

Managing Health and Safety Threats

Submission to the
Strategic Review of the Workplace Health and
Safety System

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About this Submission

The rate of change is relentless in the workplace. The importance of hazard management cannot be underestimated in this busy and complicated workplace of the 21st Century. The result can be worker fatigue, stress and burnout leading to accidents. As well, the need for organisations to cut costs and sustain financial profitability in a competitive global market is fierce.

This Submission looks beyond hazard management to address the full gambit of safe workplaces and brings into consideration other international approaches. In defining the problem it then looks at aspects of workplace safety failures leading to the need for a better approach. The innovative solution in this Submission is a blended hazard / risk / threat standard that informs management of responses to both natural and manmade causes of concern in the workplace. This solution is offered to the Taskforce for consideration and evaluation.

Introduction

The object of the Health and Safety Actⁱ 'is to promote the prevention of harm to all persons at work and other persons in, or in the vicinity of, a place of work'. The Act then provides the following interpretations:

accident means an event that
(a) causes any person to be harmed; or
(b) in different circumstances, might have caused any person to be harmed
harm—
(a) means illness, injury, or both; and
(b) includes physical or mental harm caused by work-related stress
hazard—
(a) means an activity, arrangement, circumstance, event, occurrence, phenomenon, process, situation, or substance (whether arising or caused within or outside a place of work) that is an actual or potential cause or source of harm; and
(b) includes—
(i) a situation where a person's behaviour may be an actual or potential cause or source of harm to the person or another person; and
(ii) without limitation, a situation described in subparagraph (i) resulting from physical or mental fatigue, drugs, alcohol, traumatic shock, or another temporary condition that affects a person's behaviour
significant hazard means a hazard that is an actual or potential cause or source of—
(a) serious harm; or
(b) harm (being harm that is more than trivial) the severity of whose effects on any person depend (entirely or among other things) on the extent or frequency of the person's exposure to the hazard; or
(c) harm that does not usually occur, or usually is not easily detectable, until a significant time after exposure to the hazard

There is no interpretation of the words 'risk' and 'threat'. The actual word risk only appears 4 times in the Act and threat was not found at all.

18 A (5) In subsection (4)(b), as is means that the plant is sold without any representations or warranties about its quality, durability, or fitness, and with the entire risk in those respects to be borne by the buyer.

28A (5) An employee may not refuse to do work that, because of its nature, inherently or usually carries an understood risk of serious harm unless the risk has materially increased beyond the understood risk.

This lack of focus on risk and threat is interesting. There are other widely accepted international approaches that have similar safety objectives to this Act. These approaches are risk and threat based. Three of particular note are:

- Risk Management including AS/NZS ISO 31000:2009 Risk Management - Principles and Guidelines
- Human Factors Analysis and Classification System (HFACS)
- Threat and error management (TEM).

Further reference to these international approaches is included below. However at this point, it is suggested in this Submission, that the achievement of the goals and Terms of Reference of the Taskforce to

consider international best practice in regards to workplace health and safety
to take a broad and fresh approach
and to
generate bold and innovative thinking

may well be assisted and enhanced by the consideration of the cause of workplace hazards and accidents in a wider context including both risks and threats.

The Problem

The workplace is where a series of activities is undertaken by 'people'¹. Each workplace may be quite unique, but just like the Terms of Reference for this Taskforce, there are often a number of complex factors including legislation, regulation, standards, guidance documents and codes of practice.

Despite all of these factors being in place, people are still injured or killed in workplace 'accidents'. Sometimes these accidents are not caused by hazards but are caused by people and organisations. The following two case studies provide examples of the failure of possibly otherwise compliant workplaces environments.

The Waterfall Rail Disaster

There is a statement in the Special Commission's review of this disasterⁱⁱ that is unfortunately not uncommon. It relates specifically to deliberate human actions which circumvent a process to safeguard the driving of the train.

Marks near the deadman's pedal indicated some drivers were wedging a conveniently sized signalling flag to defeat the deadman's pedal, to prevent their legs from cramping in the poorly configured foot well and to give themselves freedom of movement in the cabin.

and;

The experienced human-factors accident investigator determined the organizational culture had the driver firmly in charge, making it psychologically more difficult for the guard to act.

While this extract was not found to be the cause of this accident, it is relevant to the problem of maintaining a safe workplace environment being addressed in this Submission.

¹ Intended to include employees, contractors and other as interpreted in the Act.

Esso Longford Gas Plant Explosion

The findings of the Royal Commission into this disasterⁱⁱⁱ found that organisational actions contributed to this disaster.

