

WORK HEALTH AND SAFETY IN STRUCTURAL METAL PRODUCT MANUFACTURING: A QUALITATIVE RESEARCH STUDY



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Table of Contents

Foreword.....	v
Executive Summary	vi
1 Introduction	1
2 Methodology	4
2.1 Sampling frame	4
2.2 Data collection	4
2.2.1 In-depth interviews	4
2.2.2 Online forum and mobile phone app.....	6
2.3 Analysis.....	6
3 Findings: Work health and safety attitudes, mindsets and perceptions.....	7
3.1 Attitudes	7
3.2 The four mindsets.....	8
3.3 Perceptions of whether their risk management practices were effective	10
3.4 Factors that influence work health and safety	11
4 Findings: Work health and safety knowledge	14
4.1 Obtaining work health and safety information	14
4.1.1 Training and sharing of information on work health and safety	15
4.1.2 Industry associations and newsletters	15
4.2 Awareness of specific work health and safety programs.....	16
4.3 Communication in the workplace on work health and safety	18
4.3.1 Meetings	18
4.3.2 Informal communication	18
4.3.3 Consulting workers in identifying hazards and selecting risk control measures ...	19
4.3.4 Induction	19
4.3.5 Safe work method statements.....	19
4.3.6 Onsite and factory or workshop differences.....	20
5 Findings: Risk management practices in the workplace	21
5.1 Hazard identification	21
5.2 Onsite versus in the factory or workshop	22
5.3 Common hazards in the industry	23
5.4 Safety practices	24
5.4.1 Examples of specific risk control measures for common hazards and activities ..	29
5.5 Reporting of accidents and near misses	35
6 Findings: Bridge and gantry cranes.....	36
6.1 Overview	36

6.2 Knowledge and awareness of bridge and gantry crane licensing requirements	36
7 Findings: Contact with the work health and safety regulator	38
8 Findings: Participants' suggestions for improving workplace safety.....	41
9 Conclusions and implications	43
References	45
Lists	46
Figures	46
Tables	46
Information boxes	46

Foreword

The *Australian Work Health and Safety Strategy 2012–2022* (the Australian Strategy) identifies seven broad industry groups as priorities for prevention activity. The Manufacturing industry was identified as a priority due to its relatively high rate of injuries and illnesses. In 2010-11 the Manufacturing industry had a rate of serious workers' compensation claims 1.7 times the average Australian rate.

To focus attention on areas requiring the greatest improvement relevant data has been analysed on sub sectors from within the broad industry groups. Within Manufacturing, the Structural metal product manufacturing industry has the highest incidence rate of serious claims, more than twice the rate of Manufacturing as a whole and more than four times the national average. Furthermore, it has shown no improvement over the last 10 years compared to a 20 per cent decrease in incidence rate of serious claims for the Manufacturing industry as a whole.

The national industry priorities under the Australian Strategy focus attention and activities on identifying the cause of injury and illness and on working to find and implement solutions.

This research project aimed to determine factors that contribute to the high rate of work-related injury and illness in the Structural metal product manufacturing industry. Face to face interviews were conducted to enable exploration of work health and safety issues in depth. The study was limited to 54 managers/ owners of structural metal product manufacturing businesses in NSW and Victoria—the two states with the highest concentration of structural metal product manufacturers. This is a qualitative study and therefore its findings cannot be generalised to the industry as a whole.

This report provides valuable insights into attitudes towards work health and safety, risk management practices and factors influencing work health and safety in the industry. The findings will be considered by Safe Work Australia and state and territory work health and safety bodies when developing policies and programs to improve health and safety in the industry as part of the Australian Strategy.

Executive Summary

Background

The Manufacturing industry is a priority industry for work health and safety. The structural metal product manufacturing industry has one of the highest incidence rates of serious workers' compensation claims in Manufacturing. In 2009–10 the structural metal product manufacturing industry had 52.3 serious claims per 1000 workers. This rate was 2.3 times the serious claims rate for the broader Manufacturing industry and 4.0 times the rate for all industries.

This report presents findings of a study of the factors that might help explain the high rate of injury and illness in the structural metal product manufacturing industry. The research aimed to inform evidence based prevention activities in this industry and complement other research undertaken by Safe Work Australia on national priority industries for work health and safety.

Method

The study involved in-depth interviews with 54 employers and managers of small and medium enterprises (SMEs). Employers and managers with the primary responsibility for work health and safety were targeted. Data collection was limited to New South Wales and Victoria which have the highest proportions of structural metal product manufacturers in Australia. Information from in-depth interviews was supplemented by information provided through an online forum for participants and text or pictures of risk management practices in the workplace provided using a mobile app.

Main findings

Work health and safety attitudes and perceptions

Employers and managers in this industry believed that work health and safety was important. Their motivations for health and safety included a moral obligation to the workers and their families, a desire for reduced workers' compensation premiums, the need to minimise lost production time and company reputation.

Participants accepted that it was the employer's responsibility to ensure health and safety. However, they also reported that health and safety was best achieved by working in partnership with their employees. Most participants believed that although they worked in a high risk industry they had done all that they could to minimise the risk of injury based on common sense and their personal work experience. They felt that the rest was up to their employees. There was also the perception that injury and illness could not always be prevented.

According to participants, significant factors influencing work health and safety were increased competition and uncertainty, leading to financial pressures. The background of the employer was also another factor. Employers who had worked for large companies felt that they had a good handle on health and safety as large companies had good health and safety procedures in place. The size of business was another factor that influenced work health and safety with small businesses having less time and resources to devote to health and safety.

Some employers reported that they relied on hiring 'safe' workers with adequate health and safety knowledge and appropriate licenses and tickets to ensure the workplace was safe. Participants explained that recent changes meant it was difficult to find such 'safe' workers. This was partly attributed to changes in the apprenticeship system where workers had the

knowledge from the class room but lacked on the job skills including those on health and safety as they lacked training under an experienced tradesperson. Other reasons were mature workers entering industry for the first time due to redundancies, an increase in overseas workers, and the mining industry recruiting experienced tradespersons from the industry.

Work health and safety knowledge

Few participants in this industry were seeking information on health and safety. They relied on updates and regulatory changes through email and inspector visits rather than actively seeking this information. Most participants had little knowledge of the materials and programs provided by the work health and safety authority in their respective state. If a health and safety issue occurred, they were likely to search the internet, contact a supplier or a consultant.

There was little sharing of health and safety knowledge across the industry. The majority had little interaction with other SMEs in the industry. Industry associations did not play a major part in this industry and only a few were registered with an industry association or an employer group.

Risk management practices in the workplace

Commonly reported methods of hazard identification by SMEs were while ‘walking around the floor’ and relying on ‘experience and common sense’. While larger businesses had more formal procedures in place for most these were not generally regular or systematic involving documents and check lists to document hazards and risks. Small business employers were either unaware of formal checklists and procedures or questioned their relevance to small business.

Many businesses in this industry not only worked in the factory or workshop but also worked onsite¹ with tradespersons from other businesses. Employers reported that onsite risk management practices were a particular concern as they were less able to control the risks. Some felt that they were putting their workers’ safety into the hands of someone else. On the other hand some employers felt onsite safety requirements were more stringent especially if they were sharing the site with larger companies. Most participants reported experiencing induction processes when working on commercial sites but this rarely occurred at residential sites.

There were some differences in common hazards identified depending on whether they were undertaking work in the factory or workshop environment or they were onsite. Hazards that were considered major hazards for factory/workshop setting included falling from heights, being run over by a forklift, having something fall on them (for example from crane or hoist), electrocution, and hands caught in the machinery. Common hazards when working onsite were being run over by a train, crane or truck, pedestrians accessing insecure work sites, falls from heights off scaffolds and ladders and clutter and insufficient space.

Safety practices reported by participants were personal protective equipment (PPE); use of standard operating procedures; traffic management; machine, equipment and process modernisation; and machinery maintenance. Participants were also asked about risk management practices for specific hazards. For manual handling hazards, common risk controls included the use of vehicles and lifting equipment. Some reported using forklift or bridge and gantry cranes to move materials around the factory/ workshop. For hazards associated with hand tools such as angle grinding and welding, common risk controls

¹ Either commercial or residential building or construction site

included use of PPE, ensuring that work pieces were secure, and that the area was ventilated.

Bridge and gantry cranes

As a supplementary research question, participants were asked about bridge and gantry cranes—whether or not they had identified themselves as crane users during recruitment. This was included as part of this research for two reasons. First, it was expected that some in the industry were likely to use bridge and gantry cranes in a workshop/factory setting. Second, little information was available on the use of bridge and gantry cranes or employers' understanding of licensing requirements. This study provided an opportunity to obtain this information.

Participants reported that the use of cranes posed a significant health and safety risk. However, it was found that most participants were unsure which type of bridge and gantry crane they have. There was a lack of understanding of different types of cranes and their links to licensing requirements. Most did not know what three powered operations meant—a key factor in determining whether a particular type of license is required.

Contact with the work health and safety regulator

Most participants had not visited the regulator's website or sought information directly from the regulator. Of those who had accessed specific information on the website, more were from Victoria compared to New South Wales with some reporting that they found the website useful. However, some commented that the information appeared to be aimed at office workers rather than tradespeople.

Few participants had attended training programs offered by the regulator. Those who attended reported a positive experience.

Most enterprises had been visited by an inspector intermittently. The majority of SMEs who had experienced an inspection indicated that the visit was beneficial and that the inspector had followed up with them to see if they had put the recommendations into place. They viewed inspections as an opportunity to have an 'extra set of eyes to pick up on possible risks'.

However, they noted that the approach taken by the inspector determined how useful they found the visit. If the inspector took a collaborative approach and were responsive to their needs, these visits were considered beneficial. If the inspector took a position of power, they were less likely to view the visit as beneficial.

In terms of contact with the regulator, the views were conflicting. Participants indicated that they would like to be 'under the radar' of the regulator. At the same time, they suggested that regular inspection visits would be beneficial. It was suggested that every business should be visited to make the system fairer. They would also like a more preventative and collaborative approach by the regulator.

