

Mine disasters: the need for planning partnerships between mine operators and local community emergency planning committees

David Parsons, senior emergency management planner and Masters student at Charles Sturt University, presents recommendations for cooperative working for planners. 

ABSTRACT

In contemporary Australia mine disasters involving miners trapped underground are not common. However, experience from recent mine disasters in Australia and overseas show that when underground entrapments do occur they create a range of issues for the mine and local community to manage. The emergency response will therefore include participation of multiple emergency services with specialist support potentially coming from across the globe. Significant issues management and logistical challenges will arise. As a result the participation of local, state and national governments will be required.

For the majority of mines the range and scale of issues are beyond the scope of their internal emergency plan. As a result emergency management arrangements within the jurisdiction in which the mine operates will need to be activated to enable effective coordination. Joint pre-planning between the mine operator and the local community's emergency planning committee will contribute to ensuring the conduct of an effective emergency operation. This article recommends actions mine operators should take to build a strong partnership with their Local Emergency Management Committee.

Introduction

The effective response to a mine disaster will involve not only the mining company but the local community where the mine operates and may well attract national and international attention. The global nature of the mining industry will result in offers of assistance from mining companies around the world. Effective response operations will require the application of both

the mine's emergency response arrangements and those of the jurisdiction in which the mine is located. Achieving joint planning and preparation between a mine and the local community is essential.

On 25 April 2006 a mine collapse in Beaconsfield, Tasmania killed one miner and trapped two others approximately 900 metres underground. This event attracted dozens of media crews to the town and involved emergency services from multiple Australian states and territories (Melick 2006). On 19 November 2010 the Pike River coal mine explosion occurred in New Zealand, killing 29 miners whose bodies have never been recovered. This disaster drew dozens of media crews to Greymouth and resulted in an extended emergency response operation. The management of the disaster involved national and international resources (Royal Commission on the Pike River Coal Mine Tragedy 2012). Most recently, on 9 February 2014, the Hazelwood open cut coal mine fire occurred in Victoria. The fire caused significant disruption to the community and public health issues. The Hazelwood coal mine fire involved an extended emergency operation using large numbers of emergency services personnel from multiple Australian states and territories (Hazelwood Mine Fire Inquiry 2014). The official reports from both the Pike River mine disaster and the Hazelwood mine fire recommend improving the ability of mine operators to work effectively with emergency management agencies (Hazelwood Mine Fire Inquiry 2014, Royal Commission on the Pike River Coal Mine Tragedy 2012).

The combination of complex issues, intense public interest and multiplicity of agencies involved requires formal coordination arrangements. Each Australian state and territory has legislation to enable this to occur. The legislation also creates Local Emergency Planning Committees at local government level. These committees are responsible for planning for emergency events in their area.

This paper details research into mine disaster events and provides recommendations for future cooperative planning.

Method

A literature review was conducted to examine the issues that arise in a mine disaster. The review collated information from a range of government reports, mine disaster books, journal articles and briefings. The mine disasters that were reviewed in detail included Beaconsfield and Hazelwood in Australia, Pike River in New Zealand, Westray in Canada and Copiapó in Chile. This article focuses substantially on the medical and psychological conditions of the miners, the intensive media pressures, and the impacts on family and community members.

There is a considerable amount of literature relating to the cause of mine disasters and strategies to mitigate the risk. However, there is substantially less written about the issues in managing the mine disaster response and operation. The issues identified as a result of this review were categorised into key themes requiring management in a mine disaster response. Each theme is comprised of categories employing terminology familiar to the emergency management community.

Leadership – command and control

Mine disasters involve two key characteristics that meet the criteria for activation of emergency management arrangements in most Australian jurisdictions. These characteristics are that mine disasters endanger, or threaten to endanger, the safety or health of people and that they require a significant and coordinated response.

Inquiries into the Pike River and Hazelwood mine disasters found that interaction and cooperation between emergency services organisations and the mining companies involved was not optimal. Inquiries from both events found that inter-agency problems were due to the lack of a common incident management operating system (Hazelwood Mine Fire Inquiry 2014, Royal Commission on the Pike River Coal Mine Tragedy 2012). The lack of this common process meant that sharing of information and critical decision-making was disjointed and dysfunctional. In response to this, the New Zealand, Victorian and New South Wales governments initiated requirements for mining companies to apply the Incident Control System in their emergency response processes (Hazelwood Mine Fire Inquiry 2014, New Zealand Police 2015, Trade and Investment NSW 2015). In New Zealand this system is known as the Co-ordinated Incident Management System (CIMS) (New Zealand Government 2014) while the Australian Fire Authorities Council call it the Australian Inter-service Incident Management System (AIIMS).

Recommendation 1: Mine operators should work with their Local Emergency Planning Committee to gain an understanding of:

- local emergency response arrangements such as location of the community Emergency Operations

Centre and requirements of the local police officer who would coordinate the response

- agencies that could be involved in the multi-agency response and their roles. Agencies could include emergency services organisations, disaster medical staff, local government and community social services.

