

The psychological impact of responding to agricultural emergencies

Meredith Jenner overviews the literature on the unique psychological impacts of responding to agricultural emergencies

Abstract

It has increasingly been recognised that emergency responders may suffer stress and adverse psychological reactions to their exposure to traumatic events and the nature of the work they are expected to perform. However, little previous research has focused on the psychological impact of responding to agricultural emergencies. While these types of emergencies have some stressors in common with 'traditional' emergencies, there are a number of factors that are more specific to agricultural emergencies. These are explored in the context of the existing literature and interventions or preventative measures suggested to mitigate the possible negative impact of responding to agricultural emergencies.

Most people are familiar with the stereotype of the 'superhuman' emergency responder, able to work tirelessly in extreme conditions whilst remaining invulnerable to stress and emotion¹. However, in recent years there has been increasing recognition that emergency responders can be affected by their exposure to traumatic events. While emergency responders "display an implicit willingness to expose [themselves] to potentially distressing situations and the associated risks to [their] well being"² through choosing to work in the field, the effects of this exposure can range from feeling overworked and overwhelmed during the event to the development of long-term psychological difficulties such as anxiety, depression, anger or aggression³, and even post-traumatic symptoms similar to those seen in the 'victims' of the event⁴.

An emergency scene is, by its very nature, a dynamic and ever-changing work environment, which "bring[s] together some of the most distressing aspects of human experience"⁵. Emergency responders work "under stressful and chaotic conditions, face unprecedented personal demands"⁶ and may even be faced with

situations that threaten their own lives and safety. There may also be the threat of further events impacting on and worsening the situation. Time pressures are high, with rapid and effective action essential, work hours may be long and resources may be limited or stretched to capacity.

Emergency responses involve the breakdown of routine and familiar frameworks and may require emergency responders to perform unfamiliar tasks. Communication problems may also be a source of stress⁷, particularly at the start of a response when the situation is unclear. Despite all this, emergency responders must operate under the rules and expectations of their organisation⁸ to ensure that the response is coordinated and achieves its objectives. Due to the high profile of many emergency events, this may be compounded by "politically motivated demands for immediate and effective action, accompanied by intense administrative pressures"⁹. All of these factors combine to present an intense experience for emergency responders and may cause them to experience stress reactions of various degrees.

Stress is distress caused by a physical or mental strain¹⁰ and results in a state of extreme emotional and physical arousal. Once stress becomes overwhelming and reaches a level where performance deteriorates and personal well-being is seriously impaired, this can have serious implications for emergency management organisations. Most seriously, exposure to a life-threatening situation can lead to the development of Post-Traumatic Stress Disorder (PTSD). The prevalence of PTSD in the general population is 1–2% but has been reported as being as high as 30% or more in emergency responders after serious incidents¹¹. PTSD is characterised by several potentially debilitating symptoms which, if left untreated, can continue for months or even years and severely impact on the quality of life of sufferers.

The majority of the literature on stress reactions in emergency responders focuses on the traditional first responders such as fire fighters, police, ambulance attendants and other rescue personnel. These are the emergency responders most likely to encounter life-threatening situations as part of fulfilling their duties.

Working in physically dangerous conditions leads to high levels of arousal and fear and problems may arise when these feelings are not released after the event. Facing death in the line of duty can also lead emergency responders to feel a greater awareness of their own mortality and that of loved ones¹².

However, it is important to recognise that stress reactions in emergency responders can occur whether or not the incident put their lives directly at risk. For instance, emergency responders have reported feeling stressed and frustrated at not being able to 'save' everyone who needs help¹³. This frustration can be coupled with anger if it is felt that the failure to save people was the result of the inadequacy of resources, equipment or personnel¹⁴. Alternatively, the frustration and sense of helplessness can be internalised when emergency responders feel they are unprepared, inadequately trained¹⁵, or possess insufficient knowledge. These feelings are likely to persist and impact on the emergency responder's performance in subsequent incidents if they are not addressed.

