mine Polluted Land-column Leaching and Computer Modeling

9.40-10.00 C. L. Reichardt  
Heap Leaching and the Water Environment – Does Low Cost Recovery Come at a High Environmental Cost?

10.00-10.20 E.B. Nsimba, H.Tutu, E.M. Cukrowska, I.M. Weiersbye  
Characterisation of Cyanide in Gold-mine Tailings of the Witwatersrand

### Session 10b Special session Mine closure – uranium mines Chairperson Arnošt Grmela
9.00-9.20 J-H. Ross, E.G. Dudel  
Uranium Loads and Accumulation in a Mine Water Contaminated Wetland

9.20-9.40 J. Mužák  
Remediation of Consequences of Chemical Leaching of Uranium in Stráž pod Ralskem

9.40-10.00 N. Rapantová, A. Grmela, B. Michalek, A. Hájek, P. Zábojník, J. Zeman  
Utilization of Olsi-Dranonin Uranium Deposit After Mine Closure

10.00-10.20 H. Hudcová, H. Moyžišková, J. Badurová, M. Rozkošný, P. Sedláček, J. Sova, R. Březinová  
Monitoring of the Uranium Mining Industry Impact on the Water Ecosystem in the Middle Part of the Svatka River Basin

### 10.20-10.50 Coffee break

### Session 5b Geochemical processes AMD Chairperson Changsheng Wang
10.50-11.10 Š. Klímková, M. Černík  
Application of Zero-Valent Nanoparticles for Acid Mine Water Remediation

11.10-11.30 M. Egal, C. Casiot, G. Morin, O. Bruneel, F. Elbaz-Poulichet  
Kinetic Controls on Iron and Arsenic Precipitation in Acid Mine Drainage (Carnoulès, France)

11.30-11.50 P. Lindsay, M. Przyz, P. Weber  
Options for Treating Acid Mine Drainage at Stockton Mine, New Zealand

11.50-12.10 Ardejani F. D., Karami G. H., Assadi A. B., Dehghan R. A.  
Hydrogeochemical Investigations of the Shour River and Groundwater Affected by Acid Mine Drainage in Sarcheshmeh Porphyry Copper Mine

### Session 7 Water engineering – mine water management, mine dewatering Chairperson Adrian Brown
12.10-12.30 E.C.P. Lim, D. Holmes  
The Moving Finger Writes – the Value of Hydrographs in Numerical Modelling
Session 6 Mine tailings  Chairperson William Pulles
10.50-11.10 T.F. Pedersen, A.J. Martin, J.J. McNee
   Permanent Underwater Storage of Disposed Mine Tailings: Pitfalls and Prospects
11.10-11.30 L. Alakangas, A. Lundberg, B. Öhlander
   Pilot-scale Studies of Different Covers on Unoxidised Sulphide-rich Tailings, Northern Sweden: Oxygen Diffusion
11.30-11.50 P.M. Heikkinen, M.L. Räisänen, R.H. Johnson
   Seepage Water Quality from Sulphide Mine Tailings Impoundments
11.50-12.10 Ch. Braungardt, J. Rieuwerts, K. Miganetara, F. Azizi
   Contaminant Export Potential of Selected Mine Waste in Southwest England
12.10-12.30 B.A. Azzie
   Geochemical Characterization of Tailings, Kylylahti Cu-Co Project, Finland

Session 10b Special session Mine closure – uranium mines Chairperson Andrzej Kowalczyk
10.50-11.10 D.R. Jones, Ch. Humphrey, M. Iles, R. van Dam
   Deriving Surface Water Quality Closure Criteria – An Australian Uranium Mine Case Study
11.10-11.30 M. Mkandawire, E.G. Dudel
   Speciation Dynamics of Arsenic in Water from Springs on a Tailing Heap of Abandoned Uranium Mining
   Flood Water Treatment at the Former Uranium Mine Site Königstein – a Field Report
11.50-12.10 G. Földing, J. Eberfalvi, M. Csövári, G. Németh, J. Csicsák
   Post-closure Water Management Practice on the Former Uranium Mining Site in Hungary