Working with the media

A mine disaster involving miners trapped underground for an extended period will attract a large media contingent to the mine site and within the local community. In Chile a 2000-strong media contingent camped at the mine site (Franklin 2010). At Beaconsfield and Greymouth each had greater than 60 media crews in attendance to cover the emergency response (Franklin 2010, Goc & Bainbridge 2006, Macfie 2014, Wright 2012). In Beaconsfield the media crews obtained campervans for accommodation and parked these along the street adjacent to the mine. The community arranged meals, shelter and hygiene facilities to support the media for the two weeks of the rescue operation. In Greymouth the media crews arrived quickly to the town and booked out most of the accommodation available at hotels. This caused a shortage of accommodation for family members and friends who arrived later.

As the majority of the activity during a mine rescue occurs deep below the ground there is limited opportunity for the media to photograph and film the action. Reporters want to supply stories for news each day. In Beaconsfield and in Greymouth this resulted in reporters seeking out stories from the community. This hunt for news included shouting drinks in hotels, calling at the homes of miners and rescuers, and offering thousands of dollars to people for talking to them and providing information for stories (Wright 2012).

The Beaconsfield mine disaster had a very effective media operation. The police officer given the responsibility for managing the media had previously managed the media at the Port Arthur mass shooting in Tasmania in 1996. The media strategy included establishing a media briefing centre and regular media briefings by the police, Mayor and mine manager.

Recommendation 2: Mine operators should work with their Local Emergency Planning Committee to gain an understanding of:

- the agency to establish and coordinate a multi-agency media information centre
- the agencies in a combined multi-agency media information centre
- the location for large media briefings
- how to manage media crews seeking information within the community.

Medical and psychological care

Once miners are located and access is gained to them, consideration needs to be given to the physical and psychological injuries they may have sustained. Initial access may only be a hole drilled through to the miners that becomes a lifeline until release. Physical issues may include injuries and the effects of having had little to eat or drink for a prolonged period. Professional health advice will be required to avoid health risks from a sudden surge of too much food and to maintain an appropriate diet during a delayed release from entrapment (Franklin 2010, Wright 2012). Miners may also have experienced isolation from sound and light stimulation. As a result they may have experienced audio and visual hallucinations created by the brain in response to the isolation. The lack of natural light may result in a disruption to the miner's circadian rhythm and the resultant loss of the ability to judge time periods.¹ In the Chile mine disaster, specialists were used from NASA and the United States Navy to provide advice on managing the psychological impacts of entrapment and isolation (Franklin 2010).

Once miners are located they are typically provided contact with their family initially by notes and later by audio-visual connection. This contact with the family is closely monitored by mental health professionals who are tasked with the management of the psychological condition of the miners (Franklin 2010, Kowalski-Trakofler & Vaught 2012, Wright 2012).

Recommendation 3: Mine operators should work with their Local Emergency Planning Committee to gain an understanding of:

- the agencies that can provide the specialist medical advice required
- the agencies that can provide the specialist psychological advice required
- where specialist advice is located and how long it would take to arrive.

Family support

Family members of miners may not only be from the local community, but also communities elsewhere. Miners' families will come to a mine seeking to be close to their loved one who is trapped. In Pike River this resulted in 400 family members arriving in Greymouth. These family members had to be accommodated, supported and kept informed. In New Zealand, Air New Zealand staff trained in supporting families following an aircraft disaster, were successfully used to provide support to the families of miners. Family members will need a location to gather each day while they wait for information. This facility needs privacy, refreshments and be large enough for the number of relatives and support workers who may be expected. Families from overseas could result in embassies being involved in providing support to their residents. At the

Pike River disaster buses were arranged to transport family members up to the mine site. Managing the needs of families is a significant task ranging from accommodation, catering, counselling, transportation, access, briefings, security and memorial planning (Ewen 2014, McEntyre 2011, Maunder 2012, Kowalski-Trakofler & Vaught 2012, Wright 2012).

Recommendation 4: Mine operators should work with their Local Emergency Planning Committee to gain an understanding of:

- the surge accommodation available locally for the families of miners
- the location for a family meeting and briefing centre
- the agency to manage family privacy and security
- the agency to provide counselling support for family members
- the agency to provide counselling services for the local community and special group such as schools.

Logistics support

For rural and regional communities affected by a mining disaster the logistic services required to support a large or long-running emergency response will be significant. The closest town to a mine site will be affected by the convergence of personnel and equipment. Personnel will include families, media and emergency services. The rescue operation will also involve additional equipment being brought to the rescue site. The national and possibly global response may result in the use of aircraft to transport equipment to the scene quickly. Equipment and personnel will require transport. Many rural towns have mobile telephone systems but no capacity to cope with the surge of hundreds of people with mobile telephones and wireless data needs. Other services that may be required to support various parts of the emergency operation will include security, transportation, catering and temporary accommodation (West Virginia Office of Miners Health 2008, Wright 2012, Royal Commission on the Pike River Coal Mine Tragedy 2012, Wright 2012).