Participants' suggestions for improving workplace safety

SMEs who participated in this study provided suggestions that they considered would be useful for improving work health and safety. These include:

- having a reward and recognition system
- reimbursement or training support for workers to attend training
- a more responsive approach by the regulator
- inspectors with trade experience
- establishing training and machine registers

- establishing an app and online forum for sharing health and safety information, recording of tickets and qualifications, and
- information that is tailored to their needs in simple language.

Work health and safety policy implications

Being a qualitative study, the findings presented in this report may not be reliable or generalisable. However, the report provides an insight into work health and safety attitudes, perceptions and safety practices among participants and the findings have policy implications in terms of addressing key issues and concerns for this particular industry.

While participants viewed work health and safety as important, many believed that they had done all they could to improve safety and that their workplace was safe. This meant they were not actively seeking information and guidance on work health and safety and were also not likely to read or use materials that were mailed to them. In addition, few belong to an industry association. Therefore, placing information and guidance materials on the regulator's website, mail out campaigns or engaging SMEs in this sector through intermediaries such as industry associations may not be effective for this group and a new engagement strategy may be required. Participants' suggestions such as a mobile phone app and the types of information and materials they would like may provide a starting point for engaging this group.

A positive finding of the study was that face to face contact with the regulator was considered beneficial by participants. However, participants wanted inspectors with trade experience, a more responsive and collaborative approach by health and safety regulators and more frequent visits. These suggestions may also be considered as part of a strategy to engage SMEs in this industry.

Some issues like the lack of knowledge of licensing requirements might require a follow-up quantitative study to determine the extent to which this is a problem across the industry. Additional support and incentives like reimbursement for training or free seminars may help address time and resource barriers to improving health and safety. Further examination of other concerns such as changes in apprenticeship systems, the lack of induction at residential construction sites and overseas workers with inadequate safety knowledge or language barriers may also be needed.

1 Introduction

The Manufacturing industry has been a priority industry for work health and safety since 2002 when the *National Occupational Health and Safety Strategy 2002–2012* was launched. Since then it has been a focus of prevention activities and improvements in health and safety have been observed. The incidence rates of serious claims² per 1000 employees in Manufacturing had fallen by 17% between 2004–05 and 2008–09 (Safe Work Australia 2012a). The frequency rates³ of serious claims per million hours worked in Manufacturing had also fallen by 14% during the same period. However, further improvements need to be made. In 2009–10, the Manufacturing industry still had higher incidence and frequency rates of serious claims compared to the rate for all industries (22.3 vs 13.0 serious claims per 1000 workers and 11.7 vs 7.8 serious claims per million hours worked) (Safe Work Australia 2013).

The structural metal product manufacturing industry is consistently identified as having a high rate of serious claims over the years within the broader Manufacturing industry. This industry group contains companies that manufacture metal products used as inputs in the construction of buildings and other structures such as doors, gates, window frames, staircases, trusses, scaffolding, sheds and gutters. These goods may be supplied to the domestic Construction industry or sold directly to the public. In 2009–10 the structural metal product manufacturing industry had 52.3 serious claims per 1000 workers (Safe Work Australia 2013). This incidence rate was 2.3 times the serious claims rate for the whole Manufacturing industry and 4.0 times the rate for all industries. Similarly, the frequency rate for the structural metal product manufacturing industry in 2009–10 was 2.3 times the frequency rate for the whole Manufacturing industry and 3.5 times the rate for all industries.

Recognising the need for further improvements in health and safety in Manufacturing, the current *Australian Work Health and Safety Strategy 2012–2022* (the Australian Strategy) also identifies the Manufacturing industry as a priority for work health and safety prevention activities. The Australian Strategy identifies research and evaluation as an action area which includes research undertaken to better understand exposure to hazards and risk management practices in workplaces and the knowledge and attitudes towards work health and safety. A 2011 review of the literature on why some of the efforts of health and safety professionals, regulators and researchers are not having much impact also found that attitudes, perceptions, skills and knowledge in health and safety are important considerations (Bluff 2011).

The purpose of the present study was to determine factors that may be contributing to the high rate of work-related injury and illness in the structural metal product manufacturing industry, the industry group with a high incidence rate of serious claims within Manufacturing (Safe Work Australia 2013). In line with the Australian Strategy and the literature review by Bluff (2011), this study explored the following areas:

- work health and safety attitudes and perceptions
- knowledge of health and safety including channels of access to information and modes of communication in the workplace
- common hazards and risk management practices

² The incidence rate is measured as the number of serious claims per 1000 employees and this takes into account differences in labour force participation. Serious claims involve a fatality, a permanent incapacity or a temporary incapacity requiring an absence from work of one working week or more.

³ Frequency rate is a measure of the number of serious claims reporting among a given group of employees relative to the total time they spent working. Frequency rates control for any differences in the proportion of part-time employees between one group and another.

- knowledge of licensing requirements for bridge and gantry cranes (as a supplementary research question)
- contact with the regulator, and
- suggestions for improving health and safety.

The information reported here can be used to inform evidence based prevention activities to improve work health and safety in this industry.

This report is set out in nine sections, including the introduction. Details of research methodology are presented in Section 2. Findings are presented in the next six sections according to the six research areas explored in this study. Section 9 contains a brief conclusion and implications of this research.

Box 1: Highlights from this report

The study

- *In-depth interviews with 54 employers or managers of structural metal product manufacturing businesses in NSW and VIC.*

Main findings

- *Participants believe that work health and safety is important but there is a perception that health and safety is just common sense.*
- *Most report that they have done all they can in relation to work health and safety, therefore, they are not actively seeking to make further improvements.*
- *Some employers reported that they relied on hiring 'safe' workers who tended to be mature workers and/or workers with the right safety attitude, knowledge and licenses to ensure the workplace is safe.*
- *Participants reported that it is difficult to find 'safe' workers with adequate health and safety knowledge due to changes in apprenticeship programs, losing skilled workers to the mining boom and an increase in overseas workers who may not have adequate training or qualification.*
- *When businesses had a visit by the inspector, many said it was beneficial and provided 'an extra set of eyes to pick up on possible risks'. They emphasised that inspector visits are especially helpful if the inspectors are responsive to their needs instead of taking a position of power.*
- *Most participants were not aware of guidance materials, programs and assistance offered by respective health and safety authorities that were relevant to them.*
- *Participants did not have a good understanding of licensing requirements to operate bridge and gantry cranes.*
- *Common hazards and safety challenges in the factory/workshop include being hit by moving objects, falls from heights, manual handling and machine related hazards.*
- *Safety problems when working on site include limited workspace, insecure sites being accessed by pedestrians and inconsistent safety messages and practices required by the safety officer in charge of the site.*
- *Most small businesses had basic risk control measures in place with a reliance on PPE and other lower order measures.*
- *Induction, training and consultation with workers on identifying hazards and selecting risk control measures varied within the industry with small businesses tending to have informal procedures. Participants felt they had more control over these processes when they were in factory/ workshop setting compared to when working onsite. Participants also noted that they had experienced induction when working at commercial construction sites but induction rarely occurred at residential construction sites.*

Main policy implications

- *A new strategy may be needed to engage employers and managers in this sector that are not actively looking for information on work health and safety and may not read or use materials that are mailed to them.*
- *Issues such as the adequacy of apprentice training and the lack of induction at residential construction sites need to be further examined.*

2 Methodology

2.1 Sampling frame

The targeted participants for this study were employers and managers of small and medium sized enterprises (SMEs) within the structural metal product manufacturing industry in New South Wales (NSW) and Victoria (VIC). In this industry, SMEs comprised 99% of businesses and NSW and VIC had the highest proportions of such businesses (Australian Bureau of Statistics 2012).

In April 2013 the Australian Taxation Office provided the list of businesses on the Australian Business Register (ABR). According to this list there were 1289 structural metal product manufacturing companies in NSW and 810 in VIC with relevant Australian and New Zealand Standard Industry Classification (ANZSIC) codes 22210, 22220, 22230, 22240 and 22290. Information on business size was collected during recruitment of participants.

2.2 Data collection

On commencement of the recruitment process significant issues were uncovered with the ABR list. These issues included companies in the wrong industry such as software engineers and child care centres as well as manufacturing companies that were not related to structural metal products, companies no longer in business, overseas based companies and companies without any contact information.

In addition, the majority of eligible companies that could be contacted were sole traders or companies with a very small number of employees. These companies were generally not interested in participating in the research for the following reasons:

- did not have enough time – the majority of people contacted were ‘hands-on’ with their business and taking time out directly impacted their ability to complete work
- had suspicions of the research itself and suspected that it could be an audit
- indicated they were closed for business for a short period of time or may be closing in the near future due to significant cost pressures, lack of confidence in the industry and working hard for nothing
- had a policy not to participate in research, and
- did not speak English well enough to participate.

Data collection for this study occurred in three stages during May-July 2013. The initial stage included a worksite visit to a structural metal product manufacturer to gain first hand exposure for the research team and to test the interview guide by conducting the first interview. This was followed by the main stage of the study which included 53 interviews with employers and managers. The last stage involved asking participants to participate in an online forum to post details of risk management practices of specific hazards in their workplace. This stage also involved the use of a mobile phone app to capture examples of risk management practices in workplaces.

2.2.1 In-depth interviews

The individual in-depth interviews⁴ allowed coverage of a broad range of attitudes and behaviours. They also enabled exploration of factors that influenced work health and safety among participants. All potential participants were screened to determine their industry,

⁴ Consideration was given to conducting part of the research using focus groups. Three factors made focus groups impractical. The first was that there were too few participants. The second and most important factor was that the companies were relatively spread out across Melbourne and Sydney and travelling times involved would prevent many employers from attending. Finally there was a sense of suspicion about the purpose of the focus groups that may have prevented many from participating.

company size (based on number of employees) and location. Screening questions also ensured that the most relevant and suitable person within the company was interviewed. The majority of businesses had been in operation for 10 years with a few in operation over 20 years. Very few were new to the industry. Table 1 provides an overview of the interview sample.

