Mine Water Environ
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MINE WATER NOTES

A Word from the Secretary General

Dear Colleagues and Friends,
I am currently busy organizing our IMWA 2010 Symposium; therefore, these mine water notes will be rather short. The most important upcoming events concerning mine water this year are the PADRE meeting in June, in Freiberg/Germany, and the Water in Mining 2010 meeting in Santiago, Chile at the same time. But, of course, the most important meeting to IMWA members is the one in September in Sydney, Nova Scotia. We are expecting 350 delegates and we hope that no volcano eruption between Europe and Canada will hinder your travel to IMWA 2010.

When you register for IMWA 2010, please ensure that you also book your hotel. Hotel reservation is your responsibility. You can find a link to the most prominent hotels on our web page www.IMWA2010.info. We are looking forward to seeing you in this lovely place in the world!

I also would like you to send me your short notes for Mine Water Notes. Romy Matthies, Doug MacKenzie, and Claire Cote sent me their short notes this time, and I hope to find your name under one of the paragraphs in the September issue of Mine Water and the Environment. In addition, please send me information on the conferences that you think might be of interest for our readers.

Glückauf
Christian Wolkersdorfer

Cape Breton University Responds to Heilongjiang's Request for Mine Safety Expertise and Training

Sydney, NS—The People's Republic of China accounts for the largest production of coal in the world, with employment estimated at five million. Heilongjiang is located in the northeast of China, bordering Russia. This region has been producing coal for over 100 years, with an annual output of 6 billion tonnes. Deadly mine disasters occur at a high rate in Chinese coal production and the government has committed to dramatically improving safety conditions. Very recently, 153 miners were trapped in a flooded coal pit in one of China's northern collieries; on November 24, 2009, a fatal explosion killed 104 people in this region of China, one of the deadliest in recent history.

During the past year, there have been exploratory discussions between Cape Breton University (CBU) and the Heilongjiang Coal Commission about coal mining safety education and training programs. In February, CBU President and Vice Chancellor, John Harker met with senior officials of Heilongjiang Coal Commission (HLJA) and government representatives. The meeting focused on Heilongjiang's serious issues of life threatening floods and fires as well as the need for emergency rescue expertise for miners, managers and mine owners. The value of the capacity of Cape Breton University to draw upon Cape Breton mining experience to address both short and long term mine safety training and assessment needs was agreed by the parties.

President Harker has committed two Cape Breton experts, who will soon be on-site in Heilongjiang. These experts will initiate the exchange of technical information. They will also undertake a "needs analysis" of the ongoing training requirements that would be of value to the Heilongjiang Coal Commission as a regulatory body for the many privately owned mines in the region.

According to Harker, "This was of great interest to Chinese officials for a number of reasons. They are aware of the long history of coal mining in Cape Breton and the efforts made here to ensure safety for workers underground.

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They also are aware of CBU's success with developing and implementing multiple training modules in several international locations for Exxon Mobil, through LearnCorp International, a private sector company wholly owned by CBU. LearnCorp focuses on developing and managing corporate education and training programs, particularly those that have international and/or eLearning components. I was also able to inform them that through CBU's Chair in Mine Water Remediation & Management, the university will be jointly hosting the world's major international symposium—IMWA 2010—"Mine Water & Innovative Thinking", on campus in September of this year, bringing the world's leading experts on the subject to Cape Breton."

The control of mine gas and recycling of mine water are extremely important to HLJA. The Commission is planning to send two delegations of mine managers and owners to Cape Breton to gain first hand training knowledge from the local experience, with the first delegation slated to arrive in June. In addition, HLJA directors recognize the need to build a mine safety culture and encourage miners' ownership of risk assessment practices. They have committed to two initial training programs this year.

CBU and Enterprise Cape Breton Corporation, now home to skills and expertise built during the DEVCO (Cape Breton Development Corporation) era, will be meeting in the near future to assess the possibilities for the formation of a partnership that could sustain a long-term commitment with HJLA. CBU and ECBC (Enterprise Cape Breton Corporation) are confident that Cape Breton has the resident knowledge to assist with all aspects of safe and responsible mining and believe that this can be an important economic activity.

The initial investment of CBU time and resources will be managed under the auspices of CBU's *Centre for Sustainability in Energy & the Environment (CSEE),* under the direction of Chief Operating Officer, Dr. Ross McCurdy.

