

## Draft Program - 10<sup>th</sup> Australian Workshop on Acid and Metalliferous Drainage

### Monday 23 March; Theme of Day 1: Prediction

8:00	Registration open	
	Session 1: Opening session; keynote addresses	
8:30	Welcome (Mansour Edraki); Opening address (TBA); INAP update (Gilles Tremblay)	
9:00	Risk Assessment and Management of Legacy Mines in NSW; P. A. McBain, K. L. Maddison, N. G. Staheyeff; New South Wales Department of Planning, Industry and Environment	
9:30	Innovation in Characterization Studies of the Waste Rock Dumps at the Bingham Canyon Mine, Utah, USA; Ian S. Schofield, Paul L. Brown, Mark J. Logsdon, and Matthew P. Wickham; Rio Tinto	
10:00	MORNING BREAK	
	Session 2: Plenary session; Managing uncertainty in prediction CHAIR: Marilena Stimpfl, BHP	
10:30	Is it Possible to Make AMD Disappear? – A Case Study; Alan Robertson; RGS Environmental Pty Ltd	
10:55	Development of Alternate ANC Methods at Ok Tedi Mine PNG; Erizo Kepe, Jesse Pile, Warwick Stewart, and Russell Schumann; Ok Tedi Mining Limited; Environmental Geochemistry International Pty Ltd	
11:20	Setting Cut Off Grades in Waste Characterisation Schemes: The Perils of Using Grade Weight Averaging to Determine AMD Risk; S. Pearce, D. Brookshaw, S. Mueller, A. Barnes, T. Komba, and C. Anderson; Mine Environment Management Ltd; Boliden Mineral AB; Geochemic Ltd	
11:45	Uncertainties and Challenges in the Prediction of The Functional Hydrological Properties of Covers; Thomas Baumgartl; Federation University	
12:10	Climate Change and the Assessment of Acid and Metalliferous Rock Drainage: How Have We Done as an Industry?; Bronwen Forsyth; SRK Consulting (Australasia) Pty Ltd	
12:35	LUNCH	
	Session 3: Static leaching CHAIR: David Jones	Session 4: Time-dependent leaching CHAIR: John Webb ;
13:30	Effect of Temperature on Leaching from Pilbara Materials; C.M. Linklater, A. Watson, J Chapman, R. Green and R. Marton; SRK Consulting (Australasia) Pty Ltd; Rio Tinto Iron Ore	Pyrrhotite Is Not Pyrite: Consequences for Reduced AMD Assessment and Release; Andrea Gerson, Roger Smart, Alan Robertson, Russell Schumann, Ben Osgerby, and Peter Rolley; Blue Minerals Consultancy; RGS Environmental Pty Ltd; Levay and Co. Environmental Services; Bluestone Mines Tasmania Joint Venture Pty Ltd; Hillgrove Copper Mine;
13:50	Alkaline Leaching of Pilbara Materials; A. Watson, C. Linklater, J. Chapman, S. Lee; SRK Consulting (Australasia) Pty Ltd; Rio Tinto; BHP	Rate Evaluation of the Dissolution of Secondary Sulfate Minerals for Effective Acid and Metalliferous Drainage Mitigation; G. Qian, R. Fan, M.D. Short, R.C. Schumann, J. Li, Y. Li R.St.C. Smart, and A.R. Gerson; University of South Australia; Levay & Co. Environmental Services; Wuhan University of Technology; Blue Minerals Consultancy
14:10	Assessing the Leaching Potential of Solutes from Waste Rocks Episodically and Continuously Exposed to Saline and Hypersaline Conditions; R. Sharma, S. Black, D. Allen, B. Price, C. Burgers, and B. McGuire; ChemCentre; Consultant C/O ChemCentre; Fortescue Metals Group Ltd	Evaluating the effect of mine rock stockpile construction on mine drainage; K.R. Malloch, P. Petrov, M. Jerome, J. Robertson, M. O'Kane; O'kane Consultants New Zealand, Australia, Canada
14:30	An Integrated Protocol for the Assessment of Mobility And Risks of Potentially Toxic Elements in Mine Tailings; D.A. Rubinos, O. Jerez, G. Forghani, M. Edraki, and U. Kelm; University of Concepcion; SMI-ICE Chile	The Application and Testing of a Time Extended Paste pH Test for Pyrrhotite in Waste Rock Sorter Trials; Andrea R. Gerson, Roger Smart, Mark Recklies and Ben Osgerby; Blue Minerals Consultancy; Bluestone Mines Tasmania Joint Venture Pty Ltd
14:50	AFTERNOON BREAK	