A Royal Commission was called into the explosion at Longford, headed by former High Court judge Daryl Dawson. The Commission sat for 53 days, commencing with a preliminary hearing on 12 November 1998 and concluding with a closing address by Counsel Assisting the Royal Commission on 15 April 1999.

Esso initially blamed the accident on worker negligence, in particular Jim Ward, one of the panel workers on duty on the day of the explosion. The findings of the Royal Commission, however, cleared Ward of any negligence or wrong-doing. Instead, the Commission found Esso fully responsible for the accident:

The causes of the accident on 25 September 1998 amounted to a failure to provide and maintain so far as practicable a working environment that was safe and without risks to health. This constituted a breach or breaches of Section 21 of the Occupational Health and Safety Act 1985.

Other findings of the Royal Commission included:

- the Longford plant was poorly designed, and made isolation of dangerous vapours and materials very difficult;
- inadequate training of personnel in normal operating procedures of a hazardous process;
- excessive alarm and warning systems had caused workers to become desensitised to possible hazardous occurrences;
- the relocation of plant engineers to Melbourne had reduced the quality of supervision at the plant;
- poor communication between shifts meant that the pump shutdown was not communicated to the following shift.

Certain managerial shortcomings were also identified:

- the company had neglected to commission a HAZOP (HAZard and OPerability) analysis of the heat exchange system, which would almost certainly have highlighted the risk of tank rupture caused by sudden temperature change;
- Esso's two-tiered reporting system (from operators to supervisors to management) meant that certain warning signs such as a previous similar incident (on 28 August) were not reported to the appropriate parties;
- the company's "safety culture" was more oriented towards preventing lost time due to accidents or injuries, rather than protection of workers and their health.

In this Longford situation there was no lack of documented safety processes and procedures^{iv}. Another reference to this disaster provides the following.

In total some 140 manuals and documents comprised OIMS Operations Integrity Management System (OIMS)
“... a quality management process that is aimed specifically at lowering the risk of incidents, and provides a means by which continuous improvement can be achieved.”

Yet for some reason, these manuals and documents did not prevent the disaster.

Both of these Case Studies indicate that 'people' and 'organisations' can contribute to problems that can lead to unsafe work environments. The problem is wider than hazards. While this does not conflict with the intention or the interpretation of the Health and Safety Act it does suggest that hazards could be considered in a broader way to include risks and threats.

Background

As mentioned above, there are many widely accepted international approaches that have similar objectives to the Health and Safety Act. A brief review of just three of these will present highlight some principles that then lead to an innovative approach to helping provide a safer workplace.

Firstly risk management has direct consequences for the workplace environment. The ISO 31000 standard^v defines risk as the effect of uncertainty on objectives where objectives can have different aspects (such as financial, health and safety, and environment goals) and can apply at different levels (such as strategic, organisation wide, project, product and process).

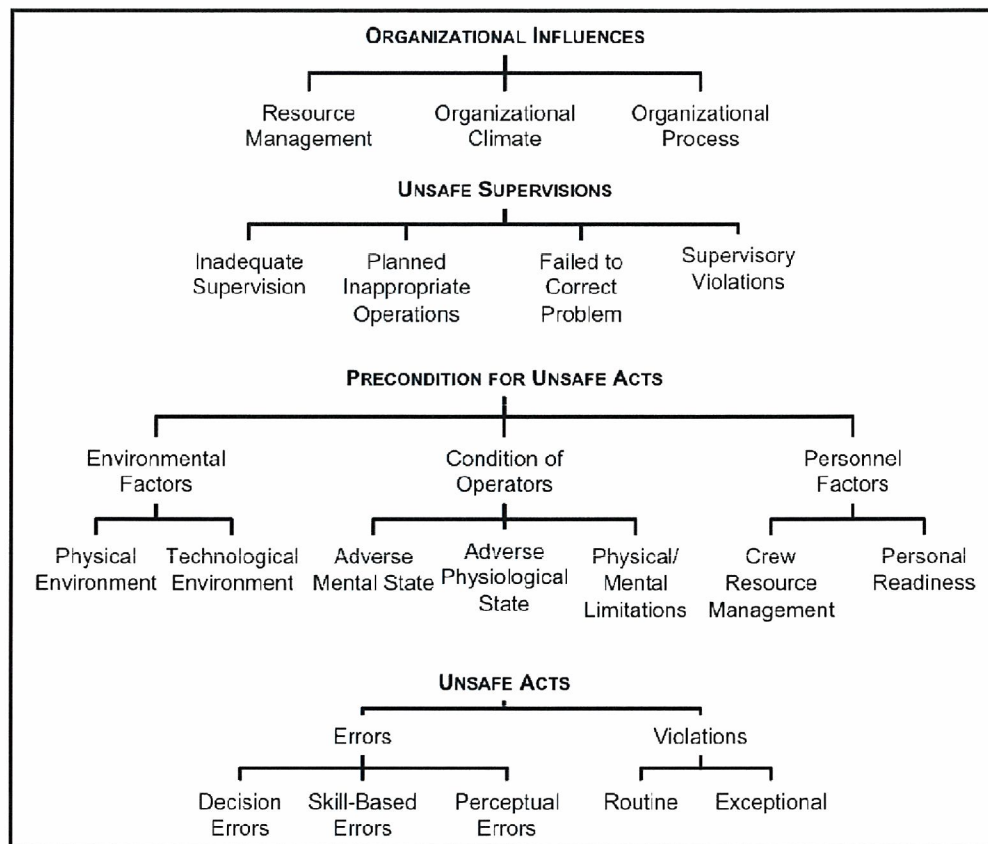
Perhaps a good example is the safety and security of workers from attack by disgruntled customers and sometimes co-workers. These responses to these threats are many and varied. Responses may include panic alarms, CCTV, and security mesh in customer contact areas. There are many risk management approaches which specifically include health and safety in the terms and definitions.