Table 1: Interview sample by location and business size

Location	Size of Business	N
Sydney	Small	21
Sydney	Medium	2
Melbourne	Small	18
Melbourne	Medium	13
Total businesses		54

Note: Small businesses are businesses with 1–19 employees and medium businesses are those with 20–199 employees.

2.2.1.1 Interview guide

The interview guide encompassed the following areas of enquiry:

- How do employers/managers obtain health and safety information?
- How do employers/managers determine common hazards and risks in their business?
- What are the main safety problems or issues in their workplace?
- What are the risk control measures for these safety problems?
- Do employers/managers consult their workers in identifying hazards and selecting risk control measures?
- How are health and safety issues discussed and communicated in the workplace?
- Do employers/managers consider their risk management practices effective (or not) and why?
- What are their attitudes towards work health and safety?
- Are small businesses aware of work health and safety programs designed for them?
- Are small businesses accessing and using guidance materials provided by work health and safety authorities for their industry?

In addition information was collected on the use of bridge and gantry cranes in the structural metal products manufacturing industry including:

- How common was the use of bridge and gantry cranes with more than three powered operations in the industry? Are these considered more high risk compared to bridge and gantry cranes with three or less powered operations?
- Are businesses aware of circumstances under which a high-risk license is required to operate bridge and gantry cranes?

These supplementary research questions were included as part of this research for two reasons. First, it was expected that some in the industry were likely to use bridge and gantry cranes in a workshop or factory setting. Second, little information was available on the use of bridge and gantry cranes or employers' understanding of licensing requirements. This study provided an opportunity to obtain this information.

2.2.2 Online forum and mobile phone app

All interview participants were asked to be involved in a subsequent stage of the study to record examples of risk management strategies used in their workplace using an online forum and a mobile phone app. The 'Out-there' app allows participants to upload images, video, audio and text to provide further information on risk management practices and examples of hazards.

Of the 54 participants interviewed, 27 agreed at the time of interview to be involved in the subsequent stage. Reasons for declining to participate included time pressures and not wanting to identify risks in their workplace that might put them on the regulator's radar.

When the online and mobile phone app stages commenced participants were emailed the relevant information and invited to participate. Only one participant contributed to this stage. Follow up phone calls and emails were made to all other participants who had originally agreed to be involved in this stage and a \$50 incentive offered. This follow up resulted in the recruitment of two additional participants. Otherwise there was either no response or they simply reported that they did not have the time to participate with some saying this was particularly true since it was not a requirement of the regulator. For example one small business owner conveyed via email that his business is struggling due to the down turn in the last 18 months and he did not know if he would be around in the next six months. Consequently he did not want 'big business with big budgets' telling him how to run his business.

The figures demonstrating risk control measures at specific workplaces and some of the risk management practices presented in the Tables in Section 5 are from this stage of the study.

2.3 Analysis

The interviewer notes, detailed debriefing and transcripts from the 'Out-there' App were content analysed using the principles of thematic analysis. Thematic analysis is a method for identifying, analysing and reporting patterns within data. The data are examined collectively, thus permitting relationships between and among central themes to emerge. The content and meaning of patterns in the data are interpreted and presented in the following sections of the report.

3 Findings: Work health and safety attitudes, mindsets and perceptions

This section provides an overview of participants' attitudes and perceptions towards work health and safety. It explores the importance of work health and safety, reasons for ensuring workplaces are healthy and safe, whether participants viewed themselves as managing health and safety issues effectively, and the factors thought to influence health and safety in their workplace.

Box 2: Section 3 highlights

- *Employers and managers in this industry believed that work health and safety was important.*
- *Their motivations for health and safety include a moral obligation to the workers and their families, a desire for reduced workers' compensation premiums, the need to minimise lost production time and company reputation.*
- *Participants accepted that it was the employer's responsibility to ensure health and safety. However, they also reported that health and safety was best achieved by working in partnership with their employees.*
- *Most participants believed that although they worked in a high risk industry they had done all that they could to minimise the risk of injury based on common sense and their personal work experience. They felt that the rest was up to their employees.*
- *Participants also believed that injury and illness could not always be prevented. This placed most participants at the cusp of the two mindsets, being a calculated risk taker and a fatalist.*
- *Participants reported two significant factors impacting on work health and safety which were increased competition and uncertainty, leading to financial pressures.*
- *Participants reported that new machines were safer compared to old machines but the cost of upgrading to new machines was high.*

3.1 Attitudes

SMEs in the structural metal product manufacturing industry supported work health and safety and recognised that it was a critical business issue that required their attention. Attitudes towards safety were similarly aligned between managers or owners and work health and safety managers. Most displayed a high level of commitment to safety. Because they were confident that high level procedures were in place they believed there was a low risk within their organisation.

The motivations for health and safety varied across the industry and included a moral obligation to the workers and their families, a desire for reduced workers' compensation premiums, the need to minimise lost production time, worker availability and income, to uphold the company's reputation, and more broadly improving workplace efficiency. For example two participants explained:

[Work health and safety is important] to ensure that everyone goes home in one piece at the end of the day because we are NOT working in a safe environment with no hazards. (Medium enterprise employer)

My greatest fear is having to tell the parents of one of my lads they have been injured, or worse still killed on the job. I treat them a lot like I treat my son. They are family and many have been with me for years. (Small enterprise employer)

Those interviewed thought work health and safety was about establishing safe work practices that needed to be communicated and adhered to by employees and about

providing safe equipment. They accepted that the culture for work health and safety came from the top down and that it was the manager or owner's responsibility to determine how much priority was given to work health and safety. Once these duties had been completed there appeared to be a belief from some employers that they had fulfilled their responsibility and executed their duty of care. Despite working in a high-risk industry they felt that they were doing all that could be done to minimise the risk to ensure their workers' well-being and it was up to the employees to do the right thing as well. Most owners and safety managers typically would then acknowledge that there was always risk in the structural metal products manufacturing industry and that injury and illness could not always be prevented. For example one participant stated that:

There is always risk with glass, it could break if there was a crack, but our business is not particularly risky as it's not like the guys are on roof tops. (Small enterprise employer)

A number of participants similarly acknowledged that:

Risk is not something that can be avoided completely but you can do your best to minimise it. (Small enterprise employer)

Fundamentally, employers or owners of SMEs in the structural metal product manufacturing sector understood that they were responsible for protecting their employees in the workplace and that the current challenging operational environment did not diminish their responsibility. While the buck stopped with the employer, participants also believed that work health and safety could only be enacted in partnership with workers. There was a polarisation of views with some believing that work health and safety was solely the employer's responsibility, others felt it should be the worker's responsibility and for the remainder it was a combination of the two.

[The regulator] probably says it [safety] falls back on the employer. Work safety needs to come down to the individual; too much pressure has been placed on employers. (Small enterprise employer)

Some owners claimed that their work health and safety strategy was in some ways dependent on the level of maturity of their workers, thus placing part of the responsibility for work health and safety on the workers. The more mature and experienced workers were thought to take work health and safety more seriously and follow safety protocols more readily. For example:

All my guys are more mature. I think they're less likely to take risks than younger blokes because they've been around and seen injuries and what can happen – you're eye sight and hearing are very important. Younger people have the attitude 'she'll be right'. I think you'd find most injuries occur in low 30s. (Small enterprise employer)

3.2 The four mindsets

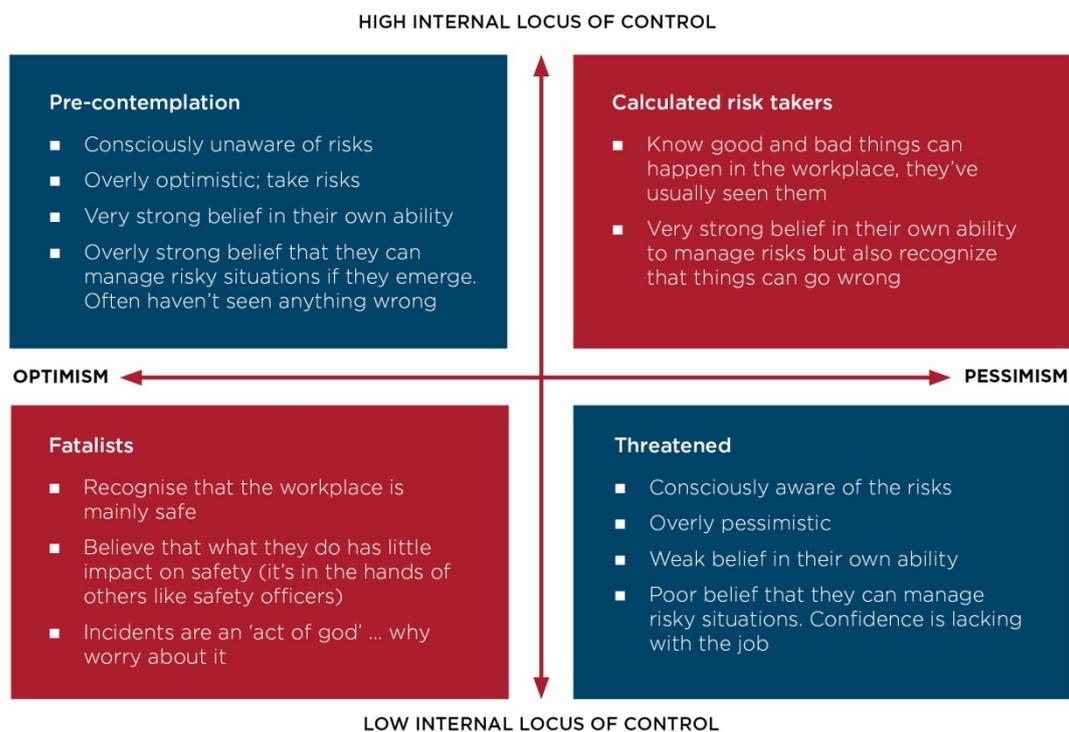
Figure 1 illustrates the four mind sets that were found to exist with SME employers and safety managers in this industry. People can be in more than one mind set and move between quadrants at different times. This figure is based on Rotter's (1954) framework for locus of control. The work health and safety mindsets are:

- **Calculated risk takers:** 'I've put in place everything that I can and we have not had an incident for several years – we'll keep going with the status quo.' Employers were often in this mindset.

