

Recent Technical Papers by Dr D J (Rick) Brake

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Heat Stress

- H 1 Brake D J, 2002. The Deep Body Core Temperatures, Physical Fatigue and Fluid Status of Thermally Stressed Workers and the Development of Thermal Work Limit as an Index of Heat Stress, PhD thesis, School of Public Health, Curtin University, Perth
- H 2 Brake DJ and Bates GP, 2002. *Limiting work rate (Thermal Work Limit) as an index of thermal stress.* Journal of Applied Occupational and Environmental Health (ACGIH). Vol 13(3):176-186, March. [The journal of the ACGIH, the American College of Government Industrial Hygienists].
- H 3 Brake D J and Bates G P, 2002. *Deep body core temperatures in industrial workers under thermal stress.* J Occup Environ Med. Vol 44, No 2, pp 125-135. [The journal of the American College of Occupational and Environmental Medicine].
- H 4 Brake D J and Bates G P, 2002. *A valid method for comparing rational and empirical heat stress indices.* Annals of Occupational Hygiene. Vol 46, No 2 pp 165-174 [Journal of the British Occupational Hygiene Society]
- H 5 Brake DJ and Bates GP, 2001. *Fatigue in industrial workers under thermal stress on extended shift lengths.* Occ Med (Society of Occ Med, UK). Vol 51, No 7, pp 456-463 [The journal of the British Society of Occupational Medicine].
- H 6 Brake D J and Bates G P, 2003. *Fluid Losses and Hydration Status of Industrial Workers under Thermal Stress Working Extended Shifts.* British Journal of Occupational and Environmental Medicine. Vol 60, No 2 pp 90-96.
- H 7 Brake D. 2001. *Fluid consumption, sweat rates and hydration status of thermally-stressed underground miners and the implications for heat illness and shortened shifts.* Proc 2001 Qld Mining Ind Occ Health and Safety Conf. Townsville, 2001, pp 275-287. Qld Mining Council, Brisbane (2001).
- H 8 Brake, D J, Donoghue M and Bates G, 1998. *Management Of Heat Stress In A Hot, Humid, Underground Environment.* Paper presented to the 1998 International Safety Conference and Exposition. Melbourne. 25-28 February. [similar to H9]
- H 9 Brake, D J, Donoghue, M D and Bates G P. *A New Generation of Health and Safety Protocols for Working in Heat.* Proc 1998 Qld Mining Ind Occ Health and Safety Conf. Yeppoon, 1998, pp. 91-100. Qld Mining Council, Brisbane (1998).
- H 10 Brake, D.J.; Bates, G.P.: *Occupational Heat Illness: An Interventional Study.* In: Proceedings of the International Conference on Physiological and Cognitive Performance in Extreme Environments, 2000, pp. 170-172. W.M.Lau, Ed. Defence Scientific and Technology Organisation, Australian Department of Defence, Canberra (2000).
- H 11 Brake, D J and Bates G P, 2000. Assessment of Underground Thermal Environments and the Prevention of Heat Illness. Intl Mine Safety Conf, Perth.
- H 12 Brake D J, 2004. The Application of a Rational Heat Stress Index (Thermal Work Limit) to Sports Medicine. Sports Med Aust annual conf, Alice Springs, Oct (presentation).

Mine Ventilation

- V 1 Brake D J and Fulker R, 2000. The ventilation and refrigeration design for Australia's deepest and hottest underground operation: the Enterprise mine. Proc MassMin 2000 611-621. Aust Inst Mining and Met. 2000.
- V 2 Brake D J, 2001. Calculation of the natural (unventilated) wet bulb temperature, psychrometric dry bulb temperature and Wet Bulb Globe Temperature from standard psychrometric measurements. J Mine Vent Soc of Sth Africa. Vol 54, No 4, Oct-Dec 2001, pp 108-112.
- V 3 Brake D J, 2002. Fan total pressure or fan static pressure: which is correct when solving ventilation problems? J. Mine Vent Soc of Sth Africa. Vol 55, No 1, Jan-Mar 2002.
- V 4 Brake, D and Nixon, T. 1998. The development of ventilation and refrigeration systems and engineering controls for the Enterprise mine. Proc 1998 Annual Conf of AUSIMM. pp 187-197. [similar to V01]
- V 5 Brake, D and Nixon, T. 2005. Current trends and future opportunities in underground hardrock ventilation practices. AusIMM Underground operator's conference, Perth, pp403-408.