Is it possible then, that there could be a stronger link between risks, threats and hazards in the workplace? Why is it that the word risk only appears four times in the Health and Safety Act and the word threat is not included at all?

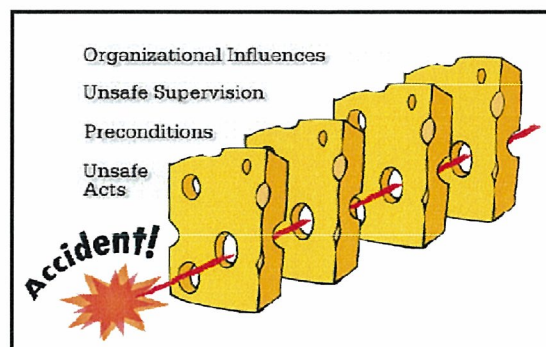
The second approach is known as the Human Factors Analysis and Classification System (HFACS)^{vi}. This approach has a focus on the understanding and compliance of the individuals and the organisation involved in the workplace. A brief comment about this system is as follows.

Using the HFACS framework as a guide, accident investigators are able to systematically identify active and latent failures within an organization that culminated in an accident. The goal of HFACS is not to attribute blame, rather to understand the underlying causal factors that lead to an accident.

The inaction or deliberate action of the individual or the organisation can cause an event to occur. This event by definition may not be an accident. This sequence of 'things' that led to this event is depicted by this approach as follows.



This approach is based on work by James Reason^{vii} who constructed a well documented and widely referenced approach that took the 'cause' through a series of layers from the unsafe act to supervision and the organisation itself.



The third approach is known as Threat and Error Management^{viii}. This approach is used in the Australian aviation industry and has a focus on aviation safety. The key here is, for whatever reason, is that the error has repercussions that could lead to an unsafe situation.

Threat and error management (TEM) is a method that can be used by flight crew to identify and mitigate hazards (known as threats) and crew errors which may have an impact on safe flight operations. The concept of TEM was derived from the LOSA program by researchers involved in the University of Texas Human Factors Research Project.

The conclusion drawn from these three Case Studies is the focus on the behaviour of individuals and organisations. This focus does sit comfortably within the general concept of a hazard within the Health and Safety Act which includes '*a situation where a person's behaviour may be an actual or potential cause or source of harm to the person or another person*'². However it goes far beyond the individual to include supervision and the organisation itself.

² Refer to the interpretations above

Need

Perhaps there is no more striking example of the need to balance risk in the workplace than that of first responders including police, fire and ambulance. The Health and Safety Executive in the UK have published a number of documents addressing this operational situation. In the case of police the document^{ix} notes the following.

Particular challenges for the Police

1. they have to respond to dangerous situations which are not of their own making – this is different to most other sectors where it is the employer's own business that creates the risks
2. they may not be able to control or mitigate all aspects of their working Environment

And officers and staff should expect Good health and safety management systems that:

3. take account of the bigger picture including the wider legal and regulatory context in which they operate, so that the Police Service can:
 - fight crime and protect the public through delivery of an effective service; and
 - enable officers and staff to take appropriate care for their own, their colleagues' and the public's health and safety;
4. include robust, proportionate, carefully considered and non-bureaucratic risk assessments which:
 - identify significant risks;
 - set out safe systems of work which specify appropriate control measures, equipment and competencies; and
 - are effectively implemented.