- **Threatened:** ‘I keep looking for things to improve.’ This mindset mainly included new employers.
- **Fatalists:** ‘I am concerned with safety because I want my staff to be safe and it is my legal responsibility but I really think it’s up to the workers to keep themselves safe.’ Employers often displayed behaviours of fatalists and employees also were in this mindset.
- **Pre-contemplation:** ‘I am not aware of the risks so I don’t know that I need to improve health and safety.’ There were few people with this mindset but it may include ‘fly by nighters’⁵ and people from culturally and linguistically diverse backgrounds.

Most participants appeared to be on the border of two mindsets—i.e. they were a calculated risk taker and a fatalist. Descriptions from participants suggested that they perceived themselves as being calculated risk takers but in fact their actions often fell into the mindset of being a fatalist. It seemed that employers or managers acted this way because they spent a number of years addressing work health and safety concerns and felt that they had done everything they could. Consequently they felt that it was now up to their employees to take some of the responsibility.

Figure 1: The four mind sets found in the industry



Source: adapted from Rotter 1954

The level of optimism or pessimism about the likelihood of injury and illness was a key factor in work health and safety behaviours. Similarly, the sense of being able to control the working environment, the workers and the external risks also played a key role. As most were calculated risk takers but also fatalists accepting the inevitability of injury and illness (of course hoping it would not happen), they were doing little pro-actively to prevent injury and

⁵ This is a term used by participants to refer to firms that start-up to win contracts and then closing as or even before the project is completed.

illness. As discussed later in Section 4, the sources of information that would assist them to implement appropriate work health and safety behaviours were often not used. At the same time there were exceptions to the rule with some employers placing a heavy focus on health and safety and investment in high end solutions and mechanisation. This focus and investment seemed to have particularly increased for these enterprises in the last few years and tended to be in the medium sized enterprises.

3.3 Perceptions of whether their risk management practices were effective

The common view expressed by participants was that because they had health and safety procedures and had a low incident record they were doing a great job. Employers took pride in having a low incident record frequently emphasising '*our record speaks for itself*' but this belief might lead to the false perception that there was no risk in their workplace. Most employers and safety officers interviewed reported having experienced minor injuries in their current workplace such as cuts. Many reported that they had not even had minor injuries for several years. Most employers claimed to have seen or heard about horrific injuries or deaths that have occurred in their industry but their own recent positive safety records led them to believe their work health and safety measures were adequate.

Most employers took the view that they had put in place as many safety precautions as they could afford based on common sense and their personal work experience. Consequently they believed that if an incident were to happen it was likely to be the result of careless employees. For example one participant explained:

I take most of the responsibility [for work health and safety] because I'm the manager and the buck stops with me. But everyone knows they [the workers] should be responsible. You can tell someone about a safety protocol in the morning and they will forget half way through the day, if you're lucky. They just think about when it's going to be lunch and home time, they don't take it seriously until they've done something to themselves. (Small enterprise manager)

The mind set of believing they were doing all they could prevented a majority of employers and work health and safety officers from seeing potential areas for improvement as well as seeking information to further improve standards and decrease risk. The majority were unaware of what they could be doing or should be doing or in fact where to source information that might be of benefit. This blind spot is not insignificant. One employer interviewed had a fatality at their workplace yet still considers their work health and safety systems to be effective.

In comparison there was an acknowledgement from those employers who placed the responsibility of work health and safety on themselves and less on their employees that more could be done to further decrease the risk of workplace injuries. For these employers the fact that some injuries albeit minor ones still occurred was evidence that the systems in place were not 100% effective.

3.4 Factors that influence work health and safety

Participants identified several factors that influenced work health and safety:

- **Background and experience of employer:** Those employers that had previous experience of working in large companies felt they had a good handle on safety and identifying risks because it had been drilled in to them. For example one small business owner said that he had previously worked for Linfox and drew on that experience to write his policies and procedures.
- **Size of enterprise:** Smaller businesses seemed to have more informal processes and to communicate information on a one-on-one basis. Being small businesses they mentioned that they had less time to use the internet to search for information as generally health and safety was one of many roles they performed. In comparison medium sized enterprises often have someone in charge of work health and safety that has time dedicated to this role and is also more likely to use the internet to search for information.
- **New types of workers:** Employers explained that there were many workers working onsite⁶ with little relevant industry experience and in their view this resulted in reduced awareness of potential risks and risk management strategies. It was reported that the reduction in experience may be due to:
 - the mining industry boom having reduced the supply of experienced workers to the manufacturing industry
 - changes in the apprenticeship system, and
 - an increase in workers from overseas.

Employers reported changes in the way apprenticeships were handled within the TAFE system. They reported that apprentices trained under the new system had the knowledge but lack the 'time' spent under an experienced tradesperson. Participants explained that this time spent under an experienced tradesperson was important as this was how apprentices learnt the craft of becoming aware of dangers beyond the obvious ones. In addition redundancies were resulting in more inexperienced mature workers with little or no industry experience being employed.

This reduction in skilled workers has made it more difficult for employers to find suitable staff. One employer interviewed 51 people, including many tradespeople, and did not employ anyone, stating that:

There was not one I felt would be safe for me and for the fellow workers. (Medium enterprise manager)

Participants also reported a significant increase in workers from culturally and linguistically diverse backgrounds with key language barriers and differences in health and safety cultures and understandings. One employer reported a personal anecdote of being fired as a contractor (too expensive) but being asked to train an overseas worker who subsequently lost two fingers very soon after taking over the role. He had claimed to have relevant work experience that he did not have.

Workers' attitudes and competency on work health and safety: Many employers raised concerns about getting workers to comply with safety procedures including wearing of PPE. They stressed that there were not severe enough repercussions on

⁶ For example, building or construction site

employees for not following safety procedures. Some employers addressed this problem by hiring workers with a good safety attitude. These employers described using two processes to decide whether a potential employee has the right attitude. Small businesses in particular reported relying on 'gut' feeling as well as their impression of the potential employee's attitude and manner, that is if they gave the impression of being conscientious or indifferent to safety. Medium size businesses were more likely to mention asking direct questions about attitude towards safety during the interview process.

Employers also mentioned that it was important to employ people with the necessary skills and tickets as they would know safety procedures. Experienced and mature workers were also seen to be better for compliance with health and safety procedures, for being aware of potential hazards in the workplace and for understanding the importance of work health and safety.

- **Complacency over time:** Experienced employers reported a dramatic change in work health and safety in the late 1990s that had the effect of focusing attention on work health and safety. This led to improvements in injury and illness rates, use of PPE, workplace safety officers, and most importantly, attitudes towards work health and safety. However, 15 years have passed and many employers felt that there was now a sense of complacency among workers.
- **Onsite safety officers:** The credibility, credentials, communication skills, inconsistency and performance of safety officers was raised as an issue. This particularly applied to onsite safety officers. The attitude and lack of industry experience of many safety officers was reported to annoy workers and result in avoidance behaviours or deliberate flouting of the health and safety rules. Safety officers were also reported to be inconsistent in their application of the rules and this affects their ability to do the job.

One day they [the safety officer] will scream at you for not wearing a hard hat and the next they are asking you to go up in a cherry picker in 60km hour winds to get the trains going or to arc weld standing waist deep in water to get a machine back on-line. (Small enterprise employer)

- **Old machines:** Most reported that new machines made it almost impossible for workers to injure themselves and this should be encouraged. However, the cost of upgrading to new machines was considered quite high.
- **Drug and alcohol problems:** While not commonly mentioned some SMEs in the sector reported a rise in pharmaceutical drugs being used by their workers. This was particularly apparent with employees under 25 years of age. It was claimed by one employer that testing was always deliberately forecast so that people affected could go home. This employer believed that it was necessary to undertake this practice because eliminating illicit drugs and over consumption of alcohol would leave the company without a workforce.
- **Mindset:** They feel that they have done everything that they can and are not aware of anything extra that they could do. They also believe that employees need to take more responsibility.
- **Training:** Participants reported that they did not attend training to find out new ideas for controls because they could not afford the time away from the workplace. They also described being unable to afford materials to educate workers about safety like DVDs.
- **Affordability of more effective control measures:** Some employers said that they could not financially afford to put more risk control measures in place.

- **Cultural change:** Challenges were reported in relation to changing established work behaviours and practices.
- **Increased competition and uncertainty:** An increase in '*fly by nighters*'. Such companies increased competition and participants thought that they did not always attend adequately to safety. The increased competition and reduced margins had also resulted in changes in project management practices which were reported to have created a sense of work being rushed both onsite and in the factory or workshop. The economic climate has forced the closure of many structural metal product manufacturing businesses. The upcoming election and potential change of government was another uncertainty hanging over industry in that it was not known whether building contracts would go ahead or not. The tough environment meant that there were many issues with which to be concerned and it appeared that work health and safety was an issue that was done and then the employer moved on to other more pressing matters.

4 Findings: Work health and safety knowledge

SMEs in the structural metal product manufacturing industry claimed they were as vigilant as they could be when it came to work health and safety and relied on their knowledge and work experience to guide risk management. However, few participants indicated that they were aware when standards changed, knew where to get work health and safety information or took the time to search websites for such information. This disengagement from work health and safety information provided the opportunity for gaps in work health and safety practices especially in unfamiliar working spaces which could in turn lead to injury.

