OHS Body of Knowledge

Mitigation: Emergency Preparedness

Core Body of Knowledge for the Generalist OHS Professional

S.I.A. Safety Institute of Australia Ltd

Australian OHS Education Accreditation Board

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First published in 2012 by the Safety Institute of Australia Ltd, Tullamarine, Victoria, Australia.

Bibliography.
ISBN 978-0-9808743-1-0

Disclaimer

The OHS Body of Knowledge for Generalist
OHS Professionals has been developed under the
auspices of the **Health and Safety Professionals Alliance**

The Technical Panel established by the Health and Safety Professionals Alliance (HaSPA) was responsible for developing the conceptual framework of the OHS Body of Knowledge and for selecting contributing authors and peer-reviewers.
The Technical Panel comprised representatives from:

The Safety Institute of Australia supported the development of the OHS Body of Knowledge and will be providing ongoing support for the dissemination of the OHS Body of Knowledge and for the maintenance and further development of the Body of Knowledge through the Australian OHS Education Accreditation Board which is auspiced by the Safety Institute of Australia.

Synopsis of the OHS Body Of Knowledge

Background

A defined body of knowledge is required as a basis for professional certification and for accreditation of education programs giving entry to a profession. The lack of such a body of knowledge for OHS professionals was identified in reviews of OHS legislation and OHS education in Australia. After a 2009 scoping study, WorkSafe Victoria provided funding to support a national project to develop and implement a core body of knowledge for generalist OHS professionals in Australia.

Development

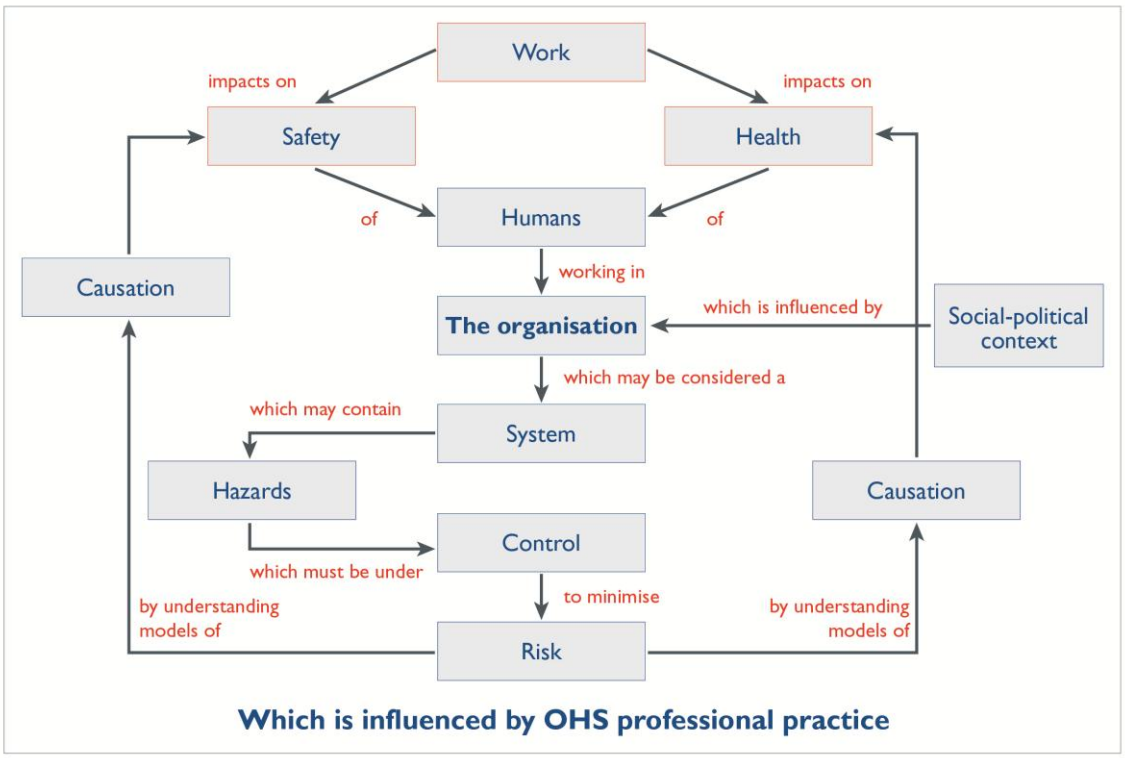
The process of developing and structuring the main content of this document was managed by a Technical Panel with representation from Victorian universities that teach OHS and from the Safety Institute of Australia, which is the main professional body for generalist OHS professionals in Australia. The Panel developed an initial conceptual framework which was then amended in accord with feedback received from OHS tertiary-level educators throughout Australia and the wider OHS profession. Specialist authors were invited to contribute chapters, which were then subjected to peer review and editing. It is anticipated that the resultant OHS Body of Knowledge will in future be regularly amended and updated as people use it and as the evidence base expands.

