

8th AMD

28 April - 2 May 2014 | Adelaide, South Australia

In April 2014, mining industry environmental specialists and engineers, geochemists, leading researchers, consultants, regulators and students from across Australia and around the world will gather in Adelaide to explore emerging trends and issues related to Acid and Metalliferous Drainage/Acid Rock drainage (AMD/ARD) assessment and remediation. This year's program will consist of a one day short course, followed by a four day workshop and inclusive field trip.

The triennial 8th Australian Acid and Metalliferous Drainage (AMD) Workshop is presented by SMI Knowledge Transfer (SMI KT), a unit within JKTech with cooperation from the Department of Manufacturing, Innovation, Trade, Resources and Energy (DMITRE), Government of South Australia. The workshop and associated short course and site visits will provide excellent opportunities to share with speakers and delegates, unbiased expertise and advocacy with respect to the causes, management and amelioration of the impacts of AMD and Acid Sulphate Soils.

The workshop theme, "What's Working, What's Not and What Could Be", emphasises the need for companies to ensure their AMD risk assessment processes truly communicate a clear message to senior management, to learn from observations of the practical long-term implications of climatic extremes and to integrate appropriate emerging treatment technologies and research into perpetuity maintenance.

Key sessions will include: The Business Case for Improved AMD Management; A Global View on Acid and Metalliferous Drainage; Future Implications for AMD Management in Australasia; and Managing AMD - What's Working, What's Not and What Could Be; which covers planning mined-waste storage structures, rehabilitation issues, treatment technologies, new research, regulatory issues, monitoring measures, and long-term risk assessment studies.

The workshop, with its extensive program of 45 plus presentations, field trips, poster display and exhibition booths will offer delegates the opportunity to experience some of Adelaide's many unique offerings through the workshop's exciting social program.

CONTACT

Bruce Barrie
P 07 3365 5980
E b.barrie@jktech.com.au
www.jktech.com.au/8th-AMD

Benefits of attending:

- Hear the business case for improved AMD/ARD practices and what you could do to avoid unnecessary costs that could compromise your project
- Develop practical methods for ensuring you fully comply with environmental legislation whilst still achieving your desired business outcomes
- Compare and share innovative approaches relating to material characterisation, planning and design to prevent or minimise the impacts of acid drainage
- Learn how to identify knowledge gaps and the need for alternative approaches for acid drainage management and control
- Analyse geotechnical issues concerning the gradual decay of mined-waste storage structures and what they could mean for your current and future projects
- Examine proven, innovative strategies for dealing with the real timelines in managing AMD and how they could be key to risk mitigation
- Meet and network with some of the mining industry's most foremost AMD/ARD management specialists, researchers, government regulators and students

Inclusions

Delegates will receive:

- Short Course and/or Workshop book including presenters' slides and space for note-taking,
- A complete set of refereed papers on CD (workshop delegates only),
- Leading Practice Sustainable Development handbooks on CD,
- Arrival tea/coffee, morning/afternoon tea, and lunch,
- Welcome Event on Monday 28 April 2014,
- Workshop Dinner on Tuesday 29 April 2014 (workshop delegates only),
- Field trip to the historic Brukunga Mine Site (workshop delegates only).

Audience

- Environmental Managers
- Environmental Consultants
- Environmental Advisors/Officers
- Mine Planners
- Project Managers
- Sustainability Managers
- Government Regulatory Agencies
- Rehabilitation Practitioners
- Geochemists
- Researchers
- HSE Managers
- Recent Graduates
- Students

Partners and Sponsors

Workshop Major Partner



Workshop Partner



Cafe Bar Sponsor



Satchel Sponsor

RioTinto

Lanyard Sponsor



Partnership and Exhibition Opportunities:

SMI Knowledge Transfer invites companies, consultants, researchers, government and non-government agencies to raise their profile by participating in various levels of partnership, sponsorship and trade exhibitions for AMD 2014.

The workshop provides an opportunity to share with the mining industry, regulators, researchers, consultants and the community, unbiased expertise and advocacy with respect to innovative approaches to managing AMD that might have relevance to their own sites or projects.