	Session 5: From laboratory to field CHAIR: Peter Scott	Session 6: Coal mining, AMD and saline drainage CHAIR: Alan Robertson
15:20	Wallrock Acidity Contributions to Pit Lake Water Quality in The Pilbara; J.R. Taylor, Earth Systems; R. Green, Rio Tinto; R. Taplin, M. Stimpfl, L. Wan; Earth Systems; Rio Tinto Iron Ore; BHP	Prediction of spoil salinity; Melinda Hilton, Mansour Edraki, Neil McIntyre, Thomas Baumgartl, Mandana Shaygan; SMI-UQ
15:40	Comparison of Field Kinetic Testing to Mine Monitoring Results at The Antamina Mine, Peru; William Nash, Brent Usher, Johan Fourie, Sergio Yi Choy; Klohn Crippen Berger Ltd	Coal Mine Saline Drainage: A Study on Alkalinity; Roald Strand; Golder Associates Pty Ltd
16:00	Simulation of Column Leach Tests Using Reactive Transport Modelling; Yuan Tian, Johan Fourie, Brent Usher, and Pyramo Marianelli; Klohn Crippen Berger Ltd	Sulfur-Related Geochemical Processes and Water Chemistry at a South African Colliery; Á. Ódri, M. Becker, J. Amaral-Filho, J. Broadhurst, S.T.L. Harrison, M. Edraki MtM, CMR, CeBER, CMLR
16:20	Gas and Heat Modelling of a Waste Rock Dump in Order to Optimize Potential Mitigation Measures; William Nash, Brent Usher, Johan Fourie, Sergio Yi Choy; Klohn Crippen Berger Ltd	Characterization, Management and Mitigation of AMD for Linear Infrastructure Projects: Recent Canadian Experience; Alex Fitzpatrick; Klohn Crippen Berger Australia
16:40	End of Day1	
19:00	Workshop Dinner	

As of 4 February 2020. Program is subject to change. For updates, please visit <https://amdworkshop.com.au/amd-2020-program>.

March 23, 2020 - 7pm Workshop Dinner, the Savannah Function Centre,  
Taronga Western Plains Zoo

## Tuesday 24 March 2020 Theme of Day 2: Design, Construction, Operation

### 8:20 Workshop updates

Session 7: Keynote addresses; From theory to practice

CHAIR: Roger Smart

8:30 Design Considerations for Managing AMD with Dry Stacked Filtered Tailings; Ward Wilson

9:00 AMD Management at Savage River; Tony Ferguson; Grange Resources

9:30 Anglo-American's Approach to Managing Mine Waste; Richard Marton; Anglo American

### 10:00 MORNING BREAK

Session 8: Plenary session; Building better waste rock dumps and creating stable landforms

CHAIR: Ward Wilson

10:30 Building Mine Rock Stockpiles for Successful AMD Management at Closure; M. O'Kane, J. Taylor, J. Robertson, S. Pape, G. Tremblay, and B. Kelley; Earth Systems; O'Kane Consultants Pty Ltd

10:55 A Calibrated Model to Predict the Performance of a Store and Release Cover for the TSF at Century Mine; T.K. Rohde, P.L. Defferrard, G.J. Greening; SGM Environmental Pty Ltd

11:20 Hydrological and Geochemical Lag and Effectiveness of Covers on PAF Mine Wastes; David Williams; The University of Queensland

11:45 Peak Hill Gold Mine - Case Study On Final Landform Dealing With AMD; M.D. Sutherland, and D.I. Chalmers; Alkane Resources Ltd

12:10 Maintaining A Social Licence to Operate Through Adaptive AMD Management; P. Weber, J. Pearce, M. Fairgray, K. Jain, W. Olds; Mine Waste Management Ltd