Conceptual structure

The OHS Body of Knowledge takes a 'conceptual' approach. As concepts are abstract, the OHS professional needs to organise the concepts into a framework in order to solve a problem. The overall framework used to structure the OHS Body of Knowledge is that:

> **Work** impacts on the **safety** and **health** of humans who work in **organisations**. Organisations are influenced by the **socio-political context**. Organisations may be considered a **system** which may contain **hazards** which must be under control to minimise **risk**. This can be achieved by understanding **models causation** for safety and for health which will result in improvement in the safety and health of people at work. The OHS professional applies **professional practice** to influence the organisation to being about this improvement.

This can be represented as:



Audience

The OHS Body of Knowledge provides a basis for accreditation of OHS professional education programs and certification of individual OHS professionals. It provides guidance for OHS educators in course development, and for OHS professionals and professional bodies in developing continuing professional development activities. Also, OHS regulators, employers and recruiters may find it useful for benchmarking OHS professional practice.

Application

Importantly, the OHS Body of Knowledge is neither a textbook nor a curriculum; rather it describes the key concepts, core theories and related evidence that should be shared by Australian generalist OHS professionals. This knowledge will be gained through a combination of education and experience.

Accessing and using the OHS Body of Knowledge for generalist OHS professionals

The OHS Body of Knowledge is published electronically. Each chapter can be downloaded separately. However users are advised to read the Introduction, which provides background to the information in individual chapters. They should also note the copyright requirements and the disclaimer before using or acting on the information.

Mitigation – Emergency Preparedness

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Core Body of Knowledge for the Generalist OHS Professional

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Mitigation – Emergency Preparedness

Abstract

All organisations are vulnerable to and, consequently, must plan for emergencies as part of their health and safety and overall management framework. While expert advice may be required, the generalist Occupational Health and Safety (OHS) professional has a role in facilitating and monitoring the emergency planning and preparedness. This chapter – one of two that address mitigation strategies for prevention of work-related fatality, injury, disease and ill health – focuses on ensuring the safety of people. It examines the key concepts in emergency preparedness for organisations, including the Performance, Preparedness, Response and Recovery (PPRR) approach, the relevance of which is challenged in today's emergency-management environment. A comprehensive, integrated risk-management approach that incorporates PPRR is advocated.

Keywords

emergency, planning, preparedness, response, recovery, mitigation

Contents

1 Introduction

Most organisations are vulnerable to experiencing an emergency that can lead to devastating outcomes. An emergency event can result from internal organisational operations or from external sources. Such emergencies can range from serious 'first-aid' incidents to events resulting in multiple deaths, property damage and business interruption. The possibility of emergencies occurring increases as new products and processes are introduced, and as political and social events causing major community disruption become more frequent.

While the main focus of the generalist Occupational Health and Safety (OHS) professional is primary prevention,[1] attention also must be given to mitigating the impact of events or circumstances causing injury or illness. This chapter is one of two that address mitigation strategies for prevention of work-related fatality, injury, disease and ill health.[2] It explores the knowledge required by the generalist OHS professional to assist organisations to identify the type and magnitude of emergencies that they may face, and to develop procedures for responding to such situations while acknowledging that emergency management is a specialist area. The chapter is concerned with minimising the consequences of an emergency, ensuring the safety of people during an emergency and reminding the OHS professional of the legal, ethical and moral obligations of employers in planning for emergencies. It focuses on emergencies that may directly impact organisations, and does not address the management of large-scale events often described as 'disasters,' 'catastrophes, or 'national crises.'

