

HAZARDOUS MATERIALS RESPONSE – MFESB

Executive Leadership

Developing a contemporary Hazardous Materials Response Strategy –

Metropolitan Fire and Emergency Services Board

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Abstract

This research investigates initiatives developed by fire services for responding to hazardous materials incidents in order to develop a contemporary hazardous materials response strategy for the Metropolitan Fire Brigade (MFB) Melbourne. In the absence of a strategic response plan, an all hazards generic response model is employed. Action research was used to identify the legislative role, strategic planning frameworks, contemporary response models and strategies adopted by Australian fire services in hazardous materials response. A literature review, focus group and telephone interviews of industry representatives supported the findings that capability enhancement can be significantly improved by strategic planning and project management frameworks must look beyond operation value to maximise performance. The research recommended stakeholders be engaged, strategic planning in operations be expanded, and that a best practice model be developed.

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Introduction

The Metropolitan Fire and Emergency Services Board (MFESB) operates within the greater metropolitan area of Melbourne in the State of Victoria, Australia. The MFESB emergency response area spans approximately 1200 square kilometres. Melbourne has a large multi cultural and transient population of approximately 3.5 million people and like many major cities around the world has a diverse range of hazards. These hazards require highly trained and motivated staff, who are well resourced to operate within the current threat environment.

The Government of Victoria and indeed the community hold the MFESB in high regard in relation to their ability to mitigate emergencies and for their emergency management planning capabilities. Since 2001, post the World Trade Centre terrorist attacks and the subsequent Anthrax incidents within the United States, the Metropolitan Fire Brigade (MFB, trading name of the MFESB) have enhanced its awareness training for responders and have also secured some equipment enhancements to support hazardous materials operations. However, a strategic plan is yet to be developed which identifies the key elements of an effective hazardous materials response capability, interdependencies and sustainability. Any enhancements to response initiatives such as hazardous materials response require that every effort is made by employers to ensure the provision of a safe working environment for employees (Victorian Occupational Health and Safety Act, 2004). In establishing a strategic hazardous materials response plan, the MFB are cognisant of the need to increase the knowledge base of its firefighters and enhancements to equipment resources. This is reinforced within the provision of the Victorian Occupational Health and Safety Act (2004).

The purpose of this research is to investigate and develop a strategic hazardous materials response plan that ensures the MFB have a sustainable capacity and that their staff are equipped and capable of dealing with hazardous materials response incidents.

Using action research framework, the following questions were addressed:

What are the legislative accountabilities of the MFB in relation to hazardous materials response?

What are the elements of a strategic plan?

What are the key elements of a contemporary hazardous materials response strategy?

What strategies have been developed by other fire services in Australia?

Background and Significance

The Metropolitan Fire Brigades Board (MFBB) was established following a parliamentary review in December 1890, resulting in the establishment of a full time permanent fire fighting service in Victoria. Prior to 1890, insurance company brigades operated within the outer regions of the city while insurance company financed brigades operated within the city of Melbourne.

In 1997 another parliamentary review considered the role of the MFBB and recommended that the organisation reflect the services it provides to the community. This resulted in a name change to the Metropolitan Fire and Emergency Services Board (MFESB) specifically recognising that the focus of the organisation had extended beyond fire fighting and now included a number of other emergency management functions. However, the term Metropolitan Fire Brigade (MFB) is considered the trading name of the organisation.

The MFB is a statutory body within the portfolio of the Minister for Police and Emergency Services. The area of jurisdiction (Greater Melbourne) is approximately 1200 square

kilometres and is located on the south eastern seaboard of Australia in the State of Victoria. The annual operating budget is approximately \$260AUD million and service delivery is achieved through 47 strategically located stations. Approximately 1600 full time professional firefighters provide emergency response activities and are supported by 330 corporate (non uniform) staff. The MFB's planning activities extend to major events such as the Australian Formula 1 Grand Prix, Commonwealth Games (2006) and other events considered to have potential impact and risk upon the community. Emergency response activities as legislated within the Metropolitan Fire Brigades Act (1958) are broadly premised upon any call for assistance. The MFB, however, is the controlling authority for a number of specific incidents (Victorian Emergency Management Act, 1986), including fire suppression, hazardous materials response, rescue from heights, road accident rescue and urban search and rescue (USAR). Support is also provided to the Metropolitan Ambulance Service for emergency medical response. These accountabilities are clearly defined within the Victorian Emergency Management Arrangements 1995, part 6, under the auspices of the Victorian Emergency Management Act, 1986. During 2005, the MFB attended approximately 35,000 emergency incidents (MFESB Annual Report, 2005).

During the late 1990's the State of Victoria saw a change in the accountabilities and philosophies of a number of government agencies who had traditionally provided support to the MFB when attending hazardous materials incidents. Agencies such as WorkSafe, formerly known as the Department of Labour were refocused to ensure that industry were held accountable for the safe working environments of their employees. A significant focus was placed upon regulatory compliance. This shift saw a reduction in support for the MFB at hazardous materials incidents whereby WorkSafe inspectors would attend incidents to undertake

compliance investigations as opposed to providing technical and scientific expertise and guidance on how best to manage hazardous materials incidents. MFB standard operating procedures at that time required the officer in charge of an incident to call for a representative of the Dangerous Goods branch from the Department of Labour to attend and assist in mitigating the incident.

