## EDUCATIONAL PARTNERSHIPS: ARE THEY THE KEY TO SOLVING OUR GROWING PERSONNEL CRISIS (A.K.A. IS IT A SILK PURSE, OR A SOW'S EAR)?

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## ABSTRACT

People are our most valuable resource. It is as true today as any point in mining history as we face unprecedented personnel shortages aggravated by a workforce that is aging, significant generational gaps and difficulties recruiting younger professionals all amidst increasing global mineral demand. The educational system has a similar, but slightly contrary problem. Many historically strong mining engineering programs have died. Now, fewer mining oriented universities are trying to produce more students in order to meet the demand. Moreover, their situation is aggravated by a similarly aging workforce, a general lack of mid-career PhD's with the interest and field experience to teach effectively, an extremely slow hiring and funding process, and an inability to be competitive against private industry compensation packages. The traditional instructional model, while not necessarily broken, is most certainly dated, and can penalize programs and students where schools do not have in-house expertise in a given topic. Mining companies, like Rio Tinto, have the opportunity, if not necessarily the obligation, to positively influence how this model works. Educational Partnerships may be the key. This paper will address some observations, and possibilities, associated with Rio Tinto's efforts in this area.

## THE NATURE OF THE PROBLEM

In response to inquiries from Rio Tinto as to possible alternatives to address the problem in North America, the mining engineering departments of the University of Arizona, the Colorado School of Mines and the University of British Columbia collectively compiled the following information (Reprinted with Permission):

Direct employment in the formal global mining sector has rebounded from the recession of 2008 to employ 3.7 million people (1.5 million in developed nations)1. Despite these numbers, the mining sector faces a looming human resources crisis that will be driven by four primary factors:

 Zeballos, E.J. and S. Garry (2010), An Overview of Employment Trends and Working Conditions by Economic Activity in Jobs Recovery: Sectoral Coverage 2010, Sectoral Activities Department, International Labour Organization (ILO).

The industry has a significant percentage of older workers, 40% of whom will be retiring in the next 10 years2, the industry makes significant investments in their operations through capital expenditures, which equated to \$140 billion (US) worldwide in 20123, and highly qualified personnel (HQP) are needed to drive and leverage those investments.

2. Mining Industry Human Resources Council (2013). MIHR

Sector Report: Unearthing Possibilities: Human Resources Challenges and Opportunities in the Canadian Mineral Exploration Sector. www.mihr.ca

- 3. Kinch, D. (2013), Mining Companies' Capital Expenditure to Fall 20% This Year. The Wall Street Journal, May 8th, 2013.
- Ernst & Young (2010). The 2010 Ernst & Young Business Risk Report: Business Risks Facing Mining and Metals. London.
- Mining Industry Human Resources Council (2010). MIHR Sector Report: Canadian Mining Industry Employment and Hiring Forecasts 2010. www.mihr.ca
- 6. Allen, David, G. (2008) Retaining Talent: A Guide to Analyzing and Managing Employee turnover. SHRM Foundation's Effective Practice Guideline Series, Alexandria, VA.
- 7. Rio Tinto 2012 Annual Report. www.riotinto.com/ documents/rio\_tinto-\_2012\_annual\_report.pdf
- 8. Mining Industry Human Resources Council (2011). MIHR Sector Report: Making the Grade: Human Resources challenges and Opportunities for Knowledge Workers in Canadian Mining. www.mihr.ca
- 9. Engineers Canada (2011). www.engineerscanada.ca
- 10. Adams, S. (2012) A Career With a Big Future: Mining Engineer. Forbes, September 20th, 2012. As outlined in a recent business risk report by Ernst & Young4, a skills shortage due to an insufficient numbers of workforce entrants represents the second largest business risk to the mining sector. For example, the Canadian Mining Industry Human Resources Council estimates that approximately 60,000 to 100,000 new employees (including both HQP and skilled operators) will be required by 20205. The company costs for replacing a retiring HQP can average over 100% of the employee's annual salary6. For a company such as Rio Tinto, the average salary for an employee is \$115,0007.

Highly qualified personnel are defined as individuals who have at least a Bachelor level university degree. Throughout Canada, the current number of graduates from miningspecific post-secondary programs is not sufficient to meet the Canadian mining sector's needs8. In Canadian universities in 2009, there were a total of 860 students enrolled in undergraduate programs within nine Canadian mining-engineering schools9. In 2011, US institutions graduated a total of 178 mining engineers, down from a high of 700 in 198210. Extrapolating from Canadian mining sector forecasts (11.5% of global sector), the global mining industry will have significant annual hires SME Annual Meeting Feb. 23 - 26, 2014, Salt Lake City, UT 2 Copyright © 2014 by SME

with 9,600 HQP in 2012, rising to 17,400 HQP annually by 2015, and again rising to 34,800 annually in 202011,12.

- 11.Mining Industry Human Resources Council (2011). MIHR Sector Report: Making the Grade: Human Resources challenges and Opportunities for Knowledge Workers in Canadian Mining. www.mihr.ca
- 12.Meech, J. (2002). University Graduates in Mining and Process Engineering in a Global Context: How Many Engineering Programs Does the Canadian Mining Industry Need? Centre for Environmental Research in Minerals, Metals, and Materials.

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