Emergency management occurs after a natural disaster (e.g. flood or fire) or a process catastrophe (eg: explosion). Planning for such potential events should always be done beforehand on the assumption that such events have occurred before, even if elsewhere, and so should be naturally seen within the 'prevention' role of the OHS professional. In addition the OHS professional needs to understand the mitigation role as part of the time sequence of accidents as proposed by Haddon, Viner and others (See, for example, Viner, 1991). In Viner's model, mitigation would occur within the consequence time zone, during which damage commences, is detected and proceeds to completion, followed by recovery or stabilisation.[3] Clearly recovery and stabilisation are part of the mitigation of the incident. The bow-tie diagram, used widely in major hazards facilities,[4] visually illustrates the importance of mitigation in the overall chain of the incident. (Figure 1) The incident (ie: disaster, process incident, or serious injury event) is seen as the Critical or Top Event, and the consequences need to be mitigated by appropriate processes that generally have to be pre-planned and should include emergency preparedness.

[1] See *OHS BoK* Introduction.
[2] See *OHS BOK* Control: Mitigation – Health Impacts.
[3] See *OHS BoK* Models of Causation: Safety.
[4] See *OHS BoK* Risk and *OHS BoK* Control.

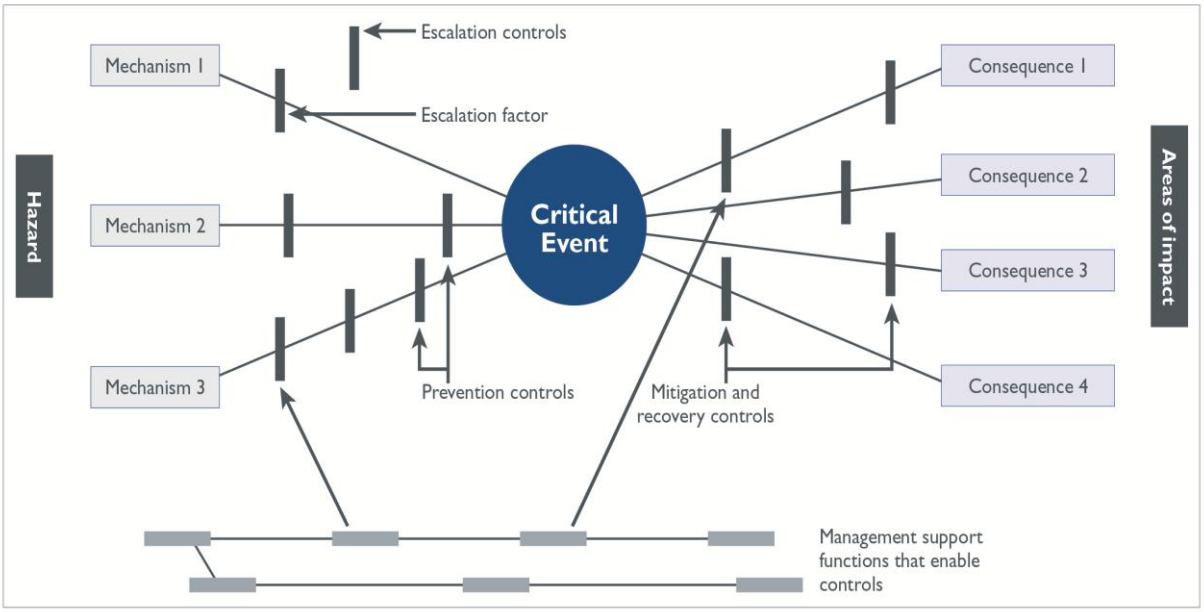

Figure 1: Bow tie model of risk (modified from Hudson & Guchelaar, 2003)

1.1 Definitions

1.1.1 Emergency

The Australian Standard *AS 3745 Planning for Emergencies in Facilities* (SA, 2010a) defines an emergency as "an event that arises internally or from external sources, which may adversely affect the occupants or visitors in a facility, and which requires an immediate response." On-site emergencies may include events such as a hazardous chemical leak, a fire, a bomb threat, a medical emergency or an industrial incident. Off-site emergencies that could impact an organisation may include a fire or chemical leak in an adjoining property, or involvement of a company vehicle in a road accident.