Recommendation 5: Mine operators should work with their Local Emergency Planning Committee to gain an understanding of:

- the agencies that can assist with logistical tasks to support the rescue operation and family support e.g. catering, accommodation, transport
- the agencies that can provide transport vehicles
- the arrangements for increasing mobile telephone cell capacity
- the size of aircraft that can use local airstrips.

¹ How isolation warps minds. At: www.bbc.com/future/story/20140514-how-extreme-isolation-warps-minds.

Community recovery

A mine disaster resulting in death may result in a memorial being created to remember the miners. In the Pike River mine disaster multiple memorial services were conducted and a number of memorials were built. The memorial services were attended by thousands of people including the Prime Minister (Ewen 2014, Maunder 2012, Wright 2012).

Recommendation 6: Mine operators should work with their Local Emergency Planning Committee to gain an understanding of:

- the agencies planning for memorial services that may involve the participation of thousands of people
- the agencies involved in building a memorial.

Conclusion

Although a mine operator will provide the initial response to a mine disaster, other agencies such as emergency services organisations, health specialists, psychosocial support agencies and local government may join the operation. Mine disasters can involve all levels of government due to the international nature of the industry, both in terms of the country of origin of the workforce, company ownership and the possible requirement for the global sourcing of expertise and equipment.

Effective emergency management depends significantly on the relationships that exist between those involved (Ewen 2014, Kowalski-Trakofler & Vaughn 2010, New Zealand Police 2015, Nova Scotia Government 1997).

Recommendation 7: Mine operators can take a number of actions to establish critical relationships with their Local Emergency Planning Committee including:

- arrange a tour of the mine for members of the Local Emergency Planning Committee
- review the mine's incident plan with the Local Emergency Planning Committee
- explain the mine's incident response capability and capacity to the Local Emergency Planning Committee
- explain the mine's incident management structure to the Local Emergency Planning Committee
- introduce the mine's Incident Controller to the Local Emergency Planning Committee
- conduct a discussion exercise involving a long duration underground rescue with the Local Emergency Planning Committee.

The development of a strong partnership and mutual understanding between the mine operator and the Local Emergency Planning Committee is essential for an effective response operation. The partnership and understanding ensures each group is aware of the capabilities and responsibilities of others, and develop the relationships required for effective cooperation.

The recommendations proposed in this article are designed to assist the process.

References

- Ewen P 2014, *Pike death by parliament*. Christchurch: Pit Pony Press.
- Franklin J 2010, *The 33: The ultimate account of the Chilean miners' dramatic rescue*. London: Bantam Press.
- Goc N & Bainbridge J 2006, *The Beaconsfield mine disaster and the evolution of chequebook Journalism*. *Australian Journalism Review*, 30(1), pp. 99-112.
- Hazelwood Mine Fire Inquiry 2014, *Hazelwood Mine Fire Inquiry Report*. (ISBN 978-0-9925618-0-2). Melbourne.
- Kowalski-Trakofler K & Vaught C 2012, *Psycho-social Issues in mine emergencies: The impact on the individual, the organisation and the community*. *Minerals Journal* (2) pp. 129-168.
- Kowalski-Trakofler K & Vaught C 2010, *A study of first moments in underground mine emergency response*. *Journal of Homeland Security and Emergency Management*, 7(1), Article 39.
- McEntyre P 2011, *Provision of support to schools and early childhood services after the Pike River disaster*. *New Zealand Journal of Psychology*. 40(4) pp. 90-91.
- Macfie R 2014, *Tragedy at Pike River: How and why 29 men died*. Wellington: AWA Press.
- Maunder P 2012, *Coal and the coast: A reflection on the Pike River disaster*. Christchurch. Canterbury University Press.
- Melick AG 2007, *Beaconsfield Investigation Report*. (ALX.016.002.0002_001). Hobart. Office of the Coroner.
- New Zealand Government 2014, *The New Zealand Co-ordinated Incident Management System*. Wellington.
- New Zealand Police 2015, *Underground Mine Emergency Protocol: A multi-agency policy for managing underground mine emergencies in New Zealand*.
- Nova Scotia Government 1997, *Westray: A plan of action. Government's Response to the Westray mine public inquiry*.
- Royal Commission on the Pike River Coal Mine Tragedy 2012, *Royal Commission Report on the Pike River Coal Mine Tragedy*. (ISBN: 978-0-477-10378-7) Wellington.
- Trade and Investment NSW 2015, *Emergency planning for mines*. Sydney.
- West Virginia Office of Miner's Health, Safety and Training & West Virginia University 2008, *Developing a comprehensive emergency preparedness planning manual for underground mining operations*.
- Wright T 2012, *Bad Ground. Inside the Beaconsfield mine rescue*. Sydney. Murdoch Books.

About the author

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