

# History of the series of International Seminars on Paste and Thickened Tailings – first years

by Ted Lord, senior tailings consultant, Canada

In 1994, John Oxenford, Syncrude Canada Ltd, presented a paper titled 'Reducing Risks at Syncrude Canada Ltd's Mining Operations Through the Application of Technology' at the Fourth Large Open Pit Mining Conference, Australian Institute of Mining and Metallurgy, Perth, Australia. After the presentation, Richard Jewell from the Australian Centre for Geomechanics (ACG) emerged from the audience, introduced himself and suggested a visit to the ACG located at The University of Western Australia (UWA). The ACG was at the time conducting research on co-disposal of sand and fines for Western Australian mineral sand operations. This work had relevance to Syncrude because inhouse company research included co-disposal of fines and tailings sand. Syncrude decided to become an ACG Corporate Affiliate Member in order to gain access to the research work being undertaken and, subsequently, received summaries of ACG research reports.

In 1995, Syncrude made the business decision to commercialise composite tailings which was a way to solidify existing inventory of fluid fine tailings by co-disposing with the tailings sand. The fines would then become entrapped within the sand matrix. At this point, Syncrude Research started to look ahead and evaluate ways to cease making fluid fine tailings in the first place. Contacts and a site visit to the Alcan red mud deposits in Québec in November 1995 provided the impetus for Syncrude

Research to forge ahead with efforts to better understand the options around using thickeners and to create paste like fine tailings deposits.

In 1998 the ACG held the two-day Tailings Management for Decision Makers Seminar in Perth. Ted Lord from Syncrude Research was invited by Richard Jewell to give a case study presentation on the Syncrude tailings operation. After the seminar, Ted and Richard had a farewell lunch at the UWA Faculty Club where they discussed potential future cooperation on better tailings disposal initiatives. At the time, Syncrude Research had an active research programme on paste technology for surface disposal and was particularly interested in increased collaboration in this technical area. Then up came the idea, "let's have a conference" on the topic with

the deliberate intent of bringing together operators, vendors, academics, consultants and others from around the world.

Ted returned to Canada with the premise that the conference on paste technology would take place in Perth in 2000. However, back in Canada, he met with Bruce Regensburg who, at the time, was a distinguished visitor on secondment from Syncrude to the University of Alberta's School of Mining and Petroleum Engineering, in Edmonton, Alberta. Aware of Syncrude's efforts towards better fine tailings disposal options, he was keen to have a paste technology for thickened tailings learning seminar. The date was set for November 1999, this becoming the first in the series of International Seminars on Paste and Thickened Tailings.



Richard Jewell at the first seminar in Edmonton, 1999

The two-day Paste Technology for Thickened Tailings Seminar was held in November 1999 under the auspices of the University of Alberta. Sponsorship contributions were designated to bring in international experts to enable the transfer of paste technology knowledge among the participants. Invited speakers were Dr Eli Robinsky, speaking on 'Thickened Tailings Disposal System', and Richard Jewell, providing insight on 'The Australian Experience'. Also to encourage participation in the transfer of knowledge, authors were asked to use PowerPoint presentations with the notes option providing more details: written papers were not required. This facilitated inclusion of a number of case histories from around the world at relatively short notice. Presentations covered case histories from four continents. Registration was much higher and more diverse than initially expected with representatives from Australia, South Africa, United States and Canada. There were 130 participants representing the aluminum, diamond, base metal and oil sands industries. Attendance by representatives from DeBeers, who were developing diamond mines in Canada, was particularly beneficial. Attendees included: Professor Andy Fourie from the University of the Witwatersrand; David Landriault from Golder Paste Technology; and Steve Slottee and Dan Bedell from Baker Hughes. The seminar included an invitation to attend Paste Technology 2000 in Australia in 2000. With Andy's attendance at the Edmonton seminar, we were able to start thinking about a seminar in South Africa in 2001.

The second seminar was held in Perth in April 2000, as originally envisaged. The two-day 'Paste Technology 2000 – An International Seminar on

The Production and Disposal of Thickened/Paste Tailings for Mine Backfill or on the Surface' was held under the auspices of the ACG. It was attended by more than 120 delegates. Invited speakers included Ted speaking on 'Technology Applied to Oil Sands' and Andy speaking about 'Material Characteristics'. Nearly all presentations were from individuals invited because of known expertise and experience.



*Ted Lord, Andy Fourie, Maureen and Richard Jewell at the second seminar in Perth, 2000*

At this stage the technology had limited application and there were not yet enough case studies related to surface disposal to consider a general call for papers. The seminar was preceded by a two-day Paste Technology Workshop where about 25 invited participants from around the world, representing a range of related disciplines, gathered and discussed paste technology. In addition to attempting to determine the state of the technology at that time, a major objective was to see whether it would be possible to establish a standardised terminology across the industry for the technology. It quickly became apparent that it was too late to achieve this as several industries had already established terminology specific to their needs. There

were a number of outcomes of this gathering including the very evident point that expertise in any single discipline would not be sufficient on its own to address design and operating issues and that any resolution would require a multi-disciplinary approach. For example, Professor David Boger from The University of Melbourne demonstrated that an understanding of rheology would be fundamental to addressing

issues related to thickened tailings. Although it was agreed that uniform terminology was not achievable, there was an agreement on the preparation of a guidance and advice handbook for the production and disposal of thickened/paste tailings under the direction of the ACG and, in particular, Richard. The authorship was international, voluntary, multi-disciplinary, and targeted. Finally, and indeed despite many objections, the term 'paste' was adopted as the short title for this series of seminars simply because it was already in use and catchy. The International Seminar Series on Paste and Thickened Tailings was established with a preferred emphasis on surface disposal issues.

