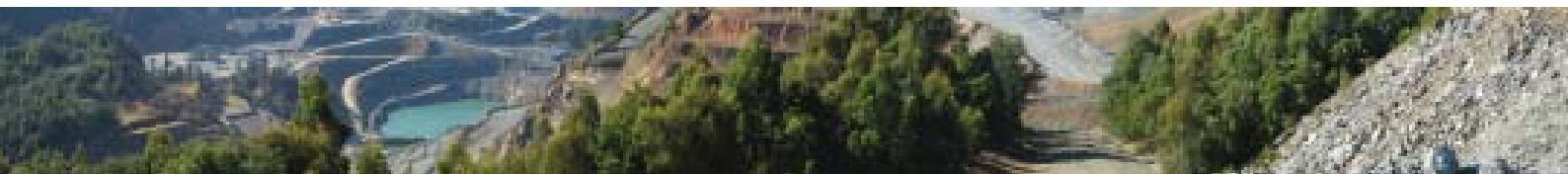


# Short Course on The Fundamentals of Acid and Metalliferous Drainage



*Promoting leading practice through delivery of a quality professional development program, addressing the practical challenges of sustainable development in the minerals industry.*



**11-12 March 2009  
Mercure Hotel, Brisbane QLD**

Acid and Metalliferous Drainage (AMD) is, and has been, a very significant issue, and therefore represents both a long-term risk and cost, for many sectors of the global mining industry. Acid and Metalliferous Drainage, sometimes referred to as 'acid mine drainage' (AMD) or 'acid rock drainage' (ARD), frequently occurs in the mining of base metals, coal, and uranium, and may also become a significant issue for the quarrying industry and the land development industry, where acid sulphate soils are exposed to oxygen and water. AMD can also describe the occurrence of near-neutral but metalliferous drainage (see *Managing Acid and Metalliferous Drainage Handbook*, produced by the Australian Government Department of Industry, Tourism and Resources, February 2007). Whilst the on-site impacts may be significant, the downstream impacts on the environment and water quality may impact on human health and thus increase public and regulatory focus and concern, and ultimately the 'social licence to operate' may be at risk.

The identification of potential AMD issues at the exploration and feasibility phases is critical, as these mine planning phases are often linked with community consultation, environmental impact assessment and regulatory approvals. Over the past 2 decades in Australia, knowledge of the extent and potential impact of AMD has increased, and this knowledge has been shared at ACMER workshops across Australia since 1992. There has also been a significant effort in the characterisation and testing of materials for AMD, and in developing innovative management strategies. Thus there is a vast array of information available to site managers to manage, minimise or eliminate AMD, and thereby reduce the costs to their operations and the business. However, it is apparent that some operations encounter AMD problems possibly through lack of understanding of the fundamentals of AMD and its underlying causes, or inappropriate management, or inadequate skills of site and planning personnel.

## SHORT COURSE AUDIENCE

The short course will be of benefit to new industry and EPA staff, mine planners and geologists working in the extractive industries, environmental managers and officers, council engineers, consultants, regulators, researchers and students.

## KEYNOTE SPEAKERS

Emer Prof Clive Bell - formerly ACMER Director  
Prof Dee Bradshaw - JKMRRC, The University of Queensland  
Dr Stephen Dobos - Dobos and Associates Pty Ltd  
Mr Marshall Lee - Golder Associates Pty Ltd  
Dr Alan Robertson - RGS Environmental Pty Ltd  
Mr Peter Scott - HLA ENSR  
Dr Jeff Taylor - Earth Systems Pty Ltd

EPA speaker and other industry speakers tbc.