This new unit (Worksafe) established under the umbrella of the Victorian WorkCover Authority, validates planning applications for dangerous goods sites and undertakes compliance checks. Similarly, the Environmental Protection Agency can no longer be relied upon to support the fire services at hazardous materials incidents, as their function today is also more as a regulatory monitor. The impact of these changes has seen a dramatic shift in the utilisation of information sources to deal with hazardous materials events.

Immediately post the World Trade Centre events of 2001, the MFB responded to some 700 white powder suspect hazardous materials incidents (MFESB Annual Report 2002). The events tested the capability of the MFB in terms of resourcing, response arrangements, decontamination abilities, detection and sampling. Today, little has changed since early 2000 and the generic all hazards response to hazardous materials incidents continues.

This research aims to address a shortfall in the MFB's response and preparedness capability and firefighter safety. It relates specifically to:

A reduction in the loss of life of firefighters; and

The ability to respond appropriately in a timely manner to emergency incidents as identified within the objectives of the Executive Fire Officers Program study guide, 2004.

Literature Review

This section will identify the current body of knowledge in regard to hazardous materials response in order to answer the research questions. Information sources were gathered from the United States (US), the United Kingdom (UK) and Australia for this literature review and comprised Federal Government reports, journals and magazine articles, Victorian Government reports, previous research and books. The structure of this literature review mirrors that of the research questions.

Research Question 1: What are the legislative accountabilities of the MFB in relation to hazardous materials response?

Australian Law has its roots in Westminster Law of the United Kingdom (Eburn, 2005). The Australian legal system which is made up of States and Territories is a federal system within a Commonwealth structure. Each State and Territory of Australia has its own Parliament which in turn has the right to make its own Law. As a result, each State and Territory may have different Law in relation to similar matters.

The Commonwealth of Australia was established by an Act of Parliament of the United Kingdom (Commonwealth of Australian Constitution Act, 1900). This Act sets out the limitations of power of the Commonwealth. As a consequence there is no power for the Commonwealth to make Law in regard to rescue services. Therefore the Law in relation to rescue and emergency is vested with the respective States and Territories of Australia (Eburn, 2005).

Statute law or legislation is made by the Parliament (Hogan, 1995) of either the States, Territories or the Commonwealth and is known as an Act of Parliament. The legislation that

governs the emergency services, such as the MFB, sets out the activities of that organization and the provisions that empower key decisions makers.

The Metropolitan Fire Brigade Act, 1958, is an Act to consolidate the law relating to the protection of life and property from fire within the Metropolitan Fire District of Melbourne Victoria (MFB Act, 1958). The MFB is a statutory authority in that it operates under the auspices of an Act of Parliament. The Act sets out the functions of the MFB in relation to the management of emergencies. The purposes and functions of which are to provide for fire safety, fire suppression, fire prevention and emergency response services within the Metropolitan Fire District.

Complementing these functions are the powers of the Chief Officer, where free access will be available at all times to ascertain whether the MFB Act, (1958) or any other Act or Law is being complied with relating to:-

- (a) the storage of explosives;
 - (b) the storage of radioactive substances;
 - (c) the storage of inflammable liquids or substances; and
 - (d) the prevention of fire or the protection of life or property in the case of fire –
- are being complied with.

The MFB is also acknowledged as a protection agency for the purposes of Section 66 of the Environmental Protection Act, 1970. (MFB Act, 1958). These provisions and functions support the MFB within the metropolitan fire district as the responsible agency for the control of hazardous materials spills. (Victorian Emergency Management, 1986).

Eburn (2005) explains that the emphasis of emergency legislation is the identification and treatment of risk. This view is supported by Allen, Everton and Holyoak (1990).

Statutory authority agencies established under a statute (Act of Parliament) such as the MFB are developed for the purposes of achieving public good and are at times constrained by the Laws that set them up and their funding or budgeting positions.

Negligence of a statutory authority, according to Eburn (2005), may be deemed proven if it can be identified that a statutory authority failed to properly discharge their statutory powers, has knowledge of a particular risk and had the ability to protect.

As the culture of private and public sector partnerships have dominated recent decades, organizations have witnessed a blurring of the boundaries between the sectors. This blurring effectively means that we now potentially operate in an environment in which no one agency or organization is fully in charge (Bryson and Einsweiler, 1991) particularly when there is a void.

Research Question 2: What are the elements of a strategic plan?

Organisations are usually formed in structures which align with functional specialties (Kaplan and Norton, 2001). Hill and Jones (1995) agree and state that if strategy is to be implemented through organisational structures then the design of the structure will be a key to success.

Wallace (1998) in his research identified that each aspect of the fire service requires the development of basic strategies. Drucker (1974) states strategic planning is a process designed to encourage analytical thinking, a commitment of available resources to action. He further considers that strategic planning is not used to eliminate risk, rather it is used to assist leaders manage risk that organisations are faced with. This supports the view of Eburn (2005).

Wallace, (1998) considers that strategic planning and thinking assists staff to:-

- think strategically and develop effective strategies.
- clarify future direction.
- establish priorities.
- make decisions in light of future consequences.
- develop a coherent and defensible basis for decision making.
- exercise maximum discretion in those areas under departmental control.
- make decisions across levels and functions.
- solve major departmental problems.
- improve overall organizational performance.
- deal effectively with rapidly changing circumstances.
- build teamwork and expertise.