Events that constitute an emergency have one or both of the following characteristics:

- Require rapid deployment of resources that would not normally be provided as part of the core activities of the organisation (e.g. spill kits and emergency showers, resources to fight a major fire, complete backup systems for essential organisational activities); special arrangements may have to be made to ensure that the required resources are in place and available at all times
- Require competencies not normally needed as part of the core activities of the organisation (e.g. in evacuation procedures, in dealing with major spillage of toxic materials, in dealing with media and local communities) (Boyle, 2000).

1.1.2 Emergency response

As an 'emergency' requires a rapid and more-or-less complex response to protect life and minimise losses, an emergency response requires:

- Identification of hazards and events that could lead to an emergency
- Identification of the activities required to respond to the emergency and the time scales for these activities
- Introduction of risk assessments and measures to control and/or eliminate the identified risks. (See, for example, EMA, 2004; Phillips, Neal & Webb, 2012.)

2 Historical context

In the early 1900s the Australian approach to disasters was focused on response with the most visible disaster management agency being the Red Cross. Following World War II the Red Cross led the way in developing a focus on disaster 'preparedness' in addition to response (Smith, 2006). However, during the 1950 and 60s there was little evidence of planning to meet potential emergency situations in industry or in specific organisations. One notable exception was the aviation industry's requirement for the preparation of 'Emergency Procedures' for all approved airports and flying bases. Generally, these procedures followed the military model developed during World War II, and involved coordination with local hospitals, fire services and police in preparing their response should a runway incident occur.

When opening the Australian Civil Defence School at Mount Macedon in Victoria in 1956, Commonwealth Minister for the Interior and Works Allen Fairhall highlighted the need for cooperation between the federal and state governments (Pearce, 2006). Subsequently, most state and territory governments addressed the need for communities to prepare for disasters, both natural and otherwise, by establishing Civil Defence Organisations and state disaster plans. For example, the Victorian State Disaster Response Plan, later known as DISPLAN, was developed following bushfires in 1962, "when a need to improve emergency agency co-ordination was identified" (WICEN, 1993). Initially these organisations and disaster plans had no legislative backing, but gradually the various states and territories promulgated disaster management legislation. In Victoria, for example, the provisional disaster management arrangements were contained within the *State Disasters Act 1983* (OESC, 2011). Unfortunately, little industry effort was invested in development of suitable emergency response plans for organisations. Organisations such as the new vehicle manufacturing plants, and infrastructure bodies such as rail systems and the Snowy Mountain Scheme, largely relied upon local fire and ambulance services to 'turn up' if an emergency occurred in their facility.

By the 1980s, Robens-style OHS legislation had been introduced in all states (NRCOHSR, 2002).[5] This legislation placed a general duty on employers to ensure, as far as practicable, a working environment that was safe and without risk and this obligation extended to employees, contractors and "others" who might be at risk from the conduct of the work. Thus, by implication, there was a requirement to address the safety and risk that might be associated with emergency situations.

Since the late 1990s, there have been emergency-management policy shifts from an internal agency focus to a community focus, and from reactive response-focused strategies to more proactive risk-management approaches (Crondstedt, 2002). These developments inspired an evolutionary change from considering hazards alone to considering vulnerability and risk, which goes beyond the physical nature of the hazard to consider the interaction between the community and the hazards (Crondstedt, 2002). The rationale behind these changes is equally applicable to organisations as it is to community emergency management.

3 Key concepts in mitigating the impact of emergencies

This section introduces key emergency-management concepts. Brief consideration of the broader Australian context is followed by an overview of the Prevention, Preparedness, Response and Recovery (PPRR) approach to emergency management, and the limitations of its application. Incorporation of PPRR within a more comprehensive, integrated risk management approach to emergency preparedness is advocated.

3.1 The Australian context

In Australia, there is a tiered approach to disaster management with local authorities being the first level of response, supported by state and national authorities. This recognises not only the scalability of incidents, but also the reality that the initial response will involve those in the immediate vicinity. In addition to local authorities, all states and territories maintain volunteer-based organisations that can provide initial support in the case of emergencies. Also, various government agencies and non-government organisations provide aid and assistance during emergencies. For example, the St John Ambulance may support professional ambulance services; the Red Cross has both national and international roles in disaster management; and, traditionally, the Australian military has had a significant role in emergency response utilising their rapid deployment and transport capabilities. (See, for example, OESC, 2011.)