A third two-day seminar was held in Edmonton in October 2000. 'Transportation and Deposition of Thickened/Paste Tailings' was held under the auspices of the University of Alberta. Again attendance was high. Invited speakers were Professor David Boger speaking about 'Exploiting the Rheology of Mineral Tailings'; Richard speaking about 'Depositional and Geotechnical Characteristics of Thickened/Paste Tailings in the Australian Mining Industry'; and Andy speaking about 'South African Thickened/Paste Tailings Initiatives'. The seminar concluded with an invitation to attend the next seminar in South Africa in May 2001.

The fourth seminar was held at the Manyane Camp, Pilanesberg National Park in May 2001. 'High Density and Paste Tailings 2001' was held under the auspices of the University of the Witwatersrand. It was well attended by international and local delegates. Invited speakers were Richard speaking about 'Depositional & Geotechnical Characteristics of Thickened/Paste Tailings in the Australian Mining Industry' and Ted speaking about 'Thickened/Paste Tailings Research at Syncrude for Oil Sands Fine Tailings'.

At GEOENG2000 in Melbourne in November 2000, organised by the Australian Geomechanics Society, Richard was approached by Luis Valenzuela from Chile to discuss the newly established paste seminars and in particular the opportunity to hold one in Chile, in view of the many large scale operations in that country that could benefit from the thickening technology. To promote the concept Luis arranged for Sergio Barrera from Arcadis to attend the seminar in South Africa and from this contact the seminar concluded with an invitation to attend the next seminar in Santiago in April 2002.



*Andy Fourie, Richard Jewell and Ted Lord at the fourth seminar in South Africa, 2001*

The fifth seminar was held in Santiago, Chile in May 2002. 'Paste and Thickened Tailings 2002' was held under the auspices of the Instituto de Ingenieros de Minas de Chile. It was well attended by international and local delegates. Invited speakers were Richard speaking about 'Paste and Thickened Tailings in the Australian Mining Industry', Andy speaking about 'Material Characteristics' and Ted speaking about 'Tailings Management in the Canadian Oil Sands Industry'. After the seminar an optional field trip to the Las Tórtolas Plant and Tailings Dam and the Ovejera Tailings Dam was offered. At this seminar in Chile, the effort which had begun in Perth in April 2000 was realised. 'Paste and Thickened Tailings: A Guide' (First Edition) was published by the ACG. The financial success of the Canadian, Australian and South African seminars provided the initial funding for the production of the book. Each of the sponsoring organisations, ACG, University of Alberta and University of Witwatersrand, received one third of the printed copies and sold the book on a cost recovery basis. This initial edition was printed in black and white in order to keep the production costs as low as possible. Within a very short time it was recognised that the guide was very relevant

and the initial production run of 1,000 copies sold very quickly. Rather than reprint the black and white edition, effort was put into updating and extending the guide with new chapters and with sponsorship solicited from the industry. The second edition, printed in colour, was published by the ACG in 2006. The continuing interest in the guide and relevance to the industry of the technology prompted the production of a completely updated and extended third edition which was published by the ACG in 2015.



*Ted Lord, Andy Fourie and Richard Jewell at the fifth seminar in Chile, 2002*

With the sixth seminar held in Melbourne in May 2003, the annual International Seminar on Paste and Thickened Tailings began the four year global rotation cycle - in order Australia, Southern Africa, South America and Northern Hemisphere - each seminar bringing together operators, vendors, academics, consultants and others from around the world.

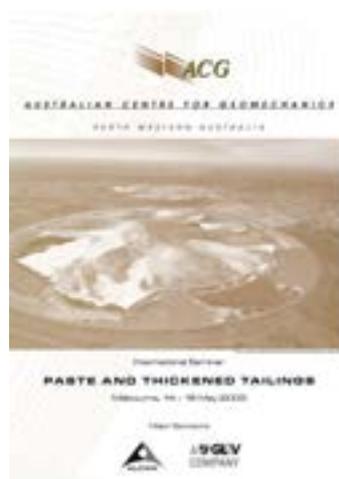
*Ted Lord 27th March 2018  
(with input and contribution from Richard Jewell, John Oxenford & Bruce Regensburg)*



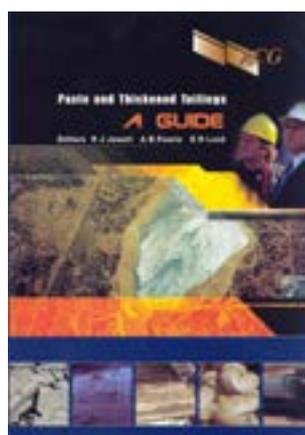
*The launch of the 'Paste and Thickened Tailings: A Guide (First Edition)' at the fifth seminar in Chile, 2002*



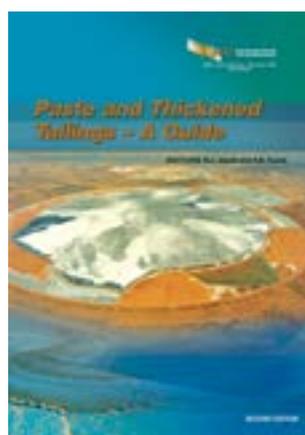
Paste Technology 2000  
An International Seminar on The Production and Disposal of Thickened/Paste Tailings for Mine Backfill or on the Surface  
Perth, 13-14 April 2000



International Seminar  
Paste and Thickened  
Tailings  
Melbourne, 14-16 May  
2003



Paste and Thickened  
Tailings - A Guide  
First Edition



Paste and Thickened  
Tailings - A Guide  
Second Edition



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