### 12:35 LUNCH

Session 9: Building better waste rock dumps and creating stable landforms II - case studies

CHAIR: Mike Fawcett

Session 10: Advances in AMD Treatment

CHAIR: Jeff Taylor

13:30 Looking Back: How Did Placing PAF Rock in this Particular Mine Rock Stockpile Not Lead To Acidic Drainage Conditions? Mike O'Kane; O'Kane Consultants Pty Ltd

Staged Electrochemical Treatment Guided by Modelling Allows for Targeted Recovery of Metals and Rare Earth Elements From Acid Mine Drainage; Emma Thompson Brewster, Stefano Freguia, Mansour Edraki, Luke Berry and Pablo Ledezma; Kinetic Group Worldwide; The University of Queensland

13:50 Case Studies to Justify Modification of the NAG Test Method on a Site Specific Basis to Suit Varied Mining Waste Characterisation Scenarios; A. Barnes, S. Pearce, M. Roberts, and D. Brookshaw; Geochemic Ltd; Mine Environment Management Ltd

Removal of Heavy Metals from Acid and Neutral Mine Drainage VIA Ozofractionative Catalysed; David M. Hunter; Evocra Pty Ltd

14:10 Development and Implementation of Masbate Gold Mine Site ARD Classification Criteria; Genn Russell Abad, Patrick Paul Mkonyi, Yuda Soka and Warwick Stewart; Masbate Gold Mine; Environmental Geochemistry International Pty Ltd

Evaluating the Potential Use of Industrial Waste in the Treatment of Acid and Metalliferous Drainage Produced by Legacy Mine Sites in Tasmania; A. Moyo, A. Parbhakar-Fox, S. Meffre, and D. Cooke; University of Tasmania; Sustainable Minerals Institute

14:30 Managing AMD and closure risk through the life of mine: the Ban Houayxai WRD case study; P. Bayliss, P. Garneau, W. Stewart, T. Rowles, and W. Wilson; Phu Bia Mining Limited; PanAust Limited; Environmental Geochemistry International; Environmental Geochemistry International; Knight Piésold Pty Ltd; Unsaturated Soils Engineering Ltd

Integrated Processes for Contaminant Removal from Mine Drainage and Hydrometallurgical Waters; A.H. Kaksonen, S. Yan, B. G. Douglas, C. Morris, M.P. Ginige G.Y. Zheng, L.X. Zhou, and K.Y. Cheng; CSIRO Land and Water; Nanjing Agricultural University

14:50 Development of Leading Practice Waste Grade Control AMD Classification Based on Deposit Specific Mineralisation Characterisation and Modelling; L. Henim S. Pearce; PT Agincourt Resources; Mine Environment Management Ltd

Remediation of Acid Sulfate Sites by Flooding – Experimental Data; J.A. Webb and M. Reid; La Trobe University

### 15:10 AFTERNOON BREAK

15:40	Session 11: Geometallurgical modelling approach CHAIR: Anita Parbhakar-Fox	Session 12: Tailings storage facilities CHAIR: TBD
	Optimising AMD Assessment and Management using Quantitative 3D Geometallurgical Material-Type Models; W. Potma and W. Gemson; CSA Global; ERM	Residual Risk Considerations: Geochemical Interactions on Tailings Dam Stability; <a href="#">J. Sanders</a> and L. Robertson; Klohn Crippen Berger Ltd
16:00	Geoenvironmental Block Model for Walford Creek; L. Jackson, G. Maddocks, P. Long, S. Tear, T. Benfield; RGS Environmental Pty Ltd; H & S Consultants; Aeon Metals	Optimising Site Hydro-Geochemical Data For Cover Design Performance Analysis of a Tailings Storage Facility In North-West Queensland; Alex Sexton and Mansour Edraki; BHP; SMI
16:20	Geometallurgical characterisation of mine tailings: examples from Tasmania; The University of Queensland, University of Tasmania	Opportunities for Direct Revegetation of Tailings Storage Facilities; Chris Higgins; Northparkes Mine CMOC
16:40	Field visit briefing	
16:50	End of Day 2	

March 25, 2020 - 8:45am for a 9am Fieldtrip departure time from the DRTCC  
- Visiting [Tomingley Gold Mine \(operating\)](#) and [Peak Hill Mine \(closed\)](#).