Sponsorship of the 8th Australian Workshop on Acid and Metalliferous Drainage presents an excellent opportunity for your company or organisation: to be recognised internationally for their capability in the field of AMD/ARD prevention and

remediation (including Acid Sulphate Soils) with their operations and clients; To contribute to knowledge transfer of AMD/ARD/ASS issues; To engage with workshop participants; and to contribute to the success of this long running workshop.

FOR A FULL LIST OF
OPPORTUNITIES
PLEASE VISIT

www.jktech.com.au/8th-AMD

Short Course Program

MONDAY 28 APRIL 2014		PRESENTERS
Welcome and Introduction		Mr Bruce Barrie JKTech
ACID AND METALLIFEROUS DRAINAGE – AN OVERVIEW		
Acid and Metalliferous Drainage (AMD): Understanding AMD and its Implications for Mine Operations		Dr Alan Robertson RGS Environmental Pty Ltd
Case Study – Savage River Mine		
AMD – UNDERSTANDING THE CAUSES		
Understanding The Role of Water in AMD Geochemistry		Dr Jeff Taylor Earth Systems Pty Ltd
Learning from the Past - A Case Study		Dr Andrew Garvie SRK Consulting (Australasia) Pty Ltd
AMD – PLANNING, PREDICTION AND PREVENTION		
Managing AMD from Mine Waste Materials		Prof David Williams The University of Queensland
Timelines and Risk Profiles in Rehabilitation of Mined Landforms		Prof David Williams The University of Queensland
AMD – MONITORING AND TREATMENT		
Understanding the Short and Long Term Effects of AMD on Revegetation		Emer Prof Clive Bell Former ACMER Executive Director
Leading Practice Monitoring		Dr Jeff Taylor Earth Systems Pty Ltd
Active and Passive Treatment		
INAP and the 9th ICARD		Dr Terry Chatwin INAP



Welcome Event

Monday 28 April | 05.30pm
Oli's Function Room, Hotel Grand Chancellor Adelaide on Hindley
Canapés and beverages provided

Supported by:



Workshop Program

TUESDAY 29 APRIL 2014			PRESENTERS
Welcome and Introduction			Mr Bruce Barrie, JKTech
Opening Address			Hon. Tom Koutsantonis MP Government of South Australia
Workshop Major Partner Address			Mr Mike O’Kane O’Kane Consultants Pty Ltd
FROM BOARDROOMS TO MINE SITES - THE BUSINESS CASE FOR IMPROVED AMD MANAGEMENT			
Keynote Address: Detailed Characterisation of the Waste Rock Dumps at the Kennecott Utah Copper Bingham Canyon Mine – Optionality for Closure			Mr Paul Brown, Rio Tinto
Commercial Implementation of Mine Closure Research Bringing Tools to Practice for Management Decisions			M. O’Kane, G. McKenna, and C. Qualizza
Leading Practice Solutions for ARD Prevention and Control. A Key to Achieving a Sustainable Future for Mineral Resource Development			S. Miller
FUTURE IMPLICATIONS FOR AMD MANAGEMENT IN AUSTRALASIA			
Keynote Address: Savage River Rehabilitation Project – 2002 to 2013			Prof David Williams, The University of Queensland
Management of Pyrrhotite Tailings – A Ten Year Case Study on Continuous Learning and Improvement			A. M. Robertson, N. Kawashima, R.St C. Smart, and R. Schumann
The Mt Gordon Challenge: Impacts of Historic Legacies, Highly Variable Climatic Conditions and Tough Economic Conditions on Management of Acid Mine Drainage			K. Sell and D. Allen
Beyond the PAF Cell			S.R. Pearce
Overall Acid Production Rates in Mine Wastes			A. Garvie, C. Linklater, J. Chapman, and A. Watson
FUTURE IMPLICATIONS FOR AMD MANAGEMENT IN AUSTRALASIA - A		FUTURE IMPLICATIONS FOR AMD MANAGEMENT IN AUSTRALASIA - B	
The Rum Jungle National Partnership Agreement	T. Laurencont and M. Rider	What Do Elevated Background Contaminant Concentrations Mean for AMD Risk Assessment and Management in Western Australia?	C.D. McCullough and J.I. Pearce
Rehabilitation Planning at the Rum Jungle Mine Site	P. Ferguson, C. Wels, and T. Laurencont	Field and Desktop Waste Rock Classification Guide for a Metalliferous Mine in the Northern Territory, Australia	M. Landers, B. Usher, D. Faulkner and P. Marinelli
The Neutralisation Potential of Biotite and Phlogopite Dissolution at the Brukunga Pyrite Mine, South Australia	F. Ali, J. Webb, and J. Taylor		
Interactive Panel Discussion Future Implications for AMD Management in Australasia			Invited Panellists