Hannagan (2002) has a similar view and compliments Wallace. He claims that strategic management of issues consists of the decisions and actions used to formulate and implement strategies that provide the right fit between the organization and the environment that it operates in (Davis and Devinney, 1997; Bryson, 1995; Twite and O’Keeffe, 2000).

There are a number of elements within the strategic planning process. Bazoian (2001), Bryson (1995), Hannagan (2002), Hill and Jones (1995) and Wallace (1998), all agree that:-

- identification of mission or goals
- environmental analysis of the external forces incorporating opportunities and threats
- environmental analysis of the external forces incorporating internal strengths and weaknesses

- strategy selection building on strengths and correcting weaknesses and taking advantage of opportunities and countering threats are key elements in strategy development.

Strategic plans can vary significantly in their content and form. They may be nothing more than an unwritten discussion between decision makers about an organisation's mission and what it should do in given scenarios (Bryson, 1995). Most organisations however may prefer to use a formal version of a detailed written strategic plan. This detailed format may include the following categories:-

- mission and purpose statement
- visions of success
- environmental analysis
- issues recognition
- program goals and targets
- implementation plan leading to action
- resourcing plan
- financial plan
- evaluation and update

(Bryson, 1995).

McNamara (2006) proposes a simpler model which incorporates:-

- mission statement
- goals which must be obtained to accomplish the mission
- strategies that must be implemented to reach the goal

- specific action plans to implement each strategy
- monitoring and update

Whilst it is recognized that Public sector organisations experience long periods of relative stability, this sector at times encounters periods of dramatic change (Bryson, 1995) which if unmanaged can be disastrous. Within this context, Bryson and Einsweiler (1991) claim the key issue facing strategic managers is to match strategy formulation with strategy implementation.

Hill and Jones (1995) reflect on the military notion of strategy as the science and art of military command as applied to large scale operations. Davis and Devinney (1997) agree that strategy is an art and a science and strike a balance in identifying that some organizations are successful yet others are not and some strategies work whilst others do not.

Judgev (2005) states that projects and planning can have strategic value when there is a clear connection between how efficient and effectively a program is delivered in providing business value. In establishing or enhancing a capability, fire services invariably assign project managers from within their own organisation to develop business cases in order to secure funding and approval of Board's or executive management. However, if a project's success is limited to the time taken to establish a capability, the cost of the project and its scope alone and the ongoing link to service value is missing, then that capability developed will provide tactical (operational) value only, not strategic value. In order to have strategic value, continual review and environmental scanning against original objectives will be the true measure of success. Project management maturity or otherwise put, programs which have been indoctrinated into core services (such as hazardous materials response) must focus on incremental improvement at the operational level.

Canabis (1998) identifies the connection between project and strategic management where project management emphasizes the beginning, whereas strategic management is about the direction. Unfortunately, most project life cycles only include conceptualization, planning, execution and termination (Pinto and Prescott, 1990). Maturity, growth and environmental influences are not normally considered beyond termination. Successful implementation of strategy can be measured where programs are strategically aligned, regenerative and involve transition of management (Hartman, 2000).

Research Question 3: What are the key elements of a contemporary hazardous materials response strategy?

During 2004-2005, the MFB attended 5,000 hazardous materials incidents ranging from minor petrol leaks to major releases of hazardous and toxic materials. This figure has increased steadily since 2000 (Metropolitan Fire Brigade, 2005).

Australian Standard (1990) 3745 defines an emergency as an unplanned event which arises internally or from external sources potentially having an adverse effect upon the safety of persons or the community generally. Saunders (1995) agrees and includes the safety and welfare of personnel which requires a timely response.

Examples of emergencies include, but are not limited to:-

High wind and storm events.

Bush and wildfires.

Terrorist activities.

Explosions and fires in buildings.

Hazardous materials incidents. (Australian National Training Authority, 1997).

Common to all these examples are the impacts of emergencies upon communities, the environment and the economy (Emergency Management Australia, 2006). Whilst there is no definitive definition of hazardous materials, it is widely accepted that, any materials that when released into the environment is likely to cause harm to the community, the environment or property, then these materials are to be considered hazardous materials, complementing the definition of emergency. (National Fire Protection Agency, 2000).

The development of a response strategy (Chem Unit, 1998) is the tool used to counteract and or mitigate the impact of emergencies such as a hazardous materials incident. The elements to be considered in response strategy development are similarly aligned with the strategic planning process (Bryson, 1995).

Aim.

Objectives.

Parameters on scope (area of operation and limitations).

Systems (resources and structures).

These processes require monitoring and review and consultation with various stakeholders.

The National Fire Protection Association (NFPA) has developed a standard (471) which details the recommended practice for responding to hazardous materials incidents. Critical to this standard is the development of an incident response plan which includes facility and community actions. There is a significant emphasis on safety within NFPA 471, of personnel and the controlling measures to be established during response. These include:

Site management methodology (zoning).

Communications.

Maintaining equipment.

Personnel protective clothing (various levels).

Mitigation methodology and resources.

Decontamination methods.

Medical monitoring of personnel.