Emergency workers also have to deal with the emotions and reactions of victims, including shock, anger, anxiety and criticism or even the refusal of help¹⁶. While these are natural reactions, the emergency responder is likely to be the first person on the scene and so may bear the brunt of the victim's emotions. This can increase the stress reaction of the emergency responder if they are not expecting it, able to cope with it or are in an emotionally heightened state themselves. Listening to the recollections of victims can in itself be traumatic and emergency responders may then experience secondary stress reactions¹⁷ or suffer from "compassion fatigue"¹⁸. This idea is supported by research which indicates that trauma reactions are "more likely among those whose job duties require an empathetic interaction with trauma survivors"¹⁹. Stress reactions caused by working with victims can be further heightened when emergency responders identify with victims because they remind them of someone they know or worse, because they are someone they know²⁰.

Emergency responders are trained to carry out specific tasks and they may feel a sense of heightened involvement or even elation while performing these tasks. However, this 'high' may lead to emergency responders working "to the limits of endurance... strength, power and courage"²¹ and staying on duty well beyond the limits of their normal or optimal functioning. This leaves them susceptible to burnout and increases the risks to their safety, the safety of those around them and their chances of making mistakes. Stressed workers lose perspective and can react in non-characteristic ways, displaying behaviours such as non-performance, insubordination, personality change and an "exaggerated sense of the importance of

their work"²² and a belief that no-one else can do it as well as they can.

Studies have indicated that serious psychological distress is not just experienced by front-line emergency responders but can also be experienced by second-line emergency responders such as administrators, control centre staff, call centre staff and switchboard operators²³. Further, emergency responders experiencing stress reactions can cause stress within their families and strain these potentially supportive family relationships²⁴. Stress may be transmitted directly to family members through changes in the emergency responders behaviour, the family dynamics may change due to the emergency responders role or absence and problems may be caused by the interaction of the emergency responders work with other psychological factors within the family²⁵. Stress within the family may then effect the ability of the emergency responder to reduce the stress induced by an emergency incident and may therefore increase the duration of stress reactions.

Stress effects can be further compounded, and cumulative stress reactions developed, when emergency responders are required to attend subsequent emergencies and do not have time to wind down and work through their experiences after an event²⁶. Similarly, attempts to assign blame for the failure of a response and post-emergency events such as "funerals, memorial services and the legal processes involved in assigning blame and addressing compensation issues"²⁷ can all contribute to the maintenance of stress reactions.

The increased recognition of these stress reactions has led some researchers to claim that the stereotype of the 'superhuman' emergency responder is in danger of being replaced by the stereotype of the vulnerable 'victim' emergency responder²⁸ who is traumatised by their work and suffering from a range of harmful psychological effects. While this may be true for some people, the reality is that there are significant differences between people in their reactions to stress. Emergency responders bring with them individual characteristics such as personal demographics, personality, previous experience, coping skills and perceptions and stress reactions are related to the interaction of these factors with the circumstances of their involvement in the emergency²⁹.

Further, not all the outcomes of exposure to emergency incidents are negative. Positive outcomes identified include "the opportunity to exercise professional skills, perception of a job well done, and a relaxation of bureaucratic constraints"³⁰. The majority of emergency responders display courage and perseverance in the face of traumatic circumstances and they "deserve to feel positive about helping"³¹. Low levels of stress can actually be performance enhancing, with effects including alertness, faster reactions, increased energy



*Burial pits for disposal of chicken carcasses during the Mangrove Mountain outbreak of Newcastle Disease
Photo courtesy of the NSW Department of Primary Industries*

and accelerated thinking skills³². In addition, some emergency responders who have had their lives threatened in the course of carrying out their duties have reported positive outcomes such as a greater appreciation of life and better relationships with others.

Despite the growing body of literature investigating the impact of exposure to emergency incidents on traditional emergency responders, little has focused on the impact of responding to agricultural emergencies. While the issues facing agricultural emergency responders are in many ways similar to those described above, there are a number of factors that are more specific to agricultural emergencies. One of these is the potential duration of an incident. Emergency animal, aquatic or plant disease outbreaks can take months or years to eradicate. For example, the 2001 Foot and Mouth Disease (FMD) outbreak in the United Kingdom lasted for 32 weeks and involved over 10 000 personnel³³. Similarly, a total of 5 000 personnel were involved in the 1999 Newcastle Disease outbreak at Mangrove Mountain in Australia, which lasted for four months³⁴. Many agricultural emergency responders are required to work long hours, seven days a week and may be separated from their families for weeks at a time. Combined with stressful working conditions, this makes emotional strain, overwork, exhaustion and burnout serious issues.