An essential component of disaster response is the establishment of coordination and control centres. Highly sophisticated centres are now operated nationally, in most states

[5] See *OHS BoK* The Generalist OHS Professional in Australia: Appendix 1

and by lead agencies. Industries likely to be affected by large-scale and site-level emergencies should also establish coordination centres where information may be exchanged and response management coordinated. Such centres would assist both emergency management specialists and generalist OHS professionals in ensuring currency of knowledge and practice as well as support should an emergency occur.

Thus coordination structures exist at each tier of government for planning for and responding to disasters. It is the responsibility of industry to engage with those structures and their personnel to ensure the interests of industry are recognised and that industry participates actively in incident management.

3.2 PPRR

The time scales for emergency response require pre-planning. As noted in section 2, there has been a shift away from a reactive, response-driven approach to a risk management approach. The Prevention, Planning, Response and Recovery (PPRR) approach– introduced in the US in 1978 and subsequently imported into the Australian emergency-management framework –is embedded in emergency-management practice (Crondstedt, 2002). However, the following limitations of PPRR as a guiding principle have been identified:

- PPRR sets up artificial barriers between the four elements implying a clear delineation between them; discussion about categorising actions can distract from the objective of effective emergency planning
- The four elements present as equally important in all circumstances whereas a risk-management approach may indicate that certain actions (and categories of action) may be more justifiable than others
- The four elements are often presented as a linear process (Figure 2); this implies that emergency planning comprises consideration and implementation of these elements in the same order all the time (Crondstedt, 2002).

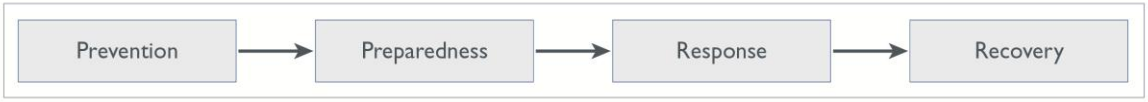

Figure 2: PPRR as a linear process

One way in which the application of PPRR has evolved to address these limitations is representation of the PPRR elements as a matrix (Figure 3) thus suggesting that evaluation can start at any point in the process. Figure 4 provides a modified view that incorporates both the linear and matrix approaches; this has lead to greater success in establishing effective emergency plans.