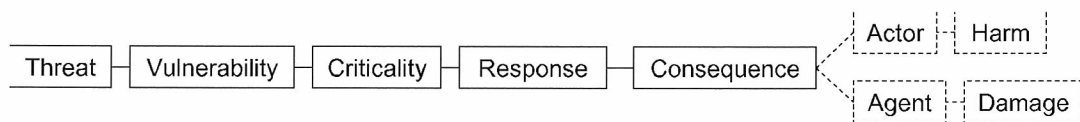
The need is to have a sound approach to managing the risk for police. But this begs the question of whether or not the cause of the many incidents police respond to are risks or threats. New Zealand Police have responded to this conundrum as reported in the 2012 Annual Report^x.

Police routinely work in an operating environment that is dynamic, unpredictable and, at times, dangerous. Therefore, it is essential that staff consider all available information pertaining to events to make sound and safe response decisions. Serious injuries and fatalities among police and the public, together with a steady increase in the numbers of assaults and serious assaults against police, has encouraged a review of Police risk and threat management processes. This review activity has subsequently given rise to the TENR model. Through this model, staff are encouraged to carefully assess the **T**hreat, **E**xposure, and **N**ecessity to act in particular situations, and thereafter, their **R**esponse to the situation. TENR was introduced to the front-line staff on 1 July 2012.

Solution

Just like the Health and Safety Executive in the UK who have taken a balanced approach to emergency services and their workplace, there is an opportunity to have a more balanced approach to hazards, risks and threats in the wider workplace.

The likelihood of an unwanted event or incident is the combination of the threat, vulnerability and criticality of the situation. The consequence of the unwanted event is harm to the individual and damage to the agent (organisation) responsible for the workplace environment. This can be shown as follows.



This is a simple logical sequence of stages using risk and threat analysis. It is soundly based on many of the previously discussed international approaches. The added advantage is that this provides a reactive decision making solution in the first three stages leading to the response. In other words understanding the nature of what could happen, who and what is at risk and how important the outcome is, will inform the decision of what action to take. This is not at odds with analysis of a workplace hazard where the lack of a safety device may necessitate immediately stopping a work activity if there is risk of injury.

In a non operational planning situation, all five stages consider the possible consequences which can support and justify proactive management before the event. Both of these reactive and proactive aspects inform the decision making process around the response and management of the situation.

This is similar to the object of health and safety approaches but has broadened the approach from hazards to include both risks and threats.

In the Appendix to this Submission there is an example of how this solution can be applied to managing emergency services responses. In this example it is shown how each of the five stages can be broken down into much more detail parts. Each part can then be assessed and understood. Developing action plans to manage any parts that are high risk is again not inconsistent with the hazard management approach. A more detail explanation of this approach is unfortunately beyond the timeframe for this Submission.

In itself, this is a sub-set of proving the Objective of the Health and Safety Act which is to provide an overarching safe workplace environment. It is acknowledged that this example is not at the level of the Terms of Reference for the Taskforce for overall workplace safety. However the concept and principles of workplace safety can be read into this example. A more generic Health and Safety approach could be developed using this concept and principles.

Benefits

In consideration of the overall scope of the Taskforce Terms of Reference, this Submission may be seen as only a very small part. However it does provide a powerful step improvement and a change in the thinking process behind keeping the workplace safe.

The management of the cause of a workplace hazard, risk or threat is dependent on the initial identification and understanding of the situation. Unfortunately it seems all too often that it takes a Royal Commission to recommend actions that were or should have been already known.

The risk and threat standard included in the Solution section of this Submission is offered in good faith for consideration by the Taskforce. Acknowledgement of the ownership and source of this approach is requested, if it used. Further information on this approach is available if required.

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End Notes

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- i <http://legislation.govt.nz/act/public/1992/0096/latest/DLM278829.html>
- ii Waterfall rail accident http://en.wikipedia.org/wiki/Waterfall_train_disaster
- iii http://www.safetycouncil.org.nz/index.php?option=com_content&view=article&id=72&Itemid=94
- iv Mike Clarke and Det Norske Veritas. Longford Royal Commission into the Explosion and Fire on 25 September 1998 at the Esso Gas Processing Plant.
http://www.qrc.org.au/conference/dbase/upl/2000_spk006_clarke.pdf
- v Available from <http://www.standards.co.nz/default.htm>
- vi <http://hfacs.com/about-hfacs-framework>
- vii http://en.wikipedia.org/wiki/Swiss_cheese_model
- viii <http://www.atsb.gov.au/media/1289688/ar2006156.pdf>
- ix Striking the balance between operational and health and safety duties in the Police Service.
<http://www.hse.gov.uk/services/police/duties.pdf>
- x Annual Report NEW ZEALAND POLICE 2011 2012 ISSN: 1178-1815 (Online) accessed at <http://www.police.govt.nz/sites/default/files/resources/annual/new-zealand-police-annual-report-12.pdf> p14