## BENEFITS OF ATTENDING

This short course provides an opportunity for mine site personnel and regulators working on AMD/ARD issues produced as a result of mining and also from use and development of acid sulfate soils, to

- (1) gain an understanding of the fundamentals of AMD/ARD that underpin management
- (2) consider the business case for improved AMD/ARD practices,
- (3) compare and share innovative approaches relating to material characterisation, planning and design to prevent or minimise the impacts of acid drainage,
- (4) better manage and treat acid drainage,
- (5) examine options for closure and relinquishment of sites impacted by acid drainage,
- (6) identify knowledge gaps and the need for alternative approaches for acid drainage management and control, and
- (7) learn from case studies highlighting both problems and successes in handling acid drainage.



# Short Course on The Fundamentals of Acid and Metalliferous Drainage

## SHORT COURSE PROGRAM

### Wednesday 11th March

#### General Overview of AMD

- What is AMD and why does it occur?
- AMD Impacts and implications for mine operators
- Legacy sites and social licence to operate
- AMD management – overall process
- Industry best practice – sources of information
- Future directions

#### Understanding the Causes of AMD

- pH and acidity; metal solubility as a function of pH
- Geochemistry, Reactivity and Weathering
- Chemistry – Oxidation of sulfides
- Energetics of sulfide oxidation
- Surface and Groundwater in AMD

#### The Impacts of AMD

- ANZECC and Qld Water Quality Guidelines
- Baseline heavy metal concentrations
- Learning from the Past - Mt Morgan Post Closure
- Acid Sulfate Soils
- AMD and its secondary products

#### Planning, Prediction and Prevention of AMD

- Risk Assessment and Planning
- Characterisation of Materials
- Testing and Sampling for AMD

### Thursday 12th March 2009

#### AMD – Management

- Industry Management Options
- AMD Issues in Waste Rock Dumps, Tailings and Voids
- Avoiding the Legacies - Designing Covers for Waste Rock Dumps and Tailings
- Working open cuts and final voids
- Short and long term effect on revegetation
- Underground Mines
- Case Studies on AMD Management for Site Conditions

#### AMD – Monitoring and Treatment

- Leading Practice Monitoring
- Practical Monitoring of Surface and Ground Waters
- Active and Passive Treatment
- The Role of Regulators
- Case Studies

#### AMD – Future

- Innovative Research
- GARD Guide and INAP



## GARD GUIDE WORKSHOP

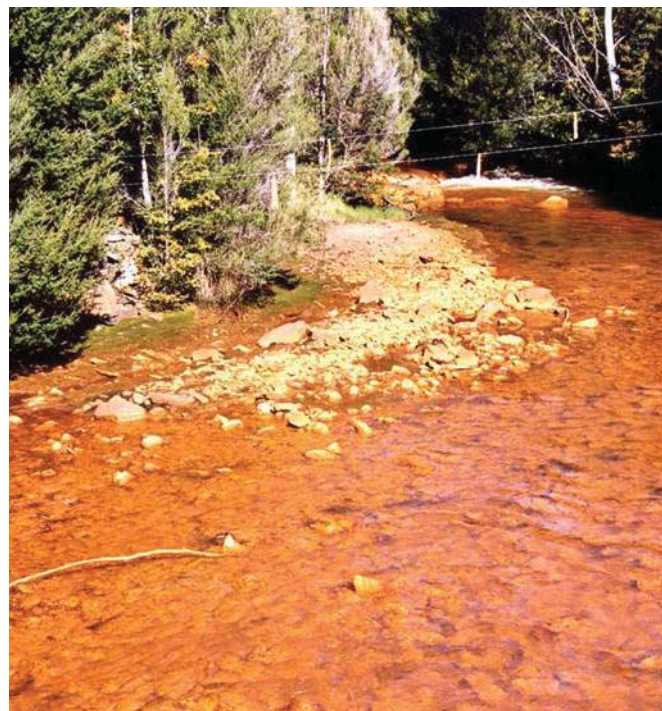
13 March 2009 (half-day)  
Mercure Hotel, Brisbane QLD

In order to reduce the incidence of AMD/ARD, the International Network for Acid Prevention (INAP), a consortium of the major global mining companies focussed on AMD/ARD, sponsors research on ARD, and actively supports international forums, such as the International Conference on Acid Rock Drainage (ICARD), a conference that is held every 3-4 years. INAP has also commissioned the production of a Global Guide on Acid Rock Drainage (GARD), and this is expected to be released in mid 2009.