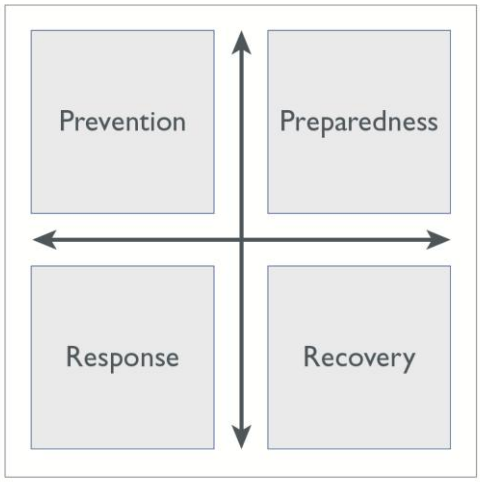

Figure 3: PPRR as a matrix

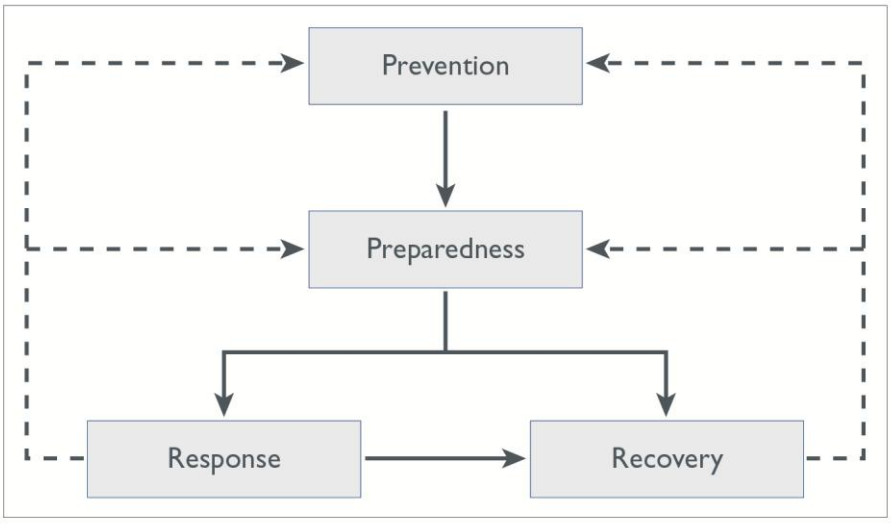

Figure4: Combined approach to PPRR

While recognising the limitations of the PPRR principle and acknowledging that writers in the emergency-management community have called for its enhancement[6] and even its removal from use (e.g. Crondstedt, 2002), its elements are explained in more detail below.

3.2.1 Prevention

Prevention differs from the other PPRR elements in that it focuses on long-term measures for reducing or eliminating risk associated with emergencies. The implementation of prevention strategies also may be part of the recovery process, if applied after an emergency. The two targets for action in the prevention activity cluster are:

- Identification of hazards and vulnerabilities that may lead to an emergency
- Mitigation of effects should an emergency occur.

Hazard identification, vulnerability and risk assessment

The first step in preparation for emergencies is to identify those events that could lead to an emergency and the likely outcomes. Typical outcomes may include fires, explosions, and loss of containment of chemicals or harmful substances. Events that might occur accidentally or as the result of arson or vandalism should be identified separately. The Prevention activity cluster is about identifying hazards as the source of harm.[7]

Certain events can contribute to several different outcomes (e.g. spillages of certain substances can result in ill health, fire and damage to the environment). All probable outcomes should be identified for any given event and, for any given outcome, all relevant events that may lead to that outcome should be identified as it is possible that the relationships between the events are different for different outcomes. The vulnerability of the organisation may affect the severity and range of outcomes. Vulnerability may result from location (e.g. next to a hazardous substances site or a river); the nature of personnel on site (e.g. workshop for disabled workers); the nature of the work and the hazards (e.g. Major Hazard Facility) or the business environment (e.g. highly competitive and based on just-in-time delivery of supplies). Another way of looking at vulnerability is from the perspective of organisational resilience.[8]

Identification of hazards that may lead to vulnerability and/or an emergency should be accompanied by risk assessment to enable those involved in emergency management to rank the likelihood of an emergency event occurring, as well as its possible severity. The

[6] For example, UK Resilience (2010) advocated Integrated Emergency Management comprised of six stages – anticipation, assessment, prevention, preparedness, response and recovery.
[7] See *OHS BoK* Hazard as a Concept
[8] See *OHS BoK* Systems and *BoK* The Organisation

resultant risk registers,[9] will give guidance as to the level of preparedness and nature of the response.[10] Casualty prediction, or the estimate of how many injuries to expect for a given kind of event, is an important part of the risk assessment as it gives planners an idea of the level of response and resources required to respond to a particular kind of emergency event.

Mitigation of the impact

Mitigation measures may be structural or non-structural. Structural measures may include building design features (e.g. compartmentation, and access and egress arrangements) and technological solutions (e.g. fire detection and suppression systems). Non-structural measures include procedures to minimise the impact of an emergency (e.g. limiting the quantities of flammable substances held on site).

3.2.2 Preparedness

Preparing for emergencies is part of minimising vulnerability and building organisational resilience, and should be a critical element of any organisation's business strategy. Being prepared for an emergency means having:

- People in the organisation with designated responsibilities for planning for and responding to emergencies
- An organisational emergency-response structure including suitably trained personnel
- A plan detailing prevention and mitigation arrangements, activities for preparing for emergencies (e.g. training and maintenance), overall control and coordination arrangements for the emergency response, and roles and responsibilities of key personnel and others at the work site in preparation for, during, and after an emergency
- Response procedures, including duties and actions of key personnel and others in responding to the emergency and, if required, evacuating the workplace
- Appropriate physical resources (e.g. communication equipment, spill containment, emergency lighting, evacuation equipment for those with disabilities, and first-aid supplies). (EMA, 2004.)