Workshop Dinner

Tuesday 29 April | Buses depart 06:15pm
The Gallery Room, National Wine Centre of Australia
Three-course dinner and beverages included

Workshop Program

WEDNESDAY 30 APRIL 2014			PRESENTERS
Welcome and Introduction			Mr Bruce Barrie, JKTech
A GLOBAL VIEW ON ACID AND METALLIFEROUS DRAINAGE			
Keynote Address: INAP Update and Outcomes of 9th ICARD in Ottawa			Dr Terry Chatwin, INAP
Designer Tailings: Improving the Management of Tailings Through Collaborative Research			M. Edraki, T. Huynh, T. Baumgartl, L. Huang, M. Andrusiewicz, K. Tungpalan, M. Tayebi-Khorami, E. Wightman, S. Palaniandy, E. Manlapig, C. Evans, S. Farrokhpay, D. Bradshaw, and S. Vink
MANAGING AMD - WHAT’S WORKING, WHAT’S NOT AND WHAT COULD BE			
Cover Systems.... Are We There Yet?			M. O’Kane
WASTE ROCK LANDFORMS AND COVER DESIGN		EFFECTIVE SAMPLING AND TESTING – IN PREDICTING DRAINAGE CHEMISTRY	
Characterisation of 26 year Old Waste Rock Stockpiles at the Detour Lake Project	A. Cash, G.W. Wilson, D. Blowes, R. Amos, J. Robertson, and M.H. Turgeon	Using Kinetic Geochemical Testwork to Assist with Mine Planning, Operations and Post Closure	B. Davis, N. Bourgeot, and J. Taylor
Geita Gold Mine Geochemical Characterisation	B. Dobchuk, I. Taylor, G. Hancock, Cooper, H., T. Coulthard, and R. Stephen	Heterogeneity Analysis Tools for AMD Assessments	S.R. Pearce
Defining Effective Closure and Reclamation Measures for Tailings and Waste Rock Storages: An African Case Study	P.A. Scott, R. Stephen, B. Dobchuk, M. Phillip, E. Mihayo, and I. Taylor	Mineralogy of Mine Site Neutralising Materials: A Missing Link in AMD Control Planning	A.R. Gerson, R. Smart, J. Li, N. Kawashima, R. Fan, S. Zeng, R. Schumann, G. Levay, P. Dielemans, P. Mc Latchie, B. Huys, A. Hughes, S. Kent, and B. Hutchison
Evaluation of Three Different Cover Systems Utilizing Geosynthetic Layers Constructed in a Seasonally Humid Geographic Location for the Closure of Coal Waste Rock Piles	G.P. Meiers, M. O’Kane, D. Mayich, and M. Barteaux	Biogeochemical Processes Governing Natural Pyrite Oxidation and Release of Acid Metalliferous Drainage	Y.T. Chen, J.T. Li, and W.S. Shu
Alkalinity Producing Covers for Minimisation of Acid Mine Drainage Generation in Waste Rock Dumps	W. Olds, P. Weber, and M. Pizey	Assessing Metal Leachability from Low Sulfur Wastes – Sequential Extraction Methods	C. Linklater, J. Chapman, P. Brown, R. Green, and S. Leake
Alkalinity Addition for Pyrite Passivation of Waste Rocks from Mt Lyell, Western Tasmania	M.G. Sephton and J.A. Webb	Oxidation and Solute Accumulation in Pit Wall Rock: Limiting Changes to Pit Lake Water Quality	A. Garvie, C. Linklater, R. Staines, J. Chapman, and R. Green
Performance of a Cover on a Bulk Sample Tailings Dam at Century Mine	P.L. Defferrard, T.K. Rohde, and B.J. Milsom	RTIO AMPL Risk Assessment Tool	S. Hannam and R. Green
PASSIVE AND ACTIVE WATER TREATMENT OPTIONS IN MANAGING AMD			
Passive Treatment of Antimony in New Zealand by Two Methods: Formation of Stibnite in a Sulphate-Reducing Bioreactor and Adsorption onto AMD Precipitates			D. Trumm and J. Pope
Instrumentation in Waste Dumps			S. Pearce and M. Barteaux