In preparation for the GARD guide release, INAP in association with ACMER (The Australasian Representative of the INAP Global Alliance) will offer a half-day GARD Guide

workshop following the 'Short Course on the Fundamentals of Acid Metalliferous Drainage' on Friday 13 March 2009. This GARD Guide workshop invites industry and regulatory specialists in AMD/ARD and mine water management to discuss aspects of the Global Acid Rock Drainage Guide. This workshop is designed to share information regarding the development of the GARD Guide and to consult with role-players in order to obtain further regional input on specified Chapters of the Guide. The feedback received from the participants will be used to improve the Guide.



# Short Course on The Fundamentals of Acid and Metalliferous Drainage

## DELEGATE DETAILS

Title: .....  
First Name: .....  
Surname: .....  
Position: .....  
Organisation: .....  
Postal Address: .....  
Suburb/Postcode: .....  
State/Country: .....  
Phone: .....  
Fax: .....  
Email: .....  
Dietary Requirements: .....

## REGISTRATION (Due 23 February 2009)

- Registration for the Short Course on Fundamentals of Acid and Metalliferous Drainage, 11-12 March 2009 - \$ 1950.00 inc GST
- Registration for the GARD Guide Workshop (half-day) 13 March 2009 - \$ 88.00 inc GST

**All prices include GST.** Registration costs include morning/afternoon refreshments, lunches, and a comprehensive set of notes. Limited places available.

## PAYMENT DETAILS

- Cheque - made payable to The University of Queensland
- Company Purchase Order No: .....  
Company ABN No: .....  
Mailing address for invoice: .....
- Bankcard     MasterCard     Visa
- Card Number:
- Name of Cardholder: .....  
Expiry Date: .....  
Signature: .....

## FOR OFFICE USE ONLY



PAID DATE: .....

INVOICE NO: .....

ENTRY DATE: .....

## ACCOMMODATION

Delegates can book their accommodation at their own expense at the following hotels:

**Mantra South Bank**  
161 Grey Street  
Southbank QLD 4101  
Ph: +61 7 3305 2500  
Fax: +61 7 3305 2599  
Southbankbris.res@mantra.com.au

**Conrad Treasury Brisbane**  
130 William St  
Brisbane QLD 4000  
Ph: +61 7 3306 8888  
Fax: +61 7 3306 8880  
brtcresevation@tabcorp.com.au

**Rydges Southbank**  
9 Glenelg Street  
Southbank QLD 4101  
Ph: +61 7 3364 0800  
Fax: +61 7 3364 0801  
reservations\_rydges@rydges.com

For further accommodation options and information about Brisbane visit: <http://www.ourbrisbane.com/>

## ACMER COMMUNICATION

Tick here if you do not wish to receive our electronic ProgramUpdates  
Where did you learn about this workshop?

- ACMER Emailing     ACMER Website  
 Colleague     Other (please specify): .....

## CANCELLATION

ACMER reserves the right to cancel any course at its discretion. Whilst we endeavour to make every effort not to do this, there could be circumstances beyond our control (e.g. insufficient numbers) that may prevent us from going ahead. In the light of this, if you need to fly, we suggest that you purchase a fully flexible airline ticket. Delegates cancellations 14-8 days before course commencement incur an administration fee of \$110. For cancellations 7 days or less before course commencement and non-attendance at the course, the full registration fee is payable. Substitutions accepted when advised.

## WORKSHOP INFORMATION

Course days will commence at 8.30am and generally conclude at 5.00pm. Please note these times may be subject to slight variations. For more information please go to: [www.acmer.uq.edu.au/training/program.html](http://www.acmer.uq.edu.au/training/program.html)

## VENUE

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