Box 3: Section 4 highlights

- *Few employers or managers in this industry were seeking information on health and safety.*
- *If a health and safety issue occurred, they were likely to search the internet, contact a supplier or a consultant.*
- *Most employers or managers were trained many years ago and have not updated their training since.*
- *Many participants relied on hiring workers with appropriate licenses and tickets.*
- *Few participants provided formal health and safety training for their workers due to the time and cost of training programs.*
- *There was little sharing of health and safety knowledge across the industry and industry associations are not significant for this sector.*
- *Workplace meetings which involved safety discussions were the most common form of regular safety communication in this industry.*
- *Very few participants had formal procedures on consultation with workers on hazard identification and risk management.*
- *Most participants were not aware of information and programs provided by the work health and safety regulator.*

4.1 Obtaining work health and safety information

Few participants were seeking information, assistance, guidance or mentoring from anyone outside their own organisation or even knew how to access such support. Participants emphasised that there was little time for reviewing websites or searching for information to update risk management strategies particularly if they believed their current situation was working or they were unaware that there were alternative strategies.

Instead employers reported complying with industry regulations that they were aware of but relied on being notified of updates and regulatory changes through email, regulator visits or other methods rather than actively seeking this information. Small operators were less likely to seek information and most had never even considered visiting a regulator website for help in designing their safety program let alone actually made a search. If a work health and safety issue occurred, the first thought would be to search the internet or contact a supplier or a consultant.

While most participants initially reported they did not have a critical need for more information they often shared later in the interviews the areas on which they would like more information. However they did not see there was a high potential for additional precautions or increased standards. The majority were unaware of what else they could be or should be doing or where to source the work health and safety information that might be of benefit to them. However, when probed further many participants identified that they would value the following:

- extra information about common risks

- step by step guidelines for managing common risks, and
- information about incidents that occur in their industry so that they can make sure their work place has the required safety measures in place.

4.1.1 Training and sharing of information on work health and safety

Many in the sector were trained years ago and have not updated their training since. Few employers were aware of the training opportunities that the regulators provided in work health and safety nor had many undertaken any training in this area. As a result, few businesses in the industry obtained new information on work health and safety through formal training.

SMEs in the structural metal product manufacturing industry employed people on the basis that they had an appropriate qualification prior to employment or provided them with on the job training. Some companies required qualified tradesmen while others employed labourers rather than tradesmen depending on the type of work required. Employers advised employees of safety procedures during an induction when they commenced employment. All employers believed their employees had the appropriate licences for the job they were required to.

Most employers provided on the job work health and safety training for new employees who already held relevant work licences. It was claimed that these workers rarely attended formal work health and safety training due to the time and cost associated with doing so. However, one medium sized enterprise reported that all employees in his workplace receive work health and safety training through a provider of high impact, dramatic training products across many industries. Several other medium sized enterprises also had formal training before the employee started on the floor.

Most had little interaction with other SMEs in the industry and this sector did not appear to have a close competitive cluster. As was found in the recruitment phase of this study most businesses were not co-located and reported little industry connectivity that allowed for learning from others. Essentially most SMEs operate independently from others like themselves. This meant that practical safety learnings could not be shared quickly across the industry. Some employers and safety managers copied work health and safety information from larger companies with whom they deal with or have previously worked for—assuming that larger companies have the right work health and safety procedures in place.

4.1.2 Industry associations and newsletters

Industry associations are not significant within the structural metal product manufacturing industry with few employers reporting being registered with an industry association. Some were not sure if they were registered or not. The industry is so diverse that the industry associations were deemed to be too broad to be of use to many of the employers. That is the structural metal product industry is very specialised and the associations are not specific to their industry.

Some employers were registered members of the Australian Industry Group. However the website was deemed busy and confusing and not specific to their industry. Other associations that employers were members of were the Housing Industry Association, the Australian Window Association and SAI Global. One participant commented that the Master Builders Association might be the closest aligned to the industry but there is a wide gap between what the association covers and the specific requirements of the industry.

Those that reported receiving information and updates about work health and safety were more likely to be members of industry groups or subscribers to standards, advisory or insurance services. Some employers and safety managers reported receiving occasional

information from the regulator which they read. Some kept this information and some disseminated them through lunch rooms. Some also indicated receiving email updates advising them of regulatory changes or a link to changes in standards. However, this was not across the industry and many did not receive any electronic information. Participants reported that they received this information on the basis of signing up or registering with an association or to a website, requiring employers to be aware of this process. The Australian Window Association was mentioned by several participants as distributing regular newsletters and notifying members when a major incident occurred in the industry.

4.2 Awareness of specific work health and safety programs

In the interviews participants were asked about their awareness and use of programs and information provided by regulators. An overview of these sources of support is provided in Box 4.

Most participants reported very limited knowledge if any of the specific work health and safety programs and materials that the regulators in Victoria and New South Wales provide. In Victoria some had at least visited the website for one reason or another, made a call to address specific queries or had copies of relevant publications obtained from websites, consultants or during regulator visits by inspectors. These participants tended to be from larger enterprises, those who have primary health and safety role or were one of the very few with a proactive nature for health and safety and used these resources as part of their quality control. There was very limited to no awareness of the programs and services offered by the regulator beyond the website and phone enquiry service.

In Victoria there was virtually no awareness among participants of:

- the assistance offered by WorkSafe Victoria for small businesses
- the free three-hour consultancy provided by an independent consultant, or
- the certificate of recognition.

Only one enterprise had used the free three-hour consultancy and they found the benefits to be limited. They felt the consultant provided less information than they would typically receive at regulator visits. They were also disappointed that there was no follow-up from the regulator to see how the visit went, if they had implemented anything or if there were issues.

However, there was a little more exposure to the guidelines and information for small businesses available on the regulator's website such as the 'Small business safety assessment tool', '12 ways to make small business safer', and 'Manual handling risk management in small business'. Many had not seen any of the material and the remainder had only seen some of the material. They may have received this information but had no recollection of it, put it aside or disposed of it due to it not grabbing their attention or not being a priority. Those that had seen some items indicated they were probably filed away 'somewhere'. When reviewing the material a number commented on how the material could be quite useful to them.

Box 4: Programs and information provided by work health and safety regulators

Programs in Victoria:

- *Three-hour consultancy provided by an independent consultant—for businesses with less than 20 full-time employees or turnover of \$2 million.*
- *Certificate of recognition—when a small business accesses the consultancy program and implements the safety action plan provided they can request recognition for their safety achievement. The safety action plan is expected to be comprehensive and not just address one or two issues raised by an inspector.*

Information on Victorian website:

- *Small business safety assessment tool*
- *12 ways to make small business safer, and*
- *Manual handling risk management in small business.*

Specific Victorian information and tools for manufacturing workplaces:

- *A guide to safety in the fabricated metal industry*
- *Injury hotspots in metal manufacturing—provides examples of safety solutions and links to relevant guidance materials, and*
- *Interactive tool for metal fabrication to improve health and safety in the industry.*

Programs in NSW for small businesses:

- *Assistance visits by business advisory officers—the business advisory officers give one-on-one advice on workplace safety, workers compensation and injury management to businesses with less than 20 full time staff. This can include a visit and will assist in creating a safety action plan.*
- *Small business rebate program—the program provides rebates of up to \$500 back to small business owners who purchase and install safety equipment in the workplace to address a safety problem. The rebate is provided after the solution has been purchased or implemented.*
- *Mentor program—the program pairs a small business mentee with an industry expert from a large business mentor.*

Information on website in NSW:

- *Small business safety checklist, and*
- *Serious about safe business kit.*

Guidelines and tools in NSW for manufacturing workplaces:

- *A guide to safety in the fabricated metal industry, and*
- *Machinery and equipment safety.*

The situation was similar in New South Wales, with no awareness of the following:

- any work health and safety programs and assistance offered by the regulator for small businesses such as the assistance visits by business advisory officers, small business rebate program, mentor program, or
- guidelines and information for small businesses on the regulator's website such as the 'Small business safety checklist' or 'Serious about safe business kit'.

No enterprises interviewed in New South Wales had accessed specific guidelines and tools provided by the regulator for manufacturing workplaces such as 'A guide to safety in the fabricated metal industry', 'Machinery and equipment safety', 'Toolbox talk record and risk

assessment record'. After the interviews many expressed an interest in these information products and the moderators encouraged them to download them from the links provided.

Participants in NSW were interested in the 'Small business rebate program' and the 'Mentor program' when they had identified a work health and safety need within their workplace. Medium enterprises were more likely to be supportive of the rebate because they were looking to upgrade or invest however they are not eligible for this program. Those who believed they were appropriately managing the risks in their workplace were less likely to be interested in the programs.

4.3 Communication in the workplace on work health and safety

The methods used for communicating work health and safety practices varied across SMEs in the structural metal product manufacturing industry. The methods of communication were influenced by the individual manager or owner and the sources of work health and safety information referred to. Communication methods reported included tool box meetings, formal safety committee meetings, informal channels, inductions and safe work method statements—each of these methods are described in further detail in the sections below. SMEs indicated that communication varied depending on whether the work was completed at the factory or workshop or onsite. It should be noted that the smaller the business the less likely that formalised processes, such as regular meetings, were used to facilitate communication.

4.3.1 Meetings

Workplace meetings that incorporated safety discussions were the most common form of regular safety communication. The frequency of discussions differed between organisations with some on a daily basis while others were on a needs basis. In many cases safety issues were discussed after an incident occurred rather than focussing on preventative practices—there was an assumption that the employee was trained and should know the job.

Some companies held a daily 'pre start' meeting every morning to discuss the day's tasks and associated safety issues. Others held 'tool box meetings' on a daily, weekly or monthly basis in which workers were asked to identify safety concerns. 'Take five meetings' where safe work standards were discussed were also something that occurred in the industry. Several managers also mentioned holding specific safety meetings on a monthly to six monthly basis. There were some SMEs in the industry that had no regular meetings in place but would call impromptu meetings when required to discuss near misses, injuries or fatalities that occurred within the industry. Larger workplaces were more likely to have a more formal structure for communicating safety like regular tool box meetings.