While the physical dangers faced by agricultural emergency responders tend to be different to those faced by traditional emergency responders, their health, safety and even lives can still be threatened. Obviously, accidents are always possible, especially among workers suffering from burnout, but the most serious threat to agricultural emergency responders comes from zoonotic diseases, or animal diseases that can be transmitted to

humans. Agricultural emergency responders must have contact with diseased and dead animals to fulfil their duties and the thought of catching a disease can be very stressful. Even when a disease outbreak is not zoonotic, agricultural emergency responders must still handle diseased and dead animals and “must consider all bodily fluids as biohazards”³⁵. Added to this, various chemicals are used to disinfect infected premises and equipment and these can cause injuries and illness if proper handling protocols are not followed.

Thankfully, large-scale agricultural emergency disease outbreaks are rare. However, this means that many agricultural emergency responders will not have had any previous experience in responding to such an incident. This can make them particularly susceptible to stress reactions arising from the implementation of policies such as the culling of animals during disease outbreaks. Carrying out stock destruction, or even witnessing it, can be very traumatic for agricultural emergency responders³⁶ as many are vets or have veterinary training. They may therefore experience “a profound sense of sorrow and anger at having to slaughter the lives they had dedicated themselves to protect and heal”³⁷. Mass slaughter of animals on the scale of that seen in the UK FMD outbreak “inevitably had deep impacts on human sensibilities”³⁸ and affected even experienced slaughter men.

The destruction of animals may also cause a stress reaction in agricultural emergency responders when they have to deal directly with the owners of the animals, some of whom they may know personally. The “enormity of the responsibility for delivering bad news and terminating farm enterprises”³⁹ can be very distressing. Research has also indicated that animal-human bonds can be very strong and that many farmers

do not think of their animals simply as agricultural commodities⁴⁰. They may react very emotionally, and even violently⁴¹, to the slaughter of their animals and this can be difficult to handle for agricultural emergency responders who have not previously had any experience in dealing with distressed or suicidal individuals. The need to cull healthy animals to contain an epidemic can be particularly traumatic for farmers and their “feelings of hopelessness, anger, frustration and injustice”⁴² can be directed at the agricultural emergency responders enforcing the control strategy.

Public perceptions can be an added stress for agricultural emergency responders. While most people “condone animal slaughter in certain circumstances”⁴³, such as putting down a terminally ill animal, mass slaughter is less easily accepted. Saturation media coverage of burning animal pyres became potent representations of the UK FMD outbreak and contributed to negative public perceptions of the way the government handled the crisis. A poll conducted in 2001 indicated that only 27% of the public were satisfied with the way the outbreak was being handled⁴⁴ and questions were raised about the animal welfare implications of the methods used. This public disapproval was experienced by many agricultural emergency responders as open hostility, anger and suspicion⁴⁵.

In the current climate of heightened global awareness and fear of terrorism, bioterrorism has become a very real threat. Just the suggestion of bioterrorism can have a significant impact as was seen in New Zealand in May 2005, when the Prime Minister received a letter claiming that FMD had been released on Waiheke Island⁴⁶. Although this was proven to be a hoax, an emergency response had to be initiated and maintained for over two weeks. Responding to bioterrorism incidents, real or threatened, can in fact have “an even greater negative psychological impact than a natural epidemic”⁴⁷. These impacts include anger that people could deliberately cause so much destruction and suffering, fear of further attacks spreading the disease and the need to work

closely with investigative agencies such as the police, in unfamiliar working relationships.

As can be seen, there is the potential for agricultural emergency responders to experience stress reactions similar to those seen in traditional emergency responders. Therefore, the interventions that have been identified in the literature on these emergency responders may also have implications for the agricultural emergency management function. These include pre-incident training, post-incident psychological debriefing, providing organisational support, recognition and follow up support, providing access to trained mental health workers and establishing appropriate work practices⁴⁸.

Preventative measures can be put in place to reduce the impacts of stress reactions well before an incident occurs through conducting trauma and risk assessments to determine an organisation’s vulnerability. Trauma prevention components can then be included in all emergency management plans and documents⁴⁹ to ensure that organisations are able to respond promptly and adequately to employee needs. Formally recognising the potential stress reactions that emergency responders may experience in this way helps to validate and normalise them⁵⁰ and this can reduce the emotional fallout of participating in an emergency response as these reactions are no longer hidden, minimised or ridiculed⁵¹.