The Australian Standard *AS 3745 Planning for Emergencies in Facilities* (SA, 2010a) provides detailed information on the preparedness phase of emergency management. While all arrangements for emergency preparedness should be appropriate for the organisation and the nature of potential emergencies, this standard advocates for the formation of an emergency planning committee (EPC) to be responsible for the development,

[9] See, for example, http://www.safety.unimelb.edu.au/ehs/riskmanagement/riskregister.php3
[10] See *OHS BoK*: Risk for a discussion on risk assessment

implementation and maintenance of the emergency plan, emergency-response procedures and related training, and an emergency control organisation (ECO) consisting of personnel with roles such as chief warden, communications officer and floor/area wardens.

The OHS professional should keep in mind that emergencies are usually dynamic situations. Consequently, no one procedural document can cover the multitude of emergency events that can arise within an organisation.

3.2.3 Response

The objective of the response activity cluster is to contain the emergency and minimise damage to people, the environment, property and business. The safety of people must always be paramount. The initial response phase will have two components:

- The response by internal organisational personnel through mobilisation of first responders in the affected area with appropriate support and coordinating action by key personnel
- Response by core emergency services (fire, police and ambulance).

Effective response may be complex and multifactorial, and there is a potential for the complexity to paralyse action. Thus flexible, comprehensive and scalable response arrangements need to be in place to deal with relatively simple incidents, which can be scaled up to deal with more serious challenges. Within an organisation, personnel in the emergency control group need to be competent in responding to the immediate needs of the emergency situation. Good leadership and well-disciplined teamwork are essential; leadership is often tested when the incident grows beyond the capability of the first responders. A well-rehearsed emergency plan developed during the preparedness stage facilitates a more effective response at all levels.

3.2.4 Recovery

The aim of the recovery activity cluster is to restore the affected area to its previous state or to a satisfactory level of functioning. It differs from the response activity cluster in its focus; recovery efforts are concerned with issues and decisions that must be made after the immediate needs are addressed. Of primary concern is the management of casualties, re-employment, rebuilding destroyed property and repair of other essential infrastructure. Efforts should be made to ‘build back better,’ aiming to reduce the pre-event risks inherent in the infrastructure (see AEMI, 2011a). An important aspect of effective recovery efforts is taking advantage of a ‘window of opportunity’ for the implementation of measures that might otherwise be unpopular. Personnel are more likely to accept changes when a recent incident is a fresh memory.

3.3 A comprehensive integrated approach

Despite debate surrounding its usefulness to modern disaster management, PPRR:

> …remains the framework with which many are familiar, it remains a central part of the visible policy and it is well established as a standard for a more reactive form of Emergency Management. In reassessing PPRR for alignment with the more disaster resilience-based approach we must be careful not to 'throw the baby out with the bath water' when advocating change.' (Rogers, 2011, p. 57)

While preparedness and response activities are closely related and sequential it is important to stress that the PPRR elements are not linear and independent of each other. A comprehensive approach to emergency management requires that PPRR processes be effectively integrated and include an 'all-hazards' and 'all-agencies' approach.

A useful perspective on PPRR for OHS professionals is provided by Lewis (2006) who uses a risk management framework to align the Prevention/Preparedness phases with reducing the likelihood of an event and the Response/Recovery phases with consequence management. Thus risk management becomes the strategic focus with PPRR being the tactical framework for organising resources and processes.

3.3.1 'All-hazards' approach

The all-hazards approach requires making arrangements for managing the large range of possible risks and identifying the emergencies associated with such risks (AEMI, 2011b). As explained by Rogers (2011, p. 56), this approach:

> …suggests that plans across the disaster cycle should recognise the commonalities in situational response mechanisms, and that these commonalities across all emergencies can be translated into operational standards and best-practice used across all-hazards.

This concept is useful to the extent that a large range of risks can cause similar problems, developing common or all-embracing responses can ensure that the competencies required of the attending personnel can be kept to a minimum. Responding to emergencies may require measures such as warning signals or alarms, evacuation, planning for the attendance of medical services, and planning recovery measures that may be required during and following emergencies. However, many risks also will require specific response and recovery measures and will almost certainly require specific prevention and mitigation measures. (AEMI, 2006)

3.3.2 'All-agencies' approach

Emergency-management planning may be referred to in various organisational and community contexts, including risk management, environmental management, occupational health and safety, quality management and asset management. In developing an emergency plan and response procedures, organisations should consider their own procedures in conjunction with all available responding emergency services and interest

groups (e.g. local municipal council, fire, ambulance and police services). The organisation and the various agencies will have different objectives and priorities for response regarding:

- Ensuring the continuity of their business or service
- Protecting their own interests and personnel
- Protecting the community
- Protecting the environment
- Protecting property
- Security and crowd control (AEMI, 2011b).