12.30-14.00 Lunch

Session 7 Water engineering – mine water management, mine dewatering Chairperson Adrian Brown
14.00-14.20 P. Schaetzl, V. Clausnitzer, H.-J. Diersch
   Groundwater Modeling for Mining and Underground Construction – Challenges and Solutions.
   Hydrogeological Data Collection at Canadian Arctic Mines in Permafrost
14.40-15.00 A. Kamkar-Rouhani
   A Finite Difference Groundwater Modelling and Comparison of the Results with Those Obtained Using Finite Element Modelling Approach
15.00-15.20 S. Brouyère, P. Orban, S. Wildemeersch, J. Couturier, N. Gardin, A. Dassargues

Session 6 Mine tailings Chairperson Danie Vermeulen
14.00-14.20 I.M.H.R. Antunes, A.M.R. Neiva, M.M.V.G. Silva
   Environmental Contamination Associated with Some Abandoned Mines at Central Portugal
14.20-14.40 S. Shevrel, V. Kopačková, A. Bourguignon, P. Rojík, V. Metelka
   Application of High Altitude and Ground-based Spectroradiometry in the Monitoring of Hazardous Waste Derived from Sokolov Open-pit
   Evaluation of the Environmental Impact of Coal Waste Pile at Smolnica, Upper Silesia, Poland
   Coupled Hydrological and Chemical Model of Coal Mine Dumps at As Pontes, A Coruña (Spain)

15.20-16.00 Coffee break

15.20-17.00 IMWA General Assembly

Plenary visit to posters

18.00-22.30 Conference Dinner
## Thursday, June 5

### Session 7 Water engineering – mine water management, mine dewatering

**Chairperson Volker Preuss**

**9.00-9.20** F.S. Botha  
Transforming Groundwater from Risk Management to Asset Management in the Mining Sector, South Africa

Using a Novel Reactive Transport Model to Determine Flow Distribution between Major Roadways in a Partially Flooded Abandoned Underground Metal Mine.

**9.40-10.00** S. Gairoard, A.-L. Courbis, B. Vayssade  
Modelling and Simulation of the Pumping in a Former Mine Using Sequential Automata; Coal Mine of Rochebelle - St-Martin de Valgalgues, Cévennes, France

**10.0-10.20** C. Mafa  
Mine Dewatering Studies at Jwaneng Open Pit Diamond Mine - Botswana

### Session 6 Mine tailings

**Chairperson Ralph Schöpke**

**9.00-9.20** A. Moradzadeh, F. Doulati Ardejani, S.F. Pisheh  
An Investigation on the Environmental Effects of Sulphide Mines Using Geophysical Studies

Characterization of Oil Sands Tailings using Nuclear Magnetic Resonance (NMR) Technique

### Session 8 Mine water legal aspects, integrated water management

**Chairperson Ralph Schöpke**

**9.40-10.00** R. Cameron  
Discussion on Implementation of the Water Framework Directive and Related Implications for the Metalliferous Mining Industry

Catchment Management and Mining Impacts in Arid and Semi-Arid South America: the CAMINAR Project

**10.20-10.50** Coffee break

### Session 7 Water engineering – mine water management, mine dewatering

**Chairperson Rafael Fernandez Rubio**

**10.50-11.10** A. Lecureuil, S. Delpierre, Ch. Grossin, C. Sauzay  
Salsigne Gold Mine Water Flow Modelling

**11.10-11.30** O. Arndt, U. Junghans, S. Kaden, P. Schätzl, F. Thilo  
Grid-based Optimization in Groundwater Management

**11.30-11.50** P. Nalecki  
Development of a Groundwater and Water Supply Management Model for a Coal Bed Methane Project

**11.50-12.10** J. Nosek, M. Černík, J. Zeman  
Numerical Modelling of Natural Wetland System at Locality Zlaté Hory

**12.10-12.30** K. Bru, A.-G. Guezennece, F. Bourgeois  
Numerical Simulation: a Performing Tool for Water Management in Tailings Impoundments

### Session 8 Mine water legal aspects, integrated water management

**Chairperson Katrin Wendt-Potthoff**

**10.50-11.10** A.P. Jarvis, D. Johnston, W.M. Mayes, H.A.B. Potter  
Application of a New methodology for Assessing the Priorities for Abandoned Mine Water Pollution Remediation at a National Scale: Results and Implications from a Study across England and Wales