It is implicit, (Spectrum Analysis, 2002) that a hazardous materials response capability will benefit from other response infrastructure such as the availability of communication systems, incident management system and fire coverage models.

The term fire cover as described by Reynolds (1998) has been used for the disposition and deployment of resources, both physical and human. In 2001 the Office of the Emergency Services Commissioner (OESC) in Victoria, Australia, published a document titled “A Model of Fire Cover for Victoria”. The document outlined the benchmarks or the objectives that would specify or define a particular level of fire cover deployment for particular situations.

Fundamental to this, was the weight of attack (resources) to be deployed to given scenarios and the timeliness of response to a given incident. The model assumed that different areas within the community had different levels of risk. This premise is supported by Cashman (1983) and Reynolds (1998).

Hazardous materials incidents by their very nature are extremely unpredictable according to Cashman (1983). He further states that every agency engaged in hazardous materials response must develop detailed strategic planning to ensure a systematic approach to incidents and response.

Key components include:-

Hazard and risk analysis.

Resource inventory and equipment.

Product storage and key transport routes.

Response capability.

Training of specialist personnel.

Development of standard operating procedures.

According to Bruno (2004) the strategic priority for responders and agencies alike is funding and training. However, he raises the concern of potential duplication of service amongst agencies (police and fire) that could occur particularly when large amounts of equipment are being procured with Federal aid. Whilst acknowledging the relationships between police and fire officers has improved in terms of co-ordination since 2001, some jurisdictions have failed to fund hazardous materials incident response teams adequately and warns that some departments have resisted establishing hazmat teams on the basis of cost benefit alone. He goes on to argue that an ill equipped, poorly trained and under resourced hazmat team can be more dangerous than having no unit at all.

Research Question 4: What strategies have been developed by other fire services in Australia?

Nationally, the Australian Fire Services attends approximately 1650 significant hazardous materials incidents annually, requiring the deployment of multiple resources and jurisdictions (Australasian Fire Authorities Council, 2006).

The 2000 Olympics provided the platform for review within Australia in determining how to better deal with hazardous materials incidents (Patterson, 2005). Fundamental to this review was the establishment of a national forum during the summer of 1998, which was established under the auspices of the Australasian Fire Authorities Council, (AFAC). The purpose of this forum was to identify the emerging risks of significant major events such as the Olympic Games, the potential impact of terrorist related events upon the fire services, their current capability and any emerging gaps (Australasian Fire Authorities Council, 1998).

This forum identified a number of areas in which improvements could be made. These included:-

- Training of first responders.
- Access to pharmaceuticals.
- Detection equipment.
- Personal protective clothing.
- Casualty extraction.
- Procedural development.
- Sampling techniques.

According to Penrose (2006) the Allen-Vanguard Corporation has provided valuable support to response agencies and led delegations from Australia to participate in live agent training at the Defense Research Establishment Suffield (DRES) Canada to enhance preparedness and experience of first responders at high risk hazardous materials incidents.

This training includes:-

- Hazard assessment

- Rescue operations.
- Medical counter measures.
- Contamination control.
- Threat neutralization.
- Preservation and evidence collection.

Gaade (2006) agrees with the approach adopted by Allen-Vanguard and whilst recognizing the guidance for responders within NFPA 471 and 472, claims that training involving role play, table top exercises and computer based simulations provide a better understanding when groups train together. Mutual aid agreements and fire service partnering of local industry brigades are a key strategy.

Emergency Management Australia (EMA) the peak emergency management authority of the Australian Federal Government has taken the lead in providing support in terms of training and resource acquisition to the respective Australian State jurisdictions. Training courses are run bi-annually for State participants on a multi-agency basis. These classes assist responders and command personnel in the management of chemical, biological and radiological incidents and emergencies (Patterson, 2005). The five day training course is designed to encourage participation, expand knowledge and identify the latest mitigation techniques and build trust amongst response agencies.

Complementing this training by EMA has been the allocation of specialist equipment to each jurisdiction to enhance capability at the local level and address capacity gaps.

Nationally, the Australasian Fire Authorities Council has been working on a hazardous materials strategic plan in order to support agency development. The key areas considered are:-

- Hazardous materials site identification and community preparedness.
- Hazardous materials industry liaison.
- Hazardous materials incident response.
- Hazardous materials management guidelines.
- Chemical, Biological and Radiological capability model (AFAC Council Meeting November 2005 Minutes).

Cashman (1983) considers the strategies outlined above are contingency and response planning mechanisms designed to ensure the safety of people and property within a specified geographic area and acknowledges that whilst response standards and strategies vary widely, all provide a framework upon which to build and continually evolve.

Procedures

The desired outcome of this research was to develop a contemporary hazardous materials response strategy for the MFB.

The development of this strategy was underpinned by a number of data sources including literature reviews, face to face discussions, telephone interviews, comparisons of other fire services within Australia and overseas and professional judgment employing action research methodology.

In order to better understand the trends in hazardous materials response strategy, telephone interviews were conducted with key stakeholders from other Australian fire services and industry experts within Victoria. Additionally an international representative was interviewed from the United Kingdom. Each of the people spoken to have a direct role to play in either emergency response, emergency management or training of responders.

Those persons interviewed were:-

Mr Geoffrey Barnes. Northern Territory Fire and Rescue Service.