Training is also an important pre-incident preventative measure. Research has indicated that emergency responders who are aware of the traumas they may encounter, and their potential reactions to these traumas, are better able to integrate the emergency experience and so fulfil their roles and responsibilities without suffering detrimental effects⁵². Training which prepares responders for many different scenarios and which identifies “the atypical and emotionally threatening nature of disasters and reduce[s] the perception of disaster demands as stressors”⁵³ is



*Catching chickens for destruction using CO₂ during the Mangrove Mountain outbreak of Newcastle Disease
Photo courtesy of the NSW Department of Primary Industries*



*Scenes confronting agricultural emergency responders during the UK Foot and Mouth Disease outbreak.
Photo courtesy of the NSW Department of Primary Industries.*

therefore vital. The involvement of trained mental health providers in training exercises can also be used to help agricultural emergency responders recognise signs of stress reactions in themselves and in others and so facilitate early identification and intervention⁵⁴.

During incidents, agricultural emergency responders should be reminded of what signs to look for and must be encouraged to attend to their personal needs, including their physical health, balance, social support and acceptance, in order to ensure they have the resources needed to perform their emergency roles⁵⁵. Organisations can assist in this by ensuring that systems of relief and back-up are enforced and that social activities are organised to allow workers to remove themselves from the response for a time⁵⁶. Support networks set up for the families of agricultural emergency responders, particularly those required to be away from home for considerable periods of time, can also relieve stress as responders can be more confident that their families understand the situation and that their needs are being met⁵⁷.

Debriefing after an incident has become very common in recent years and is designed to “help victims of psychological trauma process their experience cognitively and emotionally”⁵⁸. Optimally, debriefs should include all the agricultural emergency responders involved and be held within 48 hours of the conclusion of the incident⁵⁹. Participants should be encouraged, but not pressured, to discuss their feelings about the incident, both negative and positive⁶⁰. However, “debriefing is a short intervention provided at the start of a longer period of recovery”⁶¹ and stress reactions can continue for some time. Individual debriefing should therefore also be made available on an informal, spontaneous basis, without any sense of stigma⁶², and referrals to specialist counsellors made for people suffering from serious psychological disturbance and post-traumatic symptoms,

Post-event, some agricultural emergency responders may find the return to normal duties stressful and therefore need additional support at this time⁶³. Stress reactions can make it difficult to settle back into routine work and social sanctions can make some people reluctant to express their emotions for fear that they will be thought of as weak or vulnerable⁶⁴. There can also be a perception that co-workers who have not gone through the experience cannot really understand what it was like and this can lead to feelings of alienation⁶⁵. The return to normal duties may also be difficult for agricultural emergency responders who have experienced positive outcomes, such as high job satisfaction, with the potential that they may experience a ‘letdown’ phase⁶⁶. Formal recognition by the organisation of a worker’s participation in a disaster operation can help reduce the feeling of letdown by reinforcing the value of the individual’s contribution.

Ultimately, a combination of several of these interventions is likely to have the greatest impact on reducing stress reactions in agricultural emergency responders as ‘one size’ does not fit all and treatment and support must be suited to individual needs⁶⁷. A “distressed worker is not a fit worker”⁶⁸ and stress reactions and burnout can result in significant financial and social costs to the individual and the organisation. Therefore, recognition of potential stress reactions in agricultural emergency responders and the implementation of appropriate interventions can only enhance the ability of agricultural agencies to respond to agricultural emergency incidents in the future and to protect the well-being of their staff.