**11.10-11.30** D. Johnston, S. Rolley  
Abandoned Mines and the Water Framework Directive in the United Kingdom

**11.30-11.50** B. Graupner, Ch. Koch, F. Werner  
Can EU-WFD be Applied to Former Lignite Mining Districts? A Case Study for the Lausitz Mining District (Germany)

**11.50-12.10** P. Nalecki, M. Gowan  
Mine Water Management – Dynamic, Probabilistic Modelling Approach

**12.10-12.30** C. M. Cote, Ch. J. Moran  
A Systems Modelling Approach to Facilitate the Benchmarking of Water Use in the Mining Industry

**12.30-14.00** Lunch
Session 7 Water engineering – mine water management, mine dewatering Chairperson Chris Wolkersdorfer
14.00-14.20 M. Struzina, C. Drebenstedt
Large Scale Laboratory Tests for Development of Dewatering System for Open Pit Mines Based on Horizontal Filter Wells Installed by Horizontal Directional Drilling
14.20-14.40 P. Corser
Cost Escalation Associated with Water Management for Mine Development and Mine Reclamation
14.40-15.00 J. Szczepinski
Modelling of the Future “Piaski” Open Pit Impact on the Water Environment
15.00 IMWA Congress Closure

POSTER SESSION 1

J. Kubica, P. Bukowski, G. Gzyl
Delimiting of Safety Pillars to Separate Multi-layer Thick-seam Mining Systems from an Aquifer in an Adjacent Flooded Mine

S. Bonetto, M. Fornaro, A. Giuliani, M. Lasagna
Underground Quarrying and Water Control: Some Cases from Northern Italy

I. Pluta
Influence of Salt Bed of the Zawada Basin on Mine Waters in the Upper Silesian Coal Basin (Poland)

N. Djuric
Ending the 100 Years Salt Water Industrial Exploitation in Mineral Salt Site in Tuzla

F. Pendás, P. Cienfuegos, J. Loredo
Preliminary Data On Groundwater Geotatation in Central Coal Basin (Northern Spain)

I. Příklý, E. Pecharová, O. Škácelová, P. Chvojka, O. Křiváčková
The Associations of Mine Water Infiltration in Podkrušnohorská Spoil Heap

S. M. Ntlhaile
The Importance of Groundwater Monitoring at Jwaneng Open Pit Mine

D. U. Yasin, G. Yuce
The Effect of Drought on the Quality of Water Resources Mixed With Leachate Waters From an Open-Pit Boraxe Mine

P. Bajtoš
Actual and Potential Utilisation of Mine Waters in the Spišsko-gemerské Rudohorie Mts., Slovakia

I. Pluta, A. Malca, F. Dziendziel, M. Karwasiecka
Utilization and Purification of the Mine Waters at the Marcel and 1 Maja Coal Mines in the Upper Silesian Coal Basin (Poland)

I. Pluta, J. Jackowicz-Korczyński
Possibility of Using Waters from the Closed Coal Mines of the Upper Silesian Coal Basin (Poland) as the Resources of the Potentially Medicinal Waters

N. Djuric
Geothermal Energy New Energetic

T. Kuchovský, D. Grycz, M. Drabova
Regional Impact of Mining on Stream Drainage Characteristics in the Rosice – Oslavany Coal Mining District, Czech Republic

D. Grycz, T. Kuchovský, A. Říčka, J. Žeman
Regional Impact of Mining Activity to the Groundwater Regime: Example Case Study of the Rosice–Oslavany Coal Mine District, Czech Republic

E. Pecharová, M. Martíš, I. Kašparová
Environmental Approach to Rehabilitation Methods of Landscapes Disturbed by Open Cast Mining

M. Slábová, H. Broumová, E. Pecharová
Communities of Small Mammals as Indicators of Biodiversity Changes in Reclaimed Areas after Coal Mining

S. Kihlman, T. Kauppila
Effects of a Historical Cu-Au Mine on Testate Amoebae in Lacustrine Sediments in Southern Finland (Haveri, Ylöjärvi)