Mr Roy Bishop. Deputy Commissioner Operations, London Fire and Emergency Planning Authority.

Mr Kevin Cuneo. Director Community Safety, Fire and Emergency Services Authority Western Australia.

Mr Jim Hamilton. Chief Superintendent, Operational Readiness. New South Wales Fire Brigade.

Mr Tony Madigan, Risk Manager, Metropolitan Fire and Emergency Services Board

Mr Chris Maguire. Assistant Commissioner, Special Operations, Queensland Fire and Rescue Service.

Mr Peter Quinsee. Assistant Chief Fire Officer, Metropolitan Fire and Emergency Services Board, Executive Manager, Training.

Mr Don Patterson. Policy Director, Emergency Management Australia. Canberra.

Complementing these telephone interviews, localised (Victorian) discussions were held with key stakeholders of the MFB and other partners who have a significant role to play in hazardous materials response in Victoria. Those other stakeholders included:

Mr Joe Buffone. Deputy Director Policy, Office Emergency Services Commissioner (OESC) Victoria.

Mr Brian Hillier. Inspector, Deputy State Emergency Response Officer, Victoria Police.

Ms Fadia Mitri. Curriculum Development Officer, Metropolitan Fire and Emergency Services Board.

Mr Paul Riley. Assistant Chief Fire Officer Emergency Management, Metropolitan Fire and Emergency Services Board.

The interview instrument was validated with the Executive Manager, Human Resources, MFESB, Ms Michele Salmon to ensure that it would contribute to the body of knowledge. It was designed to identify the hazardous materials legislative responsibilities of Australia's fire services, their hazardous materials response model and to identify any resource enhancements and or strategies developed by other fire services.

Those Australians interviewed were selected to participate on the basis of their current position within their respective fire service and their involvement in emergency management. Interviewees' were asked to participate following an Australasian Fire Authorities Council, Hazardous Materials Working Group Sub Committee meeting, held on the 27th October, 2006, where the researcher explained the research. A copy of the interview questions was provided to assist each of the participants prior to the telephone interview, which took place during the week commencing the 4th December, 2006. A copy of the interview instrument is contained in Appendix A. Interviews were conducted of the international respondent during the Australasian Fire Authorities Council Annual Conference, October, 2006.

The interview responses were compiled and considered with the literature review. The outcomes of this analysis were discussed during focus group discussions with the training, operational and finance sectors of the MFESB, in order to identify resourcing, model considerations and risk mitigation. At the conclusion of this meeting, a framework of the strategic plan was developed for approval and implementation (see Appendix B).

Assumptions and Limitations

The researcher made a number of assumptions. First, that the strategic planning document would be accepted by the Operations directorate as a model for improvement. Second, that the staff of the MFB would adopt and embrace the recommendations and strategic direction developed by the researcher once an effective communication plan and consultation strategy was implemented. Third, the State of Victoria and indeed its community would benefit in terms of enhanced preparedness and ultimately improved responder and public safety. Finally, that the key people interviewed would provide open dialogue with the author of this report.

There were a number of limitations to this report.

First, access to and the availability of documentation of the models in use and resource arrangements within the respective Australian State's fire services as a result of the current threat environment. Second, whilst the number of people interviewed was small, the telephone interviews provided an opportunity to make direct contact with key representatives of Australia major urban fire services who themselves play a key role in response strategy or emergency management practice. Third, the researcher identified the potential industrial impact that could emerge from undertaking research of this nature therefore there was no dialogue with firefighter employee representatives.

Results

A hazardous materials strategic plan has been developed for the MFB (Appendix B) after consideration and analysis of the results. This section of the report presents the findings of the convenience sample survey instrument (Appendix A) and is discussed in line with the research questions.

Research question 1: What are the legislative accountabilities of the MFB in relation to hazardous materials response?

Survey question 1: Does your jurisdiction have a legislative responsibility for hazardous materials response?

All survey participants responded positively to this research question. Each fire service has the legislative responsibility for hazardous materials response within their respective jurisdiction. Each respondent provided accounts of various areas of operations which included rail, road, aircraft events and incidents on private or public land.

Survey question 1A: If yes to survey question 1, what are the boundaries of your legislative authority?

Each participant provided details of their specific areas of operation. Four respondents stated that their legislative responsibilities had increased since 2001 and included expanded roles in decontamination, sampling and in one instance evidence collection.

Six of the seven respondents also had a legislative responsibility for hazardous materials incidents on the water. Only three respondents stated they had a role in radiation incidents through decontamination.

All respondents discussed the increase in hazmat response following 2001 resulting in a large number of white powder incidents within each jurisdiction.

Five respondents stated that they also had a reporting role in relation to hazardous materials storage compliance under State Dangerous Goods legislation.

Survey question 6: If you have a hazardous materials unit, does it provide support to other agencies?

All seven respondents stated that under current legislative arrangements, they provide support to other agencies. Examples included assisting police at clandestine laboratory raids, assisting Customs and postal Officers with suspect powders, providing support to the environmental protection agency, taking samples and evidence, supporting the Department of Human Services (Health) in decontamination of casualties at hospitals.

The MFB have legislative accountabilities for hazardous materials response within its area of operation.

Research question 2: What are the elements of a strategic plan?