End notes

- 1 Moran, C.C. (1999). ‘Recruits’ predictions of positive reactions in disaster and emergency work’. *Disaster Prevention and Management*, Vol 8(3), p177.
- 2 Lunn, J. (1999). ‘How Long is Too Long at the Sharp End?’. International Conference on Disaster Management Cooperative Networking in South Asia paper, <http://www.ignoudismgtconf.org/lunn1.htm>, p2.
- 3 Alexander, L., Ward, C.L., Lombard, C.J & Gwebushe, N. (2006). ‘How stressed are emergency workers’. *Crisis Response Journal*, Vol 3(1), p50.
- 4 Friedman, T.J. (2006). ‘Trauma among emergency responders and terrorism investigators: Suggestions for conducting needed research’. *Journal of Emergency Management*, Vol 4(3), p41.
- 5 Raphael, B. (1984). ‘Rescue Workers: Stress and their Management’. *Emergency Response*, Vol 1(10) June 1984, p27.
- 6 US Department of Health and Human Services, ‘Prevention and Control of Stress Among Emergency Workers: A Pamphlet for Team Managers’. National Institute of Mental Health, Maryland, p1.
- 7 Paton, D. & Flin, R. (1999). ‘Disaster stress: an emergency management perspective’. *Disaster Prevention and Management*, Vol 8(4), p262.
- 8 Kowalski, K.M. & Vaught, C. (2001). ‘The Safety and Health of Emergency Workers’. *Journal of Contingencies and Crisis Management*, Vol 9(3), p138.
- 9 Friedman, T.J. (2006). *op cit*, p41.
- 10 Moore, B. (ed.) (2001). *The Australian Pocket Oxford Dictionary*, 5th edition. Oxford University Press, South Melbourne, p1093.
- 11 Lunn, J. (1999). *op cit*, p2.
- 12 Raphael, B., Singh, B. & Bradbury, L. (1980). ‘Disaster: The Helper’s Perspective’. *The Medical Journal of Australia*, October 18, p446.
- 13 Raphael, B. (1984). *op cit*, p29.
- 14 Alexander, L., Ward, C.L., Lombard, C.J & Gwebushe, N. (2006). *op cit*, p51.
- 15 *ibid*, p51.
- 16 *ibid*, p51.
- 17 Paton, D. (1997). ‘Post-event support for disaster workers: integrating recovery resources and the recovery environment’. *Disaster Prevention and Management*, Vol 6(1), p44.
- 18 Wagner, S.L. (2005). ‘Emergency Response Service Personnel and the Critical Incident Stress Debriefing Debate’. *International Journal of Emergency Mental Health*, Vol