Adapted after Doug MacKenzie, Communications/PR Specialist, Cape Breton University, April 13, 2010.

University of Queensland, Sustainable Minerals Institute, Mine Water Accounting Workshop

For many years, problems have persisted in measuring and reporting mine water use in a consistent, simple, and comprehensible way that can meet the basic requirements for minerals operations, corporate, and government reporting. Over the last 2 years, the Centre for Water in the Minerals (CWiMI) Industry has been working with the Minerals Council of Australia to develop and test a national system for mine water accounting. The proposed system has been tested on a range of mining, concentrating and refining operations in a variety of operating conditions.

A mine water accounting workshop will be held 9 June 2010, prior to the Water in Mining 2010 conference to be held in Santiago, Chile. I will be presenting the course and hope to see you there.

Claire Cote, University of Queensland, Brisbane, Australia.

European Geosciences Union Conference 2010

The largest geosciences conference in Europe was held at the beginning of May in Vienna, Austria. More than 12,000 abstracts were received on topics covering every imaginable topic from geo-applications in forensic sciences to hard rock geology. The European Geosciences Union (EGU) conference is also an exceptional opportunity for the mine water community to present their work, and to network with like-minded researchers with similar interests. Many of the presentations were potentially of interest to IMWA members. Given the limited space available here, I have highlighted only 20 of them that should interest the readers of Mine Water and the Environment. Abstracts of these and many others can be downloaded under http://meetings.copernicus.org/egu2010. I hope that the participation of IMWA members to the conference will continue to increase in the years to come.

- A Banegas, M J Martinez-Sanchez, I Agudo, C Perez-Sirvent: Use of filler limestone and construction and demolition residues for remediating soils contaminated with heavy metals: an assessment by means of plant uptake
- J Bech, P Duran, W Poma, I Sánchez, J Barceló, N Roca, R Boluda, L Roca-Pérez, C Poschenrieder: The first report of Pb and Zn accumulation in some native plants from the Peruvian Andes
- L Carniato, G Schoups, P Seuntjens, L Bastiaens: Modeling Fe^0 permeable reactive barriers for groundwater remediation
- R Clemente, C de la Fuente, J A Alburquerque, I Martínez-Alcalá, T Pardo, M P Bernal: Effects of organic and inorganic amendments on heavy metal fractionation in soils from the "Cartagena-La Union" mining site (Spain)
- W Daniels, G Evanylo, T Stuczynski: Low cost remediation of mining sites with biosolids
- J Delgado, R Perez-Lopez, J Miguel Nieto, C Ayora: Geochemistry of rare earth elements in minesoils from São Domingos mining district (Iberian Pyrite Belt)
- R Ellerbrock: FTIR spectroscopic characteristics of old surface soils as compared to those of recent surface soils to determine to historical land use
- J M Esbrí, T. Martín-Crespo, D. Gómez-Ortiz, C.I. Monescillo, S. Lorenzo, and P. Higueras: Mercury

dispersion in soils of an abandoned lead–zinc–silver mine, San Quintín (Spain)
- V Ettler, M Mihaljevic, V Majer, B Kribek, O Sebek: Metal distribution and mobility in lateritic soils affected by Cu-Co smelting in the Copperbelt district, Zambia
- A Faz, J A. Acosta, S Martinez-Martinez, D M. Carmona, R Zornoza, S Kabas, J Bech: Risk assessment and restoration possibilities of some abandoned mining ponds in Murcia Region, SE Spain
- M L Garcia-Lorenzo, M J Martinez-Sanchez, J Molina, M Hernandez-Cordoba: Phytotoxkit® and Ostracodtoxkit® tests for assessing the toxicity of sediment samples with high concentration of heavy metals
- R Herbert: Reactive barrier system for nitrate removal from mine effluents in northern Sweden: laboratory experiments
- P Higueras, W Llanos, M E García, R Millán, C Serrano, E M García-Noguero: Multielemental pollution of soils at the Ingenios, decommissioned mineralurgical sites in Potosí (Bolivia).
- E Korobova: Landscape and bio- geochemical strategy for monitoring transformation and reclamation of the soil mining sites
- N Kumar, L Bastiaens, K Vanbroekhoven, R Millot, F Battaglia-Brunet: L Diels Metallic particles to stimulate sulfate reduction: A new approach for bioremediation in low pH streams
- S Martínez-López, M J Martínez-Sánchez, M L García-Lorenzo, C Pérez-Sirvent: Plant material as bioaccumulators of arsenic in soils affected by mining activities
- R Matthies, A C Aplin, A J Boyce, A P Jarvis: Stable sulfur, oxygen and carbon isotopes unravel the importance of bacterial sulfate reduction in passive mine water treatment systems
- F Offeddu, I Tiseanu, J Cama, J M. Soler, C Ayora: Treatment of acid mine drainage. Column experiments and X-ray microtomography
- C Wanner, S Zink, U Mäder, U Eggenberger: Assessment of chromate reduction efficiency in a field scale PRB in Thun (Switzerland) by measuring Cr-Isotopes
- L Xu, J Yan, Y Gao: Study on different thickness topsoil quality of reclaimed land filling with coal gangue in coal mine area—a case study of Xinzhuangzi coal mine, China