Most employers believed that given its importance work health and safety could not be discussed too frequently. Several participants however, reported instances of workers becoming complacent when safety was discussed weekly. For example one manager reported that at one stage he was holding weekly safety meetings and ...

the workers got so blasé and started ignoring what was being said and saying that it was boring. At first they found it interesting but then it became pointless—one hour after the meeting they'd be doing something they'd been told not to do in the meeting. (Medium enterprise manager)

4.3.2 Informal communication

Smaller businesses were more likely to report communicating safety information on an informal one-on-one basis rather than holding regular meetings. For example they described speaking about safety while planning each job and communicating safety concerns or issues to each individual. On the spot discussions might occur if a safety issue is noticed. For

example if someone tried to lift something that was deemed too heavy an on the spot discussion might occur to devise an alternate lifting method or suggest the assistance of additional men be sought.

4.3.3 Consulting workers in identifying hazards and selecting risk control measures

Others also reported having an 'open door policy' where employees were encouraged to advise management if they noticed a risk. Alternatively if workers were unable to get in touch with management they were encouraged to write safety concerns on a white board kept on the floor and the safety officer would review this daily. Very few had formal structures for formal consultation with workers on hazard identification and development of risk controls. In fact only a couple of medium sized enterprises had formal safety committees. More frequently there were forms or reporting procedures for the recording of risks identified and suggested risk controls. However, this was still not universal.

4.3.4 Induction

All businesses interviewed had some level of induction at which safety clothing such as boots, gloves, glasses, hearing protection and protective vests were issued and safety procedures and standards were discussed. Induction was seen as a critical issue and was reported to be most effective when implemented by the owner. Most but not all claimed they held some work health and safety discussions at the time of induction which was mainly to check tickets and licences to ensure they were up to date. Employers ensured workers held the tickets they claimed which then led to an assumption that the employee had the knowledge and knew what to do regarding work health and safety. One participant expressed dismay at the ticket qualification system and was concerned that workers were taught theory when they needed practical training:

There would be 2 days of theory training and 5 minutes of practical driving time. The testing requirements are not focussed enough on practical application. (Medium enterprise safety manager)

The smaller enterprises tended to use more informal on the job induction processes while the larger medium enterprises were more likely to have formal induction. For example, in smaller businesses inductions tended to involve the employer or senior worker showing the new worker how to safely use each machine while the remaining issues remained to other workers to show the new worker 'the ropes'.

The better performing enterprises had detailed induction processes, used graduated work procedures and used a dedicated mentor until the competency and safety consciousness of the new worker were confirmed. Concern was raised however that the mentor system could fail because it only worked until the mentor had to step away even momentarily due to their own work commitments. A very small number had specific internal safety training involving viewing videos and completing tests. One employer stated that he would like to be able to provide more internal training but he is unable to afford it. Specifically this employer would like to buy the safety DVD on hearing but it cost \$400.

4.3.5 Safe work method statements

A large number of participants described the use of safe work method statements as an ongoing method of communicating safety practices to employees. The use of safe work method statements were viewed as an approach to ensure that employees undertake tasks safely. In smaller workplaces safe work method statements tended to be developed for major tasks only.

4.3.6 Onsite and factory or workshop differences

Differences were noted between communications that occurred onsite and in the factory or workshop with the methods described above more common when working in the factory or workshop. Participants noted that before workers signed on to a work site they needed to sign a safe work method statement which they agreed to put into place for that particular site. As part of this they often needed to participate in an induction session which discussed safety procedures for that particular site or job and was signed off by both by the employer and site manager with the understanding the employee was aware of what was required. One employer felt that when working onsite that these safety inductions could become repetitive:

I find that when we go to onsite induction meetings they go over the same basic information that we all know very well. We listen to the same spiel every time, therefore people aren't listening. (Small enterprise employer)

Overall, communication and consultation onsite was greatly dictated by site manager/safety officer/builder/foreman who might be inconsistent in their approach to health and safety and might lack experience.

A key communication issue highlighted was language barriers and work safety cultural barriers of workers from culturally and linguistically diverse backgrounds and lack of accommodation for those barriers. It was often described that induction meetings and safety talks were in English with often no translator present.

5 Findings: Risk management practices in the workplace

Box 5: Section 5 highlights

- Commonly reported methods of hazard identification by SMEs were while 'walking around the floor' and relying on 'experience and common sense'.
- Many businesses in this industry not only worked in the factory or workshop but also worked onsite. Participants reported that onsite risk management practices were of a particular concern as they were less able to control the risks when onsite.
- Hazards that were considered major hazards for factory or workshop setting included falling from heights, being run over by a forklift, having something fall on them (e.g. from crane or hoist), electrocution, and getting hands caught in machinery.
- Common hazards when working onsite were being run over by a train, crane or truck, pedestrians accessing insecure work sites, falls from heights off scaffolds and ladders, clutter and insufficient space.
- Participants reported using safety practices like standard operating procedures, traffic management, machine, equipment and process modernisation, scheduled machinery maintenance and procedures for reporting faults and the need for repairs.
- Most small businesses had basic risk control measures for specific hazards in place with a reliance on PPE and other lower order measures. There were a few better performers but these tended to be medium sized enterprises. Most participants indicated a lack of time and resources for making improvements in work health and safety.

5.1 Hazard identification

SMEs in the structural metal product manufacturing industry rarely reported a systematic process for identifying hazards. Instead it was generally reported that hazards would be identified while 'walking around the floor' and relying on 'experience and common sense'. For example one employer stated:

I'll walk around the floor just looking for something that might go wrong. I always am there if they are lifting anything, I know this is where things go wrong. I'll always be there when something big is being lifted by a crane. (Small enterprise employer)

It was rare for there to be reports of regular, highly visible, systematic safety walk using an objectively prepared safety checklist. Larger companies were more likely to have formal practices in place to document and regularly assess risks. They also had forums or committees for identified risks to be assessed and prioritised and to encourage reporting and discussion in the work team.

Small enterprises with less than 20 employees tended to act by focusing on the hazards which they viewed to be high risk and most relevant to their workplaces. They would informally discuss safety when they were planning each job to make sure all were aware of the risks that would be involved both onsite and in the factory or workshop. The lack of formal processes stemmed from employers not being aware of such processes or questioning their relevance to small businesses.

Most employers believed they were in a strong position to control the risks inherent in the industry whether an informal approach or a more rigorous work health and safety system was employed. However most were realistic about the dangers in the industry and believed that despite their best efforts injury and illness might still occur.

5.2 Onsite versus in the factory or workshop

There were differences between risk management practices onsite and in the factory or workshop. Onsite risk management practices were viewed as a big concern for employers because they were less able to control the risks and to determine what condition the site will be in. In the workshop or warehouse the responsibility for work health and safety rests with the employer but when onsite the responsibility rests with the site manager or foreman. Consequently the employer's policies and safety measures could be overturned when someone else was in charge. Some employers explained that in these situations they felt like they were putting their workers' safety into the hands of someone else. One employer was concerned about legal costs associated with incidents. It was felt that if site procedures were signed off by the site manager any incident would then become the site manager's responsibility.

Most participants reported experiencing induction processes when working on commercial sites but this rarely occurred at residential sites. The better performing enterprises have experienced people making risk assessments on a work site before work was commenced. These better performers also provided workers with easy access to managers and supervisors for advice or to negotiate with the site managers if uncertainty existed or there were safety issues. Some had noticed other sectors starting to use iPads and other smart technology to take photos or make assessments and send them back to the office for confirmation or guidance.

Some employers felt the onsite safety requirements were more stringent, especially when they shared the site with other larger companies who had bigger safety systems in place. These safety measures were often outside of the control of the employer as they had to adhere to the safety requirements of the larger and more powerful organisation that was in charge of the collaborative work site.

However, working onsite was still perceived to be more dangerous due to hazards that could be difficult to identify whereas the factory or workshop was viewed as being a more controlled environment with less chance of serious injury because controls could be more easily put in place. All participants reported that additional safety hazards existed when working away from the factory to deliver, fit or install products onsite. Additional safety hazards identified onsite included working in unfamiliar territory that was full of clutter (e.g. tools, materials, waste products, other workers and sometimes passers-by), limited space, and lack of access to fixed cranes which were present in most factories and workshops. Participants explained that these onsite situations were controlled by the site manager or foreman who might have different work practices and this could cause confusion. It was believed that working onsite required highly experienced workers who could assess the potential dangers and take action to make the site safe.

Since a significant amount of work in this industry was undertaken in unfamiliar work sites employers and safety officers interviewed noted that other external influences could be important. Most notably it was the onsite manager and health and safety officer, builder or foreman who set the risk mindset because the workers were under their control when working on these sites. There was a sense of mistrust towards these safety officers by many employers due to inconsistency in the application of work health and safety procedures from day to day. They explained that they were reluctant to rock the boat when inconsistencies occurred due to concern that it would jeopardise their chances of getting another contract. One participant elaborated on the frustration of working with onsite safety officers by saying:

They seem to pick on the most mundane of issues yet miss the important ones. It makes you think they don't know what they are doing... instead just administering a silly rule book. In fact I know they are not experienced at all. The way I handle them

is when they tell me to do something differently I just hand the welder to them and say here you show me how it should be done. They never know and they just go away and let me get on with my job. (Small enterprise employer)

Another participant discussed poor access to an excavation onsite where their company was required to carry out installation work. The research participant was a safety manager who conveyed the following concerns about the risks faced by his workers:

The Principal Contractor is supposed to supply safe access to all work areas onsite. The directive from the Principal Contractor's site Foreman was 'just get in and do it'. I find, on a regular basis, that the big builders preach the safety message but in practice, their operational people are more concerned about program and costs. This attitude, in turn, influences our employees, who feel pressured to undertake the risks. (Medium enterprise manager)

5.3 Common hazards in the industry

There were clear differences in the hazards and risks in the factory or workshop environment and onsite where products were delivered, fitted or installed. Tables 2 and 3 provide a list of common hazards reported by participants for factory or workshop setting and onsite. Safety problems and hazards were also divided between 'major' safety problems—those that had the potential to kill and or permanently disable workers and what participants considered to be 'minor' safety problems.