Field Trip – Brukung Mine Site

Thursday 1 May | Buses depart 09.00am
Brukung Mine Site, Adelaide Hills
Lunch included



**Government
of South Australia**

Workshop Program

FRIDAY 2 MAY 2014			PRESENTERS
Welcome and Introduction			Mr Bruce Barrie, JKTech
PASSIVE AND ACTIVE WATER TREATMENT OPTIONS IN MANAGING AMD (Cont.)			
The Dynamic Neutralising Behaviour of Alkaline Waste Rocks (Chlorite Calcite Schist) in Flow-Through Treatment of AMD Waters			J. Li, A.R. Gerson, R.St.C. Smart, K. Kaplun, N. Kawashima, R. Fan, R.C. Schumann, A. Hughes, B. Hutchison, and S. Kent
Nanofiltration for Resource Recovery from Mine Influenced Water			M. Mullett and R. Fornarelli
EMERGING TECHNOLOGIES AND RESEARCH			
Integration of Water Chemistry and Acidity Components: A New AMD Assessment Model			P. H. Pham, B. Noller, S. Golding, and M. Edraki
EMERGING TECHNOLOGIES AND RESEARCH - A		EMERGING TECHNOLOGIES AND RESEARCH - B	
Gypsum Sludge and Tailings at Brukung Mine Used as Partial Clay Substitute for Making Construction Materials: A Lab Scale Study	Y. Tian, R. Mollehuara, I. Gajjar, and P. Baker	The Inert Gas Mixture (IGM) Technology to Prevent Acid Mine Drainage	L. Ameglio and H. Barrie
Tools for Assisting with the Assessment of Acid and Metalliferous Drainage (AMD)	J. Waters, S. Pape, and J. Taylor	Domaining Acid Rock Drainage Risks Using Geometallurgical Data	A. Parbhakar-Fox and B.G. Lottermoser
Neutralisation of Aluminium-rich Acid Mine Drainage to Form a Magnetic Sludge	W. Stanford and J. Webb	Wither Lime? AMD Treatment via In-Situ Hydrotalcite Precipitation (Virtual Curtain) Technology	G. Douglas
Geochemical and Geotechnical Investigations at the Reddale Coal Mine, Reefton, New Zealand	P. Weber, W. Olds, and M. Pizey	Cost Reduction Using Water Technologies	S.P. Costin
EMERGING TECHNOLOGIES AND RESEARCH (Cont.)			
Invited Panel Discussion Workshop Review			Invited Panellists
Workshop Conclusion and Thanks			JKTech

Posters

Draintube™ Geocomposite Drainage and Lining Solution for the Mining Industry	L. Ameglio and Y. Durkheim
Use of Biosolids for the Treatment of Acidic Metalliferous Mine Drainage	J. Robinson
Coupled Physical and Chemical Weathering Processes Influencing AMD Predictions	J. Pearce, R. Green, A. Rate, and G. Steyl

Venue

Hindley Rooms
Hotel Grand Chancellor Adelaide on Hindley
65 Hindley Street, Adelaide SA 5000
+61 8 8231 5552
www.ghihotels.com

Cost

Registrations		Early Bird	Normal Registration
Due on or before:		Friday 28 February	Friday 4 April
Short Course	28 April	\$900 incl GST	\$995 incl GST
Workshop + Field Trip	29 April - 2 May	\$2425 incl GST	\$2795 incl GST
Short Course + Workshop + Field Trip	28 April - 2 May	\$2725 incl GST	\$3195 incl GST
Full Time Student	28 April - 2 May	\$595 incl GST	\$595 incl GST

*A fee of \$110/person including GST will be applicable for late registrations received after Friday 4 April 2014.