- 7(1), p33.
- 19 Palm, K.M., Polusny, M.A. & Follette, V.M. (2004). 'Vicarious Traumatization: Potential Hazards and Interventions for Disaster and Trauma Workers'. *Prehospital and Disaster Medicine*, Vol 19(1), p74.
- 20 Miller, L. (2006). 'Critical Incident Stress Debriefing for Law Enforcement: Practical Models and Special Applications'. *International Journal of Emergency Mental Health*, Vol 8(3), p190.
- 21 Raphael, B., Singh, B. & Bradbury, L. (1980). *op cit*, p445.
- 22 Friedman, T.J. (2006). *op cit*, p43.
- 23 Lunn, J. (1999). *op cit*, p3.
- 24 Alexander, L., Ward, C.L., Lombard, C.J & Gwebushe, N. (2006). *op cit*, p50.
- 25 Gordon, R. & Wraith, R. (1987). 'Workers' Responses to Disaster'. *The Macedon Digest*, Vol 2(4), p3.
- 26 Raphael, B. (1984). *op cit*, p27.
- 27 Paton, D. (1997). *op cit*, p44.
- 28 Moran, C.C. (1999). *op cit*, p178.
- 29 Gordon, R. (2006). 'Acute responses to emergencies: findings and observations of 20 years in the field'. *The Australian Journal of Emergency Management*, Vol 21(1), p22.
- 30 Paton, D., Smith, L. & Violanti, J. (2000). 'Disaster response: risk, vulnerability and resilience'. *Disaster Prevention and Management*, Vol 9(3), p173.
- 31 Moran, C.C. (1999). *op cit*, p182.
- 32 Paton, D. & Flin, R. (1999). *op cit*, p262.
- 33 Barclay, E. (2005). 'Local Community Preparedness for an Emergency Animal Disease Outbreak'. Australian Government Rural Industries Research and Development Corporation, p5.
- 34 *ibid*, p112.
- 35 Wagner, S.L. (2005). *op cit*, p33.
- 36 Hall, M.J., Ng, A., Ursano, R.J., Holloway, H., Fullerton, C. & Casper, J. (2004). 'Psychological Impact of the Animal-Human Bond in Disaster Preparedness and Response'. *Journal of Psychiatric Practice*, Vol 10(6), p371.
- 37 *ibid*, p372.
- 38 Mephram, B. (2001). 'Foot and Mouth Disease and British Agriculture: Ethics in a Crisis'. *Journal of Agricultural and Environmental Ethics*, Vol 14(3), p345.
- 39 Australian Government Productivity Commission. (2002). 'Impact of a Foot and Mouth Disease Outbreak on Australia'. <http://www.pc.gov.au/study/footandmouth/finalreport/index.html>, p124.
- 40 Hall, M.J., Ng, A., Ursano, R.J., Holloway, H., Fullerton, C. & Casper, J. (2004). *op cit*, p368.
- 41 Barclay, E. (2005). *op cit*, p125.
- 42 Australian Government Productivity Commission. (2002). *op cit*, p121.
- 43 Mephram, B. (2001). *op cit*, p341.
- 44 Greer, A. (2003). 'Countrywide Issues: A Creeping Crisis'. *Parliamentary Affairs*, Vol 56, p540.
- 45 Hall, M.J., Ng, A., Ursano, R.J., Holloway, H., Fullerton, C. & Casper, J. (2004). *op cit*, p371.
- 46 MAF Press Releases. (2005). <http://www.biosecurity.govt.nz/pest-and-disease-response/pests-and-diseases-watchlist/foot-and-mouth-disease>
- 47 Hall, M.J., Ng, A., Ursano, R.J., Holloway, H., Fullerton, C. & Casper, J. (2004). *op cit*, p372.
- 48 Gordon, R. & Wraith, R. (1987). *op cit*, p4.
- 49 Maly, M. & Putt, C.A. (1999). 'Preventing Psychological Trauma: The Next Generation of Recovery Planning'. *Disaster Recovery Journal*, Vol 12(3), p88.
- 50 Gauthier, N. (2001). 'Finding the calm after the storm'. *Emergency Preparedness Digest*, April-June 2001, p22.
- 51 Cohen, E. (1989). 'Psychological Recovery: Who Cares For Us?'. *National Emergency Response*, p21.
- 52 Gordon, R. & Wraith, R. (1988). 'Psychological effects of disaster work'. *National Emergency Response*, Vol 3(3), p33.
- 53 Paton, D., Smith, L. & Violanti, J. (2000). *op cit*, p173.
- 54 US Department of Health and Human Services, *op cit*, p3.
- 55 Palm, K.M., Polusny, M.A. & Follette, V.M. (2004). *op cit*, p74.
- 56 Barclay, E. (2005). *op cit*, p84.
- 57 *ibid*, p83.
- 58 Lunn, J. (1999). *op cit*, p7.
- 59 US Department of Health and Human Services, *op cit*, p6.
- 60 Paton, D. (1995). 'Debriefing and recovery from work-related trauma: The relationship between process, environment and counselling intervention', *The Australian Counselling Psychologist*, Vol 11(1), p39.
- 61 *ibid*, p40.
- 62 Raphael, B. (1984). *op cit*, p29.
- 63 *ibid*, p30.
- 64 Raphael, B., Singh, B. & Bradbury, L. (1980). *op cit*, p446.
- 65 Paton, D. (1995). *op cit*, p42.
- 66 Paton, D., Smith, L. & Violanti, J. (2000). *op cit*, p178.
- 67 Lunn, J. (1999). *op cit*, p7.
- 68 *ibid*, p7.

References

- Alexander, L., Ward, C.L., Lombard, C.J & Gwebushe, N. (2006). 'How stressed are emergency workers'. *Crisis Response Journal*, Vol 3(1), pp50-51.
- Australian Government Productivity Commission. (2002). 'Impact of a Foot and Mouth Disease Outbreak on Australia'. <http://www.pc.gov.au/study/footandmouth/finalreport/index.html>
- Barclay, E. (2005). 'Local Community Preparedness for an Emergency Animal Disease Outbreak'. Australian Government Rural Industries Research and Development Corporation, pp i-132.
- Cohen, E. (1989). 'Psychological Recovery: Who Cares For Us?'. *National Emergency Response*, pp 17-21.
- Friedman, T.J. (2006). 'Trauma among emergency responders and terrorism investigators: Suggestions for conducting needed research'. *Journal of Emergency Management*, Vol 4(3), pp 41-46.
- Gauthier, N. (2001). 'Finding the calm after the storm'. *Emergency Preparedness Digest*, April-June 2001, pp 20-22.
- Gordon, R. & Wraith, R. (1987). 'Workers' Responses to Disaster'. *The Macedon Digest*, Vol 2(4), pp 3-5.