Romy Matthies, Newcastle upon Tyne, UK

New Members

We welcome our following new members:
S. Rob Beranek, Ishpeming, USA
James Birkhead, Elgin, USA
Diana Duthe, Northlands, South Africa
Shawna Eason, Amherst, Canada
Bronwen Forsyth, Brisbane, Australia
Christian Gardois, Calgary, Canada
Jennifer Geroni, Barry, United Kingdom
Deborah Green, Melbourne, Australia
Denver Harper, Bloomington, USA
Tiernan Henry, Galway, Ireland
Jennifer Hudson, Fort Collins, USA
Mike Hutton-Ashkenny, Cardiff, United Kingdom
Anna Kluza, Tom Price, Australia
Helena Lind, Tallinn, Estonia
Mark Nelson, Deadwood, USA
Patrick O'Shea, Hanover, USA
Thomas Simonetti, Canonsburg, USA
Jim Vohden, Fairbanks, USA

We hope that our new colleagues will benefit from and contribute to the extensive mine water knowledge and expertise gathered within our group of international experts. Please use your membership number in any correspondence, especially money transfers with IMWA. You can find it easily on your journal's address label, in front of the word "GES".

Lee C. Atkinson, Treasurer, Lakewood, Colorado, USA; Chris Wolkersdorfer, Secretary General, Cape Breton, Canada

Forthcoming Events

June 9th–11th 2010, Santiago, Chile
Water in Mining 2010

WIM 2010 will provide an outstanding opportunity for policy makers, engineers, researchers, technology consultants and suppliers to discuss the latest developments in the availability, efficient use and sustainable management of water in the mining industry.
http://www.wim2010.com; wim@wim2010.com

September 5th–12th 2010, Sydney, Nova Scotia, Canada

IMWA 2010 Symposium "Mine Water & Innovative Thinking"

The IMWA 2010 Organizing Committee is working to create a memorable and enjoyable experience for conference delegates and accompanying persons.

Conference Themes:

1. Mine Water Issues & Innovative Mining Methods

Speakers in this session will present existing or evolving methodologies that prevent the pollution of mine water

during operations, produce a smaller water footprint and limit impacts on surrounding ecosystems.

2. Mine Water Engineering

Papers will deal with engineering infrastructure, such as pumps, dams, groundwater diversions, and pipes to direct mine water through or around the mining operation to treatment and finally to receiving water bodies with minimal impact. It will also include innovative solutions for designing on-going and final reclamation schemes that will benefit local communities.

3. Mine Water Treatment—Active Systems

If mine water becomes polluted, treatment is necessary before it is either discharged into receiving water bodies or used for other purposes, such as cooling, fire suppression, cleaning equipment, or as drinking water. This session will deal with the techniques used in active mine water treatment.

4. Mine Water Treatment—Passive Systems

Passive treatment is an environmentally friendly technology to treat mine water. Under normal operating conditions, no chemicals are used and the only energy sources are natural: sunlight, potential energy or 'biological' energy from plants or microorganism, wetlands for final polishing, limestone for natural buffering, or forest buffers for noise and dust suppression. Passive systems can also use 'natural' chemical reactions between carbonate rich rocks and acidic waters.