Consultation with these groups can facilitate understanding of how the procedures of the various agencies can complement the procedures of the organisation.

4 Legislation and standards

The national model *Work Health and Safety Act* (Safe Work Australia, 2011) requires a person conducting a business or undertaking (PCBU) to:

> (a) eliminate risks to health and safety, so far as is reasonably practicable; and
> (b) if it is not reasonably practicable to eliminate risks to health and safety, to minimise those risks so far as is reasonably practicable (WHSA s 17).

Emergency preparedness may be considered to be part of risk-minimisation strategies. In addition to this general duty, the draft model *Work Health and Safety Regulations* (Safe Work Australia, 2010) specify the requirement to prepare and test emergency plans, and to provide appropriate information on emergencies and emergency response to workers (WHSR s 3.4). In developing emergency plans, the PCBU is required to consider the:

> (a) the nature of the work being carried out at the workplace; and
> (b) the nature of the hazards at the workplace; and
> (c) the size and location of the workplace; and
> (d) the number and composition of the workers and other persons at the workplace (WHSR 3.4).

Also, the OHS professional involved in emergency management should be cognisant of the relevant state disaster management legislation and a range of other legislative instruments such as road traffic legislation and legislation relating to public health.

Australian Standards are a valuable source of practical advice on emergency preparedness and emergency management within organisations. The key Australian Standards are:

- *AS 3745–2010 Planning for Emergencies in Facilities* (SA, 2010a)
- *AS 4083–2010 Planning for Emergencies – Healthcare Facilities* (SA, 2010b)

5 Implications for OHS practice

The challenge for generalist OHS professionals is to facilitate a focus on hazard identification and risk assessment together with organisational preparedness to respond to emergencies in the busy, complex and highly competitive environment within which most businesses operate. Planning is critical to the preparedness of an organisation. The process of planning – engaging key stakeholders in identifying hazards that may lead to emergencies, considering the associated risks and identifying mitigation strategies – may be more important than the plan itself.

The generalist OHS professional has a role in facilitating and supporting the emergency preparedness of an organisation by:

- Gaining commitment from senior executives and organisational leadership; without this commitment, establishment of an emergency planning committee (EPC) and emergency control organisation (ECO) will not be perceived as an organisational priority
- Integrating identification of hazards and vulnerabilities together with risk assessment into the normal planning and business processes rather than developing stand-alone systems; thus reinforcing consideration of emergency management as a routine part of the assessment of any new initiative
- Establishing systems and structures that deliver the necessary planning and preparedness; this will include an EPC, preferably led by a senior manager, and the appointment of a key resource person (appropriately trained in emergency-management techniques) to lead the ECO
- Supporting training and development activities to ensure appropriate competency of key personnel
- Ensuring appropriate resources (e.g. emergency response and communication equipment)
- Identifying facilities that can be used in an emergency as a cooperation and control centre
- Engaging key stakeholders (e.g. workers, customers, professional associations and unions) in the identification, risk assessment and preparedness processes
- Ensuring that the emergency plan and response procedures are periodically tested, at least through tabletop exercises (see, for example, EMISIG, 1998; Renner, 2001), to ensure they remain applicable to the changing organisational environment; exercises can provide information and create awareness as well as validate plans.

6 Summary

While expert advice may be required, generalist OHS professionals have a key role in implementing a systems approach to ensuring that emergency preparedness is an integral part of OHS management processes and the overall management framework. The resultant emergency-planning process should be comprehensive, identifying hazards likely to cause an emergency together with organisational vulnerabilities as basis for a risk-management approach. It should integrate all-hazard and all-agencies approaches with the principles of Prevention, Preparedness, Response and Recovery (PPRR), recognising that PPRR is not a sequential process, but is more effectively employed as an interconnecting matrix to provide a framework for tactical response to managing risk associated with emergencies.

Useful websites

Emergency Management Australia: http://www.ema.gov.au/

Department of Health and ageing Health Protection Branch: http://www.health.gov.au/internet/main/publishing.nsf/content/ohp-about.htm

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