- Gordon, R. & Wraith, R. (1988). 'Psychological effects of disaster work'. *National Emergency Response*, Vol 3(3), pp 31-41.
- Gordon, R. (2006). 'Acute responses to emergencies: findings and observations of 20 years in the field'. *The Australian Journal of Emergency Management*, Vol 21(1), pp 17-22.
- Greer, A. (2003). 'Countryside Issues: A Creeping Crisis'. *Parliamentary Affairs*, Vol 56, pp 523-542.
- Hall, M.J., Ng, A., Ursano, R.J., Holloway, H., Fullerton, C. & Casper, J. (2004). 'Psychological Impact of the Animal-Human Bond in Disaster Preparedness and Response'. *Journal of Psychiatric Practice*, Vol 10(6), pp 368-374.
- Kowalski, K.M. & Vaught, C. (2001). 'The Safety and Health of Emergency Workers'. *Journal of Contingencies and Crisis Management*, Vol 9(3), pp 138-143.
- Lunn, J. (1999). 'How Long is Too Long at the Sharp End?'. International Conference on Disaster Management Cooperative Networking in South Asia paper, <http://www.ignoudismgtconf.org/lunn1.htm>, p2.
- MAF Press Releases. (2005). <http://www.biosecurity.govt.nz/pest-and-disease-response/pests-and-diseases-watchlist/foot-and-mouth-disease>
- Maly, M. & Putt, C.A. (1999). 'Preventing Psychological Trauma: The Next Generation of Recovery Planning'. *Disaster Recovery Journal*, Vol 12(3), pp 88-90.
- Mephram, B. (2001). 'Foot and Mouth Disease and British Agriculture: Ethics in a Crisis'. *Journal of Agricultural and Environmental Ethics*, Vol 14(3), pp 339-347.
- Miller, L. (2006). 'Critical Incident Stress Debriefing for Law Enforcement: Practical Models and Special Applications'. *International Journal of Emergency Mental Health*, Vol 8(3), pp189-201.
- Moore, B. (ed.) (2001). *The Australian Pocket Oxford Dictionary*, 5th edition. Oxford University Press, South Melbourne, p1093.
- Moran, C.C. (1999). 'Recruits' predictions of positive reactions in disaster and emergency work'. *Disaster Prevention and Management*, Vol 8(3), pp 177-183.
- Palm, K.M., Polusny, M.A. & Follette, V.M. (2004). 'Vicarious Traumatization: Potential Hazards and Interventions for Disaster and Trauma Workers'. *Prehospital and Disaster Medicine*, Vol 19(1), pp 73-78.
- Paton, D. (1995). 'Debriefing and recovery from work-related trauma: The relationship between process, environment and counselling intervention', *The Australian Counselling Psychologist*, Vol 11(1), pp 39-44.
- Paton, D. (1997). 'Post-event support for disaster workers: integrating recovery resources and the recovery environment'. *Disaster Prevention and Management*, Vol 6(1), p43.
- Paton, D. & Flin, R. (1999). 'Disaster stress: an emergency management perspective'. *Disaster Prevention and Management*, Vol 8(4), p262.
- Paton, D., Smith, L. & Violanti, J. (2000). 'Disaster response: risk, vulnerability and resilience'. *Disaster Prevention and Management*, Vol 9(3), pp 173-179.
- Raphael, B. (1984). 'Rescue Workers: Stress and their Management'. *Emergency Response*, Vol 1(10) June 1984, pp 27-30
- Raphael, B., Singh, B. & Bradbury, L. (1980). 'Disaster: The Helper's Perspective'. *The Medical Journal of Australia*, October 18, pp 445-447.
- US Department of Health and Human Services, 'Prevention and Control of Stress Among Emergency Workers: A Pamphlet for Team Managers'. National Institute of Mental Health, Maryland, pp 1-8.
- Wagner, S.L. (2005). 'Emergency Response Service Personnel and the Critical Incident Stress Debriefing Debate'. *International Journal of Emergency Mental Health*, Vol 7(1), pp 33-41.

About the author

Meredith Jenner BBSc(Hons) is the Emergency Management Planning Officer for the Department of Primary Industries and Resources South Australia. She is currently undertaking the Graduate Certificate in Emergency Management through Emergency Management Australia. Email: jenner.meredith@saugov.sa.gov.au