Survey question 3: Does your organisation have a strategic plan for continued enhancement of hazardous materials response?

Five of the seven people interviewed stated that their organisation had a detailed strategic plan for hazardous materials response. The other two respondents were in the process of developing an enhancement plan and stated shifts in organisational priorities had prevented strategic development, however, improvements had been made without any specific plan.

The international respondent stated that areas of the UK were entering their second generation strategic hazardous materials response plan.

Survey question 3A: If yes to question 3, what the key elements to this plan?

The five respondents who had implemented a strategic hazardous materials response plan were somewhat generic in their response to this survey question. Responses included:-

- Organisational mission
- identifying the risks
- defining the priorities (goals)

- identify and, specifying their objective and performance expectations
- capacity building
- change management
- resource requirements

Research question 3: What are the key elements of a contemporary hazardous materials response strategy?

Survey question 4: What level of training is provided to responders in hazardous materials response?

All respondents stated that their organisation provided basic training in hazardous materials response during recruitment and promotional courses. This training was supported by skills maintenance sessions. All of the Australian Fire Services surveyed stated that a number of their personnel had participated in national training opportunities provided by Emergency Management Australia.

Five of the respondents stated that specialist training had been provided at the hazmat technician level in accordance with the Australian Fire Competencies Framework for selected personnel.

Four of the respondents also stated that selected personnel had participated in live agent training in either Canada or the United Kingdom.

Survey question 5: What support role do other agencies provide to the fire service in hazmat response?

All respondents stated that they receive support from other agencies or jurisdictions at hazardous materials incidents. Support provided included:-

- scientific advice and analysis
- evidence and sampling collection
- environmental management advice
- containment resource support

Research question 4: What strategies have been developed by other fire services in Australia?

Survey question 2: Do you have a dedicated hazardous materials response unit?

This survey question proved challenging to some respondents as some jurisdictions had combinations of dedicated hazardous materials units and decontamination units.

All respondents stated that they have hazardous materials resources on their standard pumping appliances which included bunding equipment and spillage clothing.

Survey question 2A: If yes to question 2, what does this comprise?

Five respondents stated that they had dedicated vehicles for hazardous materials response that were supported by specialist staff rostered to shiftwork that incorporated special response criteria to pre determined alarm levels. Dedicated decontamination facilities were also available in five jurisdictions.

Of the seven respondents, four stated that they had scientific support on staff and available to respond or provide support remotely. The other three respondents had access to scientific support either from other agencies or via a service level agreement to another party.

Survey question 7: What specific equipment resources has your organisation attained to support hazardous materials response?

All respondents stated that there had been a number of resource improvements since the terrorist events of 2001.

All respondents indicated that they had enhanced their detection capability, personal protective equipment, standard operational procedures, decontamination and neutralisation capacity and staff knowledge.

Three respondents stated that whilst enhancements had been made, specific improvements in responder knowledge was required.

Discussion

As a statutory authority, the MFB is chartered with the responsibility to protect life and property and the emphasis of the MFB Act (1958) in which it operates is the identification and treatment of risk (Allen, Everton, and Holyoak 1990). It is clearly recognized (Emergency Management Act, 1986) that the MFB has the legislative accountability to mitigate hazardous materials incidents within the Metropolitan Fire District (Metropolitan Fire Brigade Act, 1958; Eburn, 2005). To this end, the accountabilities include but are not restricted to: controlling the incident, safety of all personnel in attendance and ensuring that the site is safe and clean at the conclusion of the incident. These accountabilities are in line with other fire services nationally.

Where it is found that the MFB is not in a position to effectively and diligently discharge its statutory powers in a manner that reflects the expectations of the Government and the community it serves, the MFB may be found to be negligent (Eburn, 2005). Subsequent to this failure to meet or treat identified risks, there is the potential to damage the reputation of the MFB and undermine the confidence of the community and its key resource (the staff).

The MFB Act (1958) and others (Victorian Occupational Health and Safety Act, 2004) implicitly state that employers have an obligation to ensure the health and safety of their employees. As a result the MFB must ensure that its personnel have a contemporary

understanding of the risks involved and mitigation techniques of hazardous materials incidents. This therefore requires access to appropriate training, technological and infrastructure resources to manage and mitigate today's challenges.

Authorities such as fire services benefit from strategic development (Wallace, 1998) and planning should be used to assist in managing risk (Drucker, 1974). The risk to the community and the MFB in not having a strategic plan that responds to the ever changing environment we find ourselves in today are evident. Strategic planning will allow the MFB to identify key areas of risk (gaps) and determine an appropriate course of action (Davis and Divinney, 1997).

The generic response that has been adopted by the MFB for hazardous materials incidents is of significance to this research. It is clear given the all hazards generic model applied today, that during initial development and evolution of the MFB's hazardous materials response capability, as a project management process, the linkage between activity and ongoing review beyond project completion was omitted from the original project scope or not considered at all. It is at this initial juncture that operational (tactical) value not strategic value was considered (Jugdev, 2005).

The generic model of response does not account for the complexities of today's environment nor does it take into account the specialization role of hazmat technicians ((NFPA, 471). The current practice in hazardous materials response can be strengthened through strategic planning where the objectives of the MFB, the current increase in response rates to incidents (Metropolitan Fire Brigade, 2005) and future challenges of the organization are realigned.