As seen in Table 2, the major safety problems and concerns for structural metal manufacturing businesses were those that can lead to occupational injury, musculoskeletal problems or death. Common hazards reported were falls from heights, being hit by moving or falling objects, manual handling and hazards associated with the use of machinery and working on uneven surfaces. These hazards generally correspond with common mechanisms of injury and disease reported in workers' compensation claims for this particular industry (Safe Work Australia 2012b, 2013). There was also recognition of other hazards such as chemicals and noise.

Table 2: Common hazards in factory/workshop identified by participants

Major safety problems	Minor safety problems
Falling from heights	Cuts from small pieces of glass left on tables in workshops
Being run over by a fork lift	Burns from welders
Having something fall on them from a hoist or crane if it is not secured properly or being hit by an object being moved by a crane	Minor burns
Electrocution from electrical equipment	Minor scratches
Burns from welding equipment	Slips and trips
Being crushed by shifting materials not secured or stored properly	Constant and intermittent noise from loud machinery (it isn't noticeable for years)
Glass breaking by shifting materials not secured or stored properly	Flashes from arc welders (resulting in sore eyes)
Chemicals leaking because they weren't stored properly	Grit, sparks, from grinders getting into eyes (even around safety goggles)
Having a finger or hand crushed in machinery or by heavy objects	Cluttered and in limited spaces
Back problems through lifting heavy items incorrectly	
Cuts from sharp materials	
Dropping heavy items onto people	
Hands caught in machinery	
Machinery breaking and causing injury	

As mentioned in the previous section SMEs recognised that there might be different types of hazards when working onsite (see Table 3). Participants reported hazards such as being run over by moving objects (e.g. a train while working on train tracks), pedestrians accessing the site, scaffolding issues and limited work space as major hazards onsite. Common minor safety problems tended to relate to traffic issues and hazards associated with working on uneven grounds onsite.

Table 3: Common hazards onsite identified by participants

Major safety problems	Minor safety problems
Being run over by a train, crane or truck if there is no exclusion zones or workers are walking within the exclusion zone Materials dropping from a crane Pedestrians accessing insecure work sites Falling from heights off scaffolds because they weren't put up correctly, boards moved or ties cut or scaffolds not tied properly Falling from ladders Cuts from sharp materials Lifting and moving heavy materials Clutter and insufficient space to accommodate all tradespeople onsite Working in public places like hotels with the public wanting to help Starting a fire because of dry grass or other inflammable materials Being crushed by moving excavators, forklifts or other machinery Working in water and arc welding Working at height in cherry pickers when winds exceed 25 kph Rushing around to get jobs done and not being conscious of the work of others around	Trip hazards (from uneven ground on a building site) Brushing against a sheet of glass Lifting injuries from uneven ground Having to carry heavy objects into its place on uneven, cluttered and in limited spaces

5.4 Safety practices

Table 4 provides a summary of the types of safety practices being undertaken in structural metal product manufacturing businesses. Those that are commonly used are presented in a separate column from those that are used by better performers. These better performers tend to be few and are medium sized businesses.

All employers and safety officers actively encouraged the wearing of PPE. In addition to PPE the use of substitution, elimination and better design were described as elements of risk management by a number of respondents. For example many employers explained that they use trollies, forklifts or cranes for lifting. Medium sized businesses were more likely to describe making modifications to machines to improve their design and using machines that automate tasks, for example machines that automatically thread metal sheets.

Table 4: Safety practices commonly used and those used by better performers

Safety practice	Commonly used	Used by better performers
Promoting and demanding PPE use	This is a minimum. Most supply basic PPE items like gloves, goggles or protective glasses and plugs or equivalent. Some would not necessarily provide replacements for lost PPE.	The better performing enterprises make PPE readily available and rigidly police PPE use – although all reported issues with employee non-compliance
Use of standard operating procedures, safe work methods statements, and a comprehensive program of risk identification, documenting, monitoring and auditing	Most used standard operating procedures and safe work method statements at some level— although there were variation in how formal and rigidly they were applied and used. Smaller enterprises and especially struggling enterprises were more likely to only use these for major activities and relied on more informal methods for other activities.	Better performing enterprises had in place a comprehensive system and documentation and training for safe work methods statements. They were generally more likely to be the larger medium sized enterprises with larger factories or workshops and/or more dealings with onsite work.
Traffic management	All would describe having traffic control at some level but many would not have documented traffic hazard and management plans. Most had markings of traffic zones and no-go zones.	Better performing enterprises had formal traffic hazard identification and management planning. There were a very small number that had traffic management systems involving boom gates, sensors to prevent access while there was traffic, sound warnings and strict procedures. One participant interviewed has spent a great deal of time and money implementing a traffic management plan which includes fixed barriers, expanding barriers, both manual and pneumatic boom gates (Figure 2 and 3) and mirrors on all main doors (Figure 4). They have also installed proximity detection systems on their fork lifts so staff who have to go into designated fork lift area have to wear a device which activates an alarm on the fork lifts should they get within three metres of it. Where there is a tight space they use a fully multidirectional lift truck (see Figure 5). The two main fork lifts have speed restrictors and are set at 8km or medium walking pace—everyone said this would affect productivity but the employer reported that in reality it does not.

Safety practice	Commonly used	Used by better performers
Risk identification, documenting, monitoring and auditing	All had at least some form of risk identification and monitoring but many relied on informal systems. This particularly applied to the smaller enterprises. Many of these also relied on regulator visits as a form of audit.	Many but not all medium sized enterprises have formal risk identification documentation. They also tend to have safety checking procedures, checklists, recoding systems, regular and ad hoc walk throughs or spot checks, formal disciplinary systems and greater use of internal or independent auditing.
Engaging employees in work health and safety and reporting and risk assessment	At a minimum all enterprises claimed that communication with employees on hazards and safety practices occurred at an informal level on the job relating to the specific tasks at hand. They encouraged staff to report safety issues. Smaller enterprises tended to use the informal approach.	Many but not all larger medium sized enterprises are more likely to have formal channels for engaging staff through their regular meetings, formal reporting systems and training. Only a small number have formal health and safety committees and the frequency of these meetings varied from monthly to twice a year. All reported difficulty in getting voluntary staff involvement.
Machine, equipment and process modernisation	At a minimum all tend to use equipment with basic safety features such as guards as they tend to be built in. Many thought that these built in safety features were the extent of the necessary and possible safety controls. Most have done some form of substitution in terms of trolleys and lifting equipment. Few (especially smaller enterprises) had considered exclusion or new processes unless there was a productivity, process or production reason.	The better performing enterprises have or are introducing greater automation in their processes where people's interaction with the risks are removed or minimized. They are also more likely to have higher order safety features in place such as easy to access and use of lifting equipment, trolleys, air cushioned tables, laser barriers, barriers, blankets, no go and zoned areas and sophisticated traffic controls. In general they were medium enterprises in highly competitive international markets.
Induction and training	All claim to have some level of at least informal induction and a level of initial supervision either by another experienced worker or manager. Most use buddy systems which can sometimes fail and rely heavily on safety training people have received through their trade education, past experience and on-the-job training.	The better performing enterprises have detailed induction processes, graduated work processes, dedicated mentors until competency and safety consciousness are confirmed. A very small number have specific internal safety training with formal documentation and initial off-job training component.
Onsite practices and controls	There is a dependency on the safety practices and controls operating at a site and most have experienced induction processes when working on commercial sites. Most reported that virtually no induction occurred at residential sites.	The better performing enterprises have experienced people making risk assessments on a work site before work is commenced. They also provide workers with easy contact to managers and supervisors for advice or for them to negotiate with the site managers.

Safety practice	Commonly used	Used by better performers
Independent assessments	Many rely simply on their own assessments and visits from the regulator to update knowledge and risk assessments.	The better enterprises (usually the larger medium sized enterprises) not only do internal and regular assessments, walk throughs and audits but will also obtain independent assessments or audits.
Maintenance, faults and repairs	Many reported having a program or process of maintenance of equipment. Some were supported by reminder systems from their suppliers and servicers.	The better performing enterprises had strict procedures for decommissioning and reporting faulty equipment. Many reported issues with employees failing to report faulty equipment and leaving them accessible to others.

Figure 2: Manual boom gate



Figure 3: Pneumatic boom gate



Figure 4: Mirrors on all main doors



Figure 5: Fully multidirectional lift truck



5.4.1 Examples of specific risk control measures for common hazards and activities

During the interviews, participants were also asked about risk control measures for specific hazards in addition to their general risk management practices. Their responses are summarised below. The published guide, 'A guide to safety and the metal fabrication industry', was used as the basis for organising risk control measures that were reported by participants for common hazards and activities in structural metal product manufacturing (NSW WorkCover & WorkSafe Victoria 2007). This guide was chosen because it was developed for use in both states and the hazards encountered in the metal fabrication industry were generally similar to those encountered in the structural metal product manufacturing industry.

Table 5 provides a list of control measures for manual handling hazards reported by participants. The measures in green (dark shading) were commonly used measures and measures in yellow (light shading) were measures that were sometimes used. The first column of the table indicated whether these control measures were used in factories or workshops, onsite or at both locations. The use of vehicles and lifting equipment was reported both at factories or workshop and onsite. Some businesses used forklift or bridge and gantry cranes to transport materials around the workshop. In relation to manual handling, many participants reported risk control measures to work safely with glass like promoting the use of PPE or using laminated glass sheets so that if they broke workers would not be exposed to shattered pieces of glass. Participants also reported that they designed work stations to avoid awkward postures and bending.