5. Mine Water Uses—Geothermal, Geochemistry, Biochemistry

Mine water can be used in several ways: as geothermal energy, as cooling liquid, in agriculture, for recreation, as drinking water, or enhancing stream flow. Papers presented in this session will focus on those mine water uses.

6. Analysis of Mine Water and its Chemistry

Mine water chemistry usually differs significantly from the chemistry of ground and surface water. In this session, the problems encountered with developing appropriate field sampling protocols, selection and deployment of real time monitors, laboratory analysis techniques, and selection of tracers will be explored. It will also include modelling the results and consideration of legal and funding issues associated with long term monitoring after operations cease. The session also covers general aspects of mine water.

7. Coal Mining—Underground Mining, Surface Mining

Coal is one of the most important solid fuels for electricity production and heating. Consequently, mine water issues for both surface and underground coal mines are an important part of operational management, consultancy, and research. Speakers for this session will focus on mine water issues related to coal mining, such as acid mine drainage, pumping, prevention of pollution, geochemical aspects of coal mine drainage, encountering deep saline groundwater, sub-sea mining, multi-seam mining, in situ gasification, and CO_2 sequestration.

8. Mine Closure—Coal, Metal

Mine closure has become an important environmental issue worldwide. To ensure that mines are closed in a way that long term pollution of receiving water courses is minimized, special techniques have been developed in recent years. This session will address mine closure strategies relative to mine water and related aspects of subsidence, reclamation bonding, long term monitoring, meeting a changing regulatory framework, public perception issues, and the potential impact of a changing climate.

9. Legal and Social Aspects of Mine Water

Use of mine water and discharges of mine water into receiving water courses need special legal consideration in most countries of the world. One of the many examples covering discharges is the European Water Framework Directive. Talks in Section 9 will focus on legal and social questions concerning mine water, impact on surface landowners, ISO accreditation, due diligence, and environmental impact assessments.

10. Mine Tailings

Mine tailings and their associated emanating waters need experienced operators, consultants, and researchers to ensure proper handling and treatment. This theme will be the platform for presentations dealing with water flowing through or emanating from mine tailings and coarse waste rock piles, as well as long term groundwater contamination plumes, and demolition of facilities.

11. The 'Cape Breton Development Corporation' Legacy

In 1672, Nicholas Denys, described the occurrence of coal seams on Cape Breton Island. On December 31, 2009, the Cape Breton Development Corporation—the last large scale mining operator in the Sydney Coal Field—ceased as an entity and amalgamated into 'Enterprise Cape Breton Corporation'. Papers presented in this section will deal with the mine water issues of four decades of coal mining on Cape Breton Island by the Corporation, and more than three centuries of coal mining on the Island.

12. Discussing the concept of a 'Zero Waste Mine'

Most mine operations produce large amounts of unwanted material, such as overburden, waste rock, mine water, sludges, or tailings, that can't be readily sold to market. In most cases, the mine operator must dispose of

these substances. Commonly, these unwanted substances are referred to as mine waste. This moderated discussion theme will investigate the potential for a Zero Waste Mine, and discuss the techniques and research that is needed to operate a mine as a Zero Waste Mine.

13. Fracture Flow to Mines

The aim of this Special Session is to look at how fractured rock is characterised and how data are used to design large pit slopes or underground mines, assess dewatering, depressurisation, and water inflow volume or rates, and site water monitoring and management during mining.
http://www.IMWA2010.info; email: info@IMWA2010.info

June 21st–23rd 2011, Aberystwyth, Wales, UK

Frontiers in Environmental Geoscience; http://www.minersoc.org/pages/meetings/frontiers-2011/frontiers-2011.html; email: njp@aber.ac.uk.

September 4th–11th 2011, Aachen, Germany

11th IMWA Congress

http://www.IMWA2011.info; email: info@IMWA2011.info

2012, Denpasar, Bali, Indonesia

IMWA 2012 Symposium

http://www.IMWA2012.info; email: info@IMWA2012.info

2012, Ottawa, Canada

ICARD 2012—MEND Canada

Mark your calendars; the 9th International Conference on Acid Rock Drainage (ICARD) is coming to Ottawa, the birthplace of MEND, in May/June 2012. The Conference will include 3 days of technical presentations, a suite of short courses and field trips.
gtrembla@nrcan.gc.ca