Within the MFB there are capability gaps that if not realized (Bruno, 2004) may be filled by other agencies or partners as the opportunity to secure resources for a proposed inefficiency

can quickly be seized upon. Other Australian Fire Services have developed specific hazardous materials response units to support current fire coverage models (Reynolds, 1998). These units are strategically positioned to provide timely and appropriate response. Specially trained and equipped personnel are rostered to deal with an array of hazardous materials scenarios. An ability to perform hazard prediction modeling, conduct sampling and evidence gathering, undertake hazard analysis of storage and transport routes that reduces the impact of hazardous materials incidents on the community and the environment (Cashman, 1983; Patterson, 2005; Penrose, 2006) are common skill sets within other jurisdictions. These jurisdictions provide support to other agencies and share expertise and experience.

These enhancements add strategic value and the MFB is well positioned to take strategic advantage that review, evaluation and transition bring. The MFB should develop a Hazardous materials response unit comprising; specialist staff that are skilled, resourced and housed together, backed up by appropriate support mechanisms. Access to in house scientific support presents a best practice opportunity which should be capitalized upon in an increasing hazardous materials response environment.

This research has identified a significant exposure for the MFB in not conducting ongoing reviews of capability and environmental analysis. Whilst this exposure places the MFB in a vulnerable position, its current generic model of response provides a platform for further improvement (Cashman, 1983).

Experiences of other Australian States and countries (UK) support the development and benefits of hazardous materials strategic planning.

Recommendations

As a result of this research, it is recommended that the following actions be implemented by the MFB:

- a) That the hazardous materials response strategy contained in Appendix B be incorporated into the annual planning cycle and implemented.
- b) That all emergency response activities be reviewed within the Operations Directorate environmental scanning process.
- c) That once approved, a project team be assigned to review and implement the hazardous materials response strategy.
- d) That dialogue and consultation commence immediately with employee representatives (United Firefighters' Union, Victorian Branch) during Enterprise Bargaining Implementation Committee negotiations.
- e) That the Australasian Fire Authorities Council conduct a national capability review to identify a best practice model.
- f) That an organization wide communication strategy be developed in relation to the hazardous materials response strategy contained in Appendix B.

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Compiled in confidence

As part of the Executive Fire Officer Program, U.S.

Hazardous Materials Response Questionnaire

Name:.....

Organisation:.....

Date of Interview:...../...../.....

1. Does your jurisdiction have a legislative responsibility for hazardous materials response?

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1A. If yes to survey question 1, what are the boundaries of your legislative authority?

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2. Do you have a dedicated hazardous materials response unit?

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2A. If yes to question 3, what does this comprise?

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3. Does your organisation have a strategic plan for continued enhancement of hazardous materials response?

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3A. If yes to question 3, what are the key elements to this plan?

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4. What level of training is provided to responders in hazardous materials response?

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5. What support role do other agencies provide to the fire service in hazmat response?

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6. If you have a hazardous materials unit, does it provide support to other agencies?

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7. What specific equipment resources has your organisation attained to support hazardous materials response?

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MFB Hazardous materials Response Strategy 2007 and Beyond

(Shaping the Future of the MFB)



Executive Summary

The MFB has prided itself on its ability to respond to the ever changing environment. Community demographics and risk profiles have been the genesis for the review of the strategic location plan. However, the issue of changing technology and the impact of current world events necessitates the enhancement of the MFB's hazardous materials response capability.

Broadly, the initiative is to equip the organisation to deal with a variety of scenarios in terms of knowledge, resources (equipment) and infrastructure.

To this end, the organisation should implement a:

Training strategy to ensure that staff are able to effectively manage and control an incident involving an accidental or deliberate release of hazardous materials.

Resource acquisition strategy that:-

- Further invests in technology.
- Brings to the organisation new skills.

Infrastructure strategy that provides for building facilities to accommodate resources such as a specialist unit their equipment and personnel.

Introduction

The MFESB has prided itself on its ability to respond to the ever changing environment. Examples include ongoing responses to technical change, demographic and cultural changes to society and changing weather patterns.

The nature of the hazards faced by the community has also changed. The past 10 years has seen the emergence of a range of biological hazards and the proliferation of chemical usage that has the potential to effect large numbers of the community given the right circumstances.

The threat of a biological, chemical or radiation incident, or acts of terrorism is ever present within the community. Melbourne will continue to be a host venue for major sporting and cultural events such as the Formula 1 Grand Prix, Australian Open Tennis, AFL Grand Final and the Melbourne Cup. Additionally singular events such as the 2000 Olympics and 2006 Commonwealth Games continue to keep Victoria in the International spotlight.

The attached strategy provides an opportunity for the MFB to implement a contemporary hazardous materials response model. A detailed implementation strategy will need to be developed following consideration and approval of this strategy.

Mission

Contributing towards making Melbourne, one of the safest cities in the world.

The MFB exists to provide for fire safety, fire suppression, fire prevention and emergency response services within the Metropolitan fire district of Melbourne under the auspices of the MFB Act (1958).

Objectives

- To ensure the protection of life and property from the impact of fires and other emergencies.
- To respond in a timely manner
- To minimise the impact of emergencies on the community, the environment and the economy.
- To respond to current and emerging threats which may be placed upon the community of Melbourne.
- To be able respond to any call for assistance.