March 25, 2020 - 6:00 pm

Open forum on Mine Tailings / Wine and Cheese, Dubbo Regional Theatre and Convention Centre (DRTCC)

## Thursday 26 March 2020: Theme of Day 3: Closure and Rehabilitation

8:20 WORKSHOP UPDATES	
	Session 13: Keynote addresses: Lessons learned and industry uptake CHAIR: Gilles Tremblay
8:30	Closure Planning Competencies and Interdisciplinary Collaboration for Improved AMD Outcomes; Jon Crosbie; MMG
9:00	BHP AMD Management Standard - BHP's Global Approach to Reducing Geochemical Risk and Minimising Closure Uncertainties; JP Pearce, T Cooper, J Heyes, and M Stimpfl, BHP
9:30	Evaluating Risk and Opportunity With Your Cover System Design - Case Studies Across Climate Conditions Comparing Predicted and In-Service Performance; M. O'Kane and S. Lamoureux; O'Kane Consultants Pty Ltd
10:00 MORNING BREAK	
	Session 14: Managing legacies CHAIR: David Williams
	Session 15: Novel perspectives of closure and rehabilitation CHIAR: Tania Laurent
10:30	Store and Release Cover Systems - Lessons Learned from Over 20 Years of Field Monitoring; S. Lamoureux and M. O'Kane; O'Kane Consultants Pty Ltd
10:30	Identification of Indigenous Bacteria at Copper Mines Tasmania: Implications for Bioleaching to Extract Cobalt; Debangana Mukhopadhyay, Thomas Jones, Anita Parbhakar-Fox, Gordon Southam; The University of Queensland
10:50	Modelling Verification of a Regional Cover Design for the Cobar Region; N.P. Jamson, T.K. Rohde; SGM Environmental Pty Limited
10:50	New Paradigm of AMD: Towards Utilization of AMD as an Energy Source, Fake or Real?; Sulistiyohadi, Yuli, Garniwa, Iwa, Moersidik, Setyo, Aziz, Muhammad and Saria, Lana; University of Indonesia; University of Tokyo; Ministry of Energy Minerals Resources Republic of Indonesia
11:10	Conrad Mine Site - From Legacy to Remediation; Becka Barritt, N. Staheyeff, and I. Taylor; O'kane Consultants Pty Ltd; NSW Government Department of Planning, Industry and Environment
11:10	Mine Pit Lakes: Characterisation of Water Quality and Geochemistry to Inform Mine Closure; Kathryn L. Linge, Silvia Black and David Allen; ChemCentre
11:30	Identification of Geochemical Processes Controlling Metal Mobility in a Natural Lake Impacted by Mine Waste and AMD from Ancestral Mining in Huancavelica, Peru; S. Palomino, P. Quesada, O. Tafur and J. Marca; Amphos 21 Consulting Peru
11:30	Biogeochemical Cycling, Potential Linkages between AMD and ASS and Considerations for Long Term Water Quality Management – A Case Study from Ranger Uranium Mine; W. Gemson, M. Iles, T. Weaver, D. Windle, D. Kovacsy, and A. McLellan; ERM; ERA
11:50	The Evolution of The New South Wales Legacy Mines Program; A.J. Sampaklis; NSW Department of Planning, Industry and Environment
11:50	Carbonation of magnesium silicates in mine waste: field-scaled lab testing methods to assess the dual opportunity for carbon capture and AMD mitigation; R.J. Savage, S. Pearce, A. Barnes, S. Mueller, P. Renforth, and D. Sapsford; Geochemic Ltd; Mine Environment Management Ltd; Boliden Mineral AB; Heriot-Watt University; Cardiff University
12:10 LUNCH	
13:00	Young achievers forum/Workshop awards
13:30	Panel discussion / Workshop wrap up CHAIR: Bruce Kelley
15:30 Afternoon tea / End of 9th Australian Workshop on Acid and Metalliferous Drainage 2020	

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