M. Jankulár, T. Klímko, L. Jurkovič, B. Lalinská, P. Šottník, O. Lintnerová, M. Šutriepka
Mineralogical and Geochemical Research in a Contaminated Environment near the Abandoned Poproč Sb Deposit (Slovakia)
P. Bukowski, M. Bukowska
Changes in Geomechanical Properties of Carboniferous Rocks Under the Influence of Water and Their Possible Consequences in the Areas of Abandoned Mines of the Upper Silesian Coal Basin (Poland)

P. Sklenička
Stand Continuity - an Additional Parameter for Ecological Networks in Post-Mining Landscapes

J. Motyka, M. Czop
Vertical Changes of Iron and Manganese Concentration in Water from Abandoned “Zakrzówek” Limestone Quarry near Cracow (South Poland)

Environmental Impact of Drainage from Abandoned Mercury Mines in Tributaries of Caudal River (Northern Spain)

A. Kowalczyk, J. Motyka, A. Witkowsk, K. Samborska, J. Wach
Impact of Zn-Pb Ore Mining Activity and Mine Closure on Groundwater and Surface Water in the Eastern Part of Upper Silesia (Poland)

POSTER SESSION 2

N. Maximovich
Use of Geochemical Barriers for Environment Remediation after Mine Closure

S. A. Shahraki, A. Ahmadimoghdam, F. Naseri, E. Esmailzade
Study the Accumulation of Strontium in Plant Growing around Sarcheshmeh Copper Mine, Iran

S. A. Shahraki, A. Ahmadimoghdam, F. Naseri, E. Esmailzade
Study of the Possibility of Arsenic Phytoremediation in the Soil of Sarcheshmeh Copper Complex by Native Plants

A. F. Da S. Gomes, A. P. Vinhal, A. C. Q. Ladeira
Estimation of Potential Pollution of Uranium Sludge from Acid Water Treatment.

F. D. Ardejani, S. Z. Shafaei, A. Moradzadeh, R. Marandi, R. Kakaei, B. J. Shokri
Environmental Problems Related to Pyrite Oxidation from an Active Coal Washing Plant, Alborz Sharqhi, Iran

H. Paulava
Monitoring of Water Quality at the Bjorkdal Gold Mine, Northern Sweden

A. B. Assadi, F. D. Ardejani, G. H. Karami, B. D. Azma, A. D. Reza, A. Mahmood
Heavy Metal Pollution Problems in the Vicinity of Heap Leaching No. 3 of Sarcheshmeh Porphyry Copper Mine

B. Palumbo-Roe, R. Newsham, B. A. Klinck, S. Quigley, V. J. Banks
A GIS Based Risk Screening Approach to Abandoned Mine Waste in the Ystwyth Catchment of Mid-Wales, UK

T. Rudolph, W. G. Coldewey
Implications of Earthquakes on the Stability of Tailings Dams

S. Z. Shafaei, A. R. Karim, F. D. Ardejani, M. A. Zadeh, M. Kor
Environmental Protection by Paste Production and Storage Mechanism for Cyanide Disposal in Gold Processing-A Case Study, Aq Dareh, Takab, Iran

R. A. Dehghan, A. B. Assadi, F. D. Ardejani, A. A. Azizpour
Iranian Experience in Designing Heap Leaching Structures-Case Study: Heap Leaching Structure No. 3 of Sarcheshmeh Copper Mine

K. Kura, M. Korcz, J. Długosz, G. Gzył, M. Odrzywołek
Application of Conceptual Hydrogeological Site Model Basing on GIS Database for the Area of Mine Waste Rock Pile

A. Turner, Ch. Braungardt, J. Rieuwerts, K. Mighanetara
Unravelling the Complex Issues of Diffuse Metal Pollution from Abandoned Mine Workings

M. M. S. Cabral-Pinto, M. M. V. G. Silva, A. M. R. Neiva
Uranium Mineralization and Associated Pollution on Water and Stream Sediments

I. Pluta
Using of Mine Tailings in Treatment of Mine Waters in the Upper Silesian Coal Basin

Banks, V. J., Palumbo-Roe, B., Chenery, S., Kura, K. and Klinck, B.A.
Catchment scale study of point and diffuse water pollution in the Rookhope burn, a tributary of the River Wear (UK) affected by abandoned metal mines.