Strategic Imperatives

Training strategy

A training strategy is required to ensure that MFB operational personnel are skilled to manage and affect the necessary mitigation techniques required at hazardous materials incidents of either an accidental or deliberate nature.

This strategy must be aligned with the Australian fire competencies and consider the application of NFPA guideline 471 (Standard for the professional competence of responders to Hazardous materials incidents).

Resource acquisition strategy

A resource acquisition strategy that ensures that operational personnel have the appropriate tools to assist in the management of and the necessary mitigation techniques required, using the latest available technologies at hazardous materials incidents of either an accidental or deliberate nature.

Invest in the acquisition of specialist and highly competent skills at the scientific level in order to support operational personnel in decision making and the use of the necessary mitigation techniques required at hazardous materials incident.

Infrastructure strategy

Brings together highly skilled operational and support personnel at a pre determined location in order to benefit from experience and joint training mechanisms.

Identify a specific location or locations at which these trained specialists and the appropriate resources (vehicles and equipment) will be located in order to respond in accordance with the broad objectives of the MFB and an appropriate fire coverage model.

Key project deliverables

- a. Reduced operational exposure to hazardous materials. This can be assessed via a reduction in the number of exposure/incident accident reports.
- b. Improved training in terms of skills acquisition and maintenance. This can be assessed via the number and quality of training courses delivered.
- c. Enhanced capability. This can be assessed via the increased number of trained personnel and a greater availability of improved equipment in terms of detection and decontamination response vehicles and supporting infrastructure.
- d. Strategic alliances and partnerships will have been formed. This can be assessed by the establishment of mutual cooperation agreements.
- e. Statutory obligations will have been complied with. This can be assessed by the enhanced capability achieved.

Action Strategies

Training

- Personnel to be trained will need to be identified (skills mix, ranks, age profiles).
- Gap analysis where current and future training needs are identified.
- Training resources to be identified (facilities, funding, props, site access, curriculum validation, equipment).
- Training facilitator to be identified (industry expert, internal resources).

Key considerations

The Training strategy encompasses three levels of discipline:

1. First responder awareness across the operational sectors of the organisation:

- This includes all staff and new recruits.
2. Enhanced usage techniques at dedicated locations such as FS 38 and FS 47. This will include:
 - Chemical detection.
 - Chemical sampling.
 - Analysis.
 - Interpretation.
 - Decontamination.
 3. Senior management command and control:
 - Incident management.

Resource acquisition strategy

Specialist equipment enhancement program.

The equipment acquisition should consider:

- Funding source.
- Suppliers and timeframes for acquisition.
- Supply contracts and purchasing arrangements (tender or proposal).
- Maintenance contracts.
- Vehicle design.
- End user requirements.
- Position descriptions and specialist appointments.
- Review current equipment in terms of appropriateness and compatibility (detection, protection and decontamination).

- Review equipment locations and consider options.

Key considerations

- Detection devices designed to measure low concentrations of atmospheric contaminants. This allows the identification and quantification of a broad range of materials.
- Sampling equipment so that materials can be gathered for analysis.
- Improved decontamination services.
- Computational tools to assist in hazard determination and prediction.
- The establishment of a scientific department staffed by suitably qualified and industry experienced scientific officers. These scientific staff will be available for response to assist operational crews.

Infrastructure strategy

Infrastructure modifications will require consideration of the following:-

- Funding source
- Vehicle design
- Building modification and planning
- Relocation of human and physical resources
- Modification of specialist assignment rules
- Data Technologies

Key considerations

The South Melbourne fire station is suitably located within the metropolitan fire district to be utilised as a centre of excellence for our hazardous materials response capabilities.

This station already houses the MFB's breathing apparatus section which provides natural synergy.

The station has the capacity to bring together the resources requirements already described with minor modifications.

The assignment rules and incident response platform will need to be modified.

Laboratory resources to support equipment calibration should be considered in station modifications.

A new hazardous response vehicle should be designed or purchased to accommodate the resource and response requirements of this strategy.

Information sources and specialist advice resources will be required including:

- Written reference material currently housed in the MFB Library.
- The Datachem chemical database currently available through ICS and the FSCC.
- Hazmat Initial Emergency Response Guide Books currently available on each appliance.
- The Chemwatch database currently available on the MFB Intranet.

Consultation Strategy

A detailed communications strategy will be required that acknowledges the interdependencies and will engage key stakeholders. As a minimum:

- Discussion of the proposal and comment / input from employee representatives and operational staff.
- Approval and support of the MFB Executive Management Team.

- Meetings with representatives of the training department, OH&S, fleet, supply and building infrastructure.
- Formal presentation to the Enterprise bargaining Committee.

Key stakeholders

- Operations.
- Finance and Administration.
- Employee Representatives.
- Fleet Management.
- Training.
- OHandS.
- DOJ.
- Brigade Medical Officer.
- Community.
- Industry.
- Health care industry.
- Other response agencies.
- DSTO.
- EPA / Workcover.
- OESC.
- EMA.

Monitor and review

This strategy should be reviewed to reflect changes in circumstance or environmental influences both internally and externally.

Subject to the approval of this strategy, a detailed project plan will be required to be developed which will detail key milestone of this strategy.