*Group rates are applicable for 3 or more people from the same company attending the same dates.

Registration

To register please visit www.jktech.com.au/8th-AMD

'Register and Pay' will enable you to give contact details and make payment via credit card online.

'Register Only' will enable you to give contact details online with a follow up call from a SMI KT staff member regarding alternative payment details.

Timings

Professional development events will generally commence at 8.30am and conclude at 5.00pm. Please take note of the specific start times in the Program (downloadable on the website). Times may be subject to slight variations.

Accommodation

Hotel Grand Chancellor 65 Hindley Street Adelaide SA 5000 +61 8 8231 5552 www.ghihotels.com	The Sebel Playford Adelaide 120 North Terrace Adelaide SA 5000 +61 8 8213 8888 www.mirvachotels.com
---	---

Cancellation

SMI Knowledge Transfer 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 light of this, if you need to fly, we suggest that you purchase a fully flexible airline ticket.

Cancellations 28 to 15 days prior to course commencement: AUD110.00 administration fee payable

Cancellations 14 to 8 days prior to course commencement: 50% of registration fee payable

Cancellations 7 days or less prior to course commencement: 100% of registration fee payable

Non-attendance at course: 100% of registration fee payable

If you would like a copy of our Standard Terms and Conditions for Provision of Training (including our full cancellation policy), please visit www.jktech.com.au/terms-and-conditions

Pre & Post Touring Options

Festivals and food. Arts and culture. Shopping and sports. This is Adelaide - the Australian city where there's always something on. Adelaide's generous boulevards and elegant architecture provide the perfect backdrop for all sorts of holiday activities. No matter what takes your interest, there's something that will pique your curiosity.

The below are simply a taste of Adelaide's offerings - for further information visit

www.southaustralia.com

Rawnsley Park Station: Flinders Ranges Discovery Tours

Flinders Ranges Discovery four wheel drive tours take in the most spectacular scenery of the Flinders Ranges, and showcase the wildlife, geology, Aboriginal and European history of the region.

Kangaroo Island SeaLink

Kangaroo Island SeaLink offers a wide range of touring product on Kangaroo Island, including great day tours that will take you to most of the main highlights of this beautiful Island.

Barossa Wineries Day Tour

Visit four wineries before lunch, with an antipasto platter after the first cellar door tasting. Whistler Wines is the destination for lunch where a gourmet three course meal is provided, followed by a special visit to Illipara Fortified Wine Store.

Lyndoch Lavender Farm & Cafe

www.lyndochlavenderfarm.com.au

Awarded 2010 best 'Tourist Attraction' at the South Australian Tourism Awards. A multi-award winning Barossa Valley tourist attraction which entertains visitors with its beautiful rural surrounds, working lavender farm, quality merchandise, with tasting delights at The Lavender Kitchen.

North Terrace

If you want to immerse yourself in SA's rich arts and culture then this is the "cultural boulevard" for the South Australian Museum, Adelaide Botanic Garden, National Wine Centre and just around the corner is the National Aboriginal Cultural Institute - Tandanya.

'Eat Streets'

In Adelaide, you'll find entire streets devoted to dining. These 'eat streets' are a mix of cafes, pubs and restaurants. Try Gouger Street, Rundle Street, Hutt Street, or Hindley Street within Adelaide city. Venture further to coastal suburbs Glenelg and Henley Beach to view the sun setting over the ocean.

Adelaide Central Market

Here you'll find a huge range of fresh food, all under one roof - fruit and vegetables, meat and poultry, seafood, gourmet cheeses, bakery products, sweets, nuts and health foods. Shoppers can also take a break in some of the hippest cafes in Adelaide. The Market is open from Tuesday to Saturday each week.

Moonta Mines Museum

Erected in 1878, this building now houses displays on the Cornish miners' lifestyles - mining, lodges and societies, sports and pastimes, death and hardship. Other exhibits include costume displays, china, silverware, photographs, memorabilia, a classroom furnished circa 1900, and World Wars.