- V 6 Brake, D and Nixon T, 2006. Design and operational aspects in the use of booster, circuit and auxiliary fan systems. Proc 11th US Mine Vent sym, Penn State, pp 543-553.
- V 7 Brake D J and Nixon C A, 2008. Correctly estimating primary airflow requirements for underground metalliferous mines. Proc 10th AusIMM Underground op conf, Launceston, Apr . pp 199-204.
- V 8 Brake D J, 2009. The growing use of hazardous primary ventilation systems in hardrock mines, 9th Int Mine Vent Cong, New Delhi, Nov (accepted).

Mine Ventilation Technical Training, Quality Standards and Professional Development

- T 1 Brake D J and Nixon T, 2004. The impact of changing employment and mining practices on the mine ventilation profession in Australia, in Mine Ventilation (Proc Tenth US Mine Vent Sym, Anchorage), pp 409-416.
- T 2 Brake D J and Greenhill G, 2005. New integrated pathways for mine ventilation technical training in Australia. (Qld Mining Safety and Health Conf, Tvl, 15-17 Aug, pp 29-33. [similar to T3]
- T 3 Brake, D J, 2006. Developments in mine ventilation legislation, statutory qualifications and ventilation training in Australia. Proc 11th US Mine Vent sym, Penn State, pp 609-617.
- T 4 Brake, D J, 2008. A protocol and standard for mine ventilation studies. Proc 12th US/North American Mine Vent Sym (Wallace K, ed), Jun. Reno. pp 3-11.

Mine Cooling and Refrigeration

- R 1 Brake D, 2001. The application of refrigeration in mechanised mines. Proc AusIMM. 2001(1):1-10.
- R 2 Brake D, 2001. Key engineering considerations in the specification and selection of mine refrigeration plants. Proc AusIMM. 2001(2):1-16.
- R 3 Brake, D, 2002. Design of the world's largest bulk air cooler for the Enterprise mine in northern Australia. 9th US mine ventilation symposium, Kingston, Canada, June. pp 381-390
- R 4 Brake, D, 2002. The R67 refrigeration plant at Enterprise mine, Mount Isa – the world's largest bulk air cooler. AusIMM Underground Operators conference, Townsville, July. pp 301-309 [similar to R3]
- R 5 Brake D, 2005. Performance and acceptance testing of mine refrigeration plants. Proc 8th Intl Mine Vent Cong, Brisbane, pp 3-12.

Egress and Entrapment

- E 1 Brake, D J, 1999. An integrated strategy for emergency egress from an underground metal mine. Proc 8th US Mine Ventilation Congress. Rolla, pp 649-657. (University of Missouri-Rolla)
- E 2 Brake, D. J. and Bates, G. P, 1999. Criteria for the design of emergency refuge stations for an underground metal mine. Proc AusIMM 304(2):1-8.
- E 3 Brake D J, 1999. Entrapment and escape from metal mines – a case study. Proc 1999 Qld Mining Ind Occ Health and Safety Conf. Yeppoon, 1999. Qld Mining Council, Brisbane (1999) [similar to E1]
- E 4 Brake D J, 2001. Criteria for the design of emergency refuge stations for an underground metal mine. J Mine Vent Soc of Sth Africa, Vol 43, No 2, Apr-Jun 2001, pp 5-13. [same as E2]

Awards and other Contributions

- A 1 *Development of a heat stress meter and working-in-heat protocols to reduce the incidence and severity of heat illness in mine workers.* Won the Queensland Mining Industry Safety and Health Innovation Award (1999) and was Highly Commended (equal runner-up to First Prize) in the Minerals Council of Australia National Safety and Health Innovation Award (2000). Rick Brake was Project Leader in this work.
- A 2 *The R67 mine refrigeration plant (the world's largest bulk air cooler and Australia's largest chilled water plant).* Winner of the 2001 Institute of Engineers (Qld Division) Engineering Excellence Award (Resource Development project category). Rick Brake was Mount Isa Mines' Principal Technical Adviser on this project.
- A 3 *Thermal Work Limit* developed by Dr Brake is now accepted as a valid assessment tool for heat stress in the Heat Stress Standard and Documentation developed for Use in the Australian Environment, (Aust Inst of Occ Hygienists, 2004)