Table 5: Reported manual handling risks and risk controls by frequency of use and location

		Risk control that is commonly used	Risk control that is sometimes used
Location	Activity	Controls	
Factory or workshop and onsite	Unloading raw materials		Use purpose built vehicles for small loads, ensuring the vehicle operator is trained in its safe use.
			Use a forklift with correct attachments for the task and load for bundled loads.
			Use a suitable mobile or overhead crane for bundled loads.
			Lifting equipment that is easy to access and use.
Factory or workshop	Transport of heavy materials on the shop floor		Use forklifts for transporting materials.
			Use bridge and gantry cranes with remote control or pendant control that can be operated from the best working zone, ensuring all equipment is tested and maintained.
			Ensure loads are secure prior to moving them to avoid people being crushed if the load moves or falls.
			Have safety procedures in place to ensure people are clear of objects being moved by cranes.
			Have limits for the weight and size of loads that can be manually lifted.
			Lifting equipment and trolleys are easy to access and use.
			Provide staff with feedback on the techniques they use for transporting materials.
Factory or workshop	Transport of light materials on the shop floor		Use trolleys to transport raw materials and manufactured products throughout the production process.
			Use mechanical aids like. overhead cranes, vacuum lifters and magnetic lifters to reduce the need for materials to be moved manually.
			Use dollies to move product to dispatch area.
			Have limits for the weight and size of loads that can be manually lifted.
			Provide staff with feedback on the techniques they use for transporting materials.
			Lifting equipment and trolleys are easy to access and use.
Factory or workshop and onsite	Transport of sharp materials like glass which may result in cuts		Identify materials like glass sheets that may fracture or shatter.
			Regularly check that personal protective equipment (PPE) is in a good condition and have extra available. All participants promoted the use of PPE but still reported issues with non-compliance.
			Ensure glass sheets are laminated so that if they fracture they will not shatter over the top of someone.
			Lifting equipment and trolleys are easy to access and use.
Factory or workshop	Manufacturing at workstations		Use well designed jigs, stands and other aids to hold items in the correct position so that work can be conducted within the best working zone.
			Design workstations so that materials are reachable without

		Risk control that is commonly used	Risk control that is sometimes used
Location	Activity	Controls	
		twisting the back, working above the shoulder or overreaching.	
		Automate the task—the better performing enterprises had and were introducing greater automation in their processes to remove or minimise people’s interaction with hazards and had or were introducing new high safety machines, equipment and production lines.	
		Use air cushioned tables and platforms	
Factory/ workshop and onsite	Loading and handling finished products	Raise load using hydraulic tailgate lifter.	
		Use forklifts.	
		Loading dock at truck deck height allows mechanical aids to load onto vehicles.	
		Use cranes.	
Factory or workshop	Packing stillages(1)	Ensure appropriate maintenance procedures are implemented to tag, remove from use and repair damaged stillage.	
		Use manually height-adjustable pallet or stillage lifters for stillage and components to eliminate bending to floor level to pick up components and pack components into stillage.	

Note: (1) This activity was reported by some participants

Participants also reported procedures and risk controls for the use of hand tools—particularly for welding and angle grinding. Most reported that PPE was available for use when welding and angle grinding and that PPE was regularly checked and maintained. The use of screens to protect other workers nearby was also commonly reported (Table 6).

Table 6: Reported hand tool usage risks and risk controls by frequency of use and location

		Risk control that is commonly used	Risk control that is sometimes used
Location	Activities	Controls	
Factory or workshop and onsite	Angle grinding		Improve the welding process to minimise grinding.
			Assess whether grinding is required at all.
			Ensure work pieces/objects are secure.
			Use well maintained screens to separate the task of grinding from other workers.
			Provide goggles or safety glasses and face shields.
			Grinder fitted with braking system to rapidly stop the wheel.
			Regularly check that PPE is in a good condition and have extra available.
Factory or workshop and onsite	Welding		Use a standard respirator – negative pressure.
			Ensure the area is well ventilated, portable fans can be used to disperse and dilute fumes in a workplace that has a large work area with ceiling extraction.
			Use a flip visor.
			Use well maintained screens to separate the task of welding from other workers.
			Standard operating procedures to approach the task of welding in a safe manner.
			Cylinders near, but not within, work area and secured.
			Regularly check that PPE is in a good condition and have extra available.
			Faulty tool handling systems, management, maintenance and replacement.
			Fixed or portable extraction system.
			Positive air powered respirator.
			Raise the work task by using an adjustable workstation for the task.
			Have a permit system (if applicable) such as a hot work permit to ensure work is done safely.
			Use an adjustable jig rotator or fixture to move and align the part.
	Cylinders secured to prevent tip over and located away from work area in a safe position.		

Guards were a common control measure used for safe operation of machinery (see Table 7). Guards were used to prevent limbs being crushed by machinery. Common guards in businesses were fixed guards that provided physical barriers and guards with no moving parts that prevented access to the dangerous parts of the machinery while the machine was in operation. Interlocked guards were used in some workplaces. Many participants also reported that they serviced machinery regularly.

Table 7: Machinery and guarding risks and risk controls by frequency of use and location

		Risk control that is commonly used	Risk control that is sometimes used
Location	Activities	Controls	
Factory or workshop and onsite	Operating machinery		Guards, automated feed, processing and extrusion.
			Automated shut downs.
			Lasers or sensors.
Factory or workshop and onsite	Machinery breaking down (1)		Service equipment regularly.
			Have a program or process for maintaining equipment. Some were supported by reminder systems from their suppliers and servicers. The better performing enterprises had strict procedures for decommissioning and reporting faulty equipment. Many reported issues with employees failing to report faulty equipment and leaving them accessible to others.
			Maintain a log of old machinery.
			Buy new machinery.
			Tag all machinery.

Note: (1) This was reported by some participants

SMEs also reported specific risk control measures in place for physical hazards that were prevalent in their industry. The use of administrative measures or PPE was common for noise exposures (Table 8). However, higher order control measures for noise such as isolation or buying quieter machinery were reported by only some but not all participants. There were also control measures in place to ensure that there was adequate ventilation and that the workplace was not too hot or too cold.

Table 8: Environmental risks and risk controls by frequency of use and location

		Risk control that is commonly used	Risk control that is sometimes used
Location	Risks	Controls	
Common			
Factory or workshop and onsite	Noise		Administrative measures.
			Hearing protectors.
			Regularly check that PPE is in a good condition and have extra available.
			Have ear protection hanging on each machine so that it has to be moved to use the machine.
			Have disposable ear plugs which are less cumbersome than ear muffs and can be thrown away when they become dirty – workers are less likely to wear their ear muffs if they are dirty.
			Elimination of noise sources.
			Substitution with quieter plant or processes, or use of engineering measures.
Factory or workshop and onsite	Temperature of workplace		Air conditioning, air circulation fans or good natural ventilation.
			Insulation of room and wall insulation or shielding of sources of heat and external ducting of hot exhausts.
			Suitable protective clothing with ventilation, sunburn creams and skin protector, air-conditioned vehicles and rest areas.
Some			
Onsite	Working at heights resulting in falls		Ensure scaffolding is put up correctly, ties are secure, that the boards cannot move and that ties are not cut.
			Do not work at heights when it is windy, e.g. winds exceed 25kph.
			Restrictions as to how high a worker can climb.
Factory or workshop and onsite	Lighting		Ensure overhead and fixed lighting is at appropriate levels and is appropriately maintained and replaced.
			Make full use of natural light by installing windows and skylights.
			Use task lighting with a flexible arm to enable light to be directed to the spot where the light is needed.
Onsite	Working in small spaces with other tradespeople		Take the time to meet the other workers onsite to find out what tasks will be occurring that day so that potential clashes over space can be identified as well as potential hazards.
Onsite	Fires		Clear dry grass to avoid starting a fire. If unavoidable ensure fire fighters are available.
			Check on weather conditions because many activities in the structural metal product manufacturing industry have the potential to start fires.

5.5 Reporting of accidents and near misses

SMEs in the structural metal product manufacturing industry tend to have a reporting process in place for incidents that involved seeking medical assistance as well as completing the appropriate paper work and reporting procedures. If it was serious then the regulator would be notified. However employers and safety officers were reluctant to contact the regulator if they deemed the incident minor, like a small cut, because they knew it would affect their workers' compensation premiums.

Most participants reported that they had experienced near misses and despite safety initiatives generally put them down to *'just one of those things that couldn't have been avoided'*. Near misses were not generally recorded although a verbal communication might occur, which included emphasising risk management strategies to the employee/s involved.

The mindset conveyed by employers and safety officers was that if no one was hurt or it was a minor injury the cost of time in paper work and the cost of increased premiums were a deterrent. Only a couple of enterprises strongly encouraged the reporting of near misses with one reporting that such a culture had been developed that even if the person involved did not report the near miss it was highly likely that a bystander would. Another employer said it had taken him a while to develop such a culture and it required him to be on the floor and pick up unsafe practices and discuss these with the workers concerned.

6 Findings: Bridge and gantry cranes

Box 6: Section 6 highlights

- *Participants reported that the use of cranes posed a significant work health and safety risk.*
- *Most participants were unsure which type of bridge and gantry crane they have.*
- *There was a lack of understanding of different types of cranes and their links to licensing requirements. Most did not know the meaning of three powered operations, a key factor in determining whether a particular type of license is required.*

6.1 Overview

Cranes are an integral part of the structural metal product manufacturing industry and the movement of heavy metal objects is inherently risky. Gantry cranes, bridge cranes and overhead cranes are the types of cranes used in many of the factories visited. They are used constantly to move objects by a hoist which is fitted in a hoist trolley and can move horizontally on a rail or pair of rails fitted under a beam.

Under the model Work Health and Safety (WHS) Regulations which have been adopted by New South Wales the operation of bridge and gantry cranes requires a high risk license if:

- it is controlled from a permanent cabin or control station on the crane, or
- if it is remotely controlled and has more than three powered operations, including the application of load estimation and slinging techniques to move a load.

Victoria has not adopted these model WHS Regulations but the requirements are essentially the same in Victorian regulations. The only difference is that the model WHS Regulations contain an exception (Part 4.5, Regulation 82(2) to 82(4)) to the high risk licensing requirements which is not in the Victorian regulations. For example this exception states that no high risk license is required if work is carried out solely for the purpose of installation or servicing of the plant.

There is an additional requirement for dogging or rigging licences when it is necessary for the operator to exercise judgment in the selection of slings, the weight of the load or its centre of gravity, or where there is a need to direct the bridge and gantry crane.

6.2 Knowledge and awareness of bridge and gantry crane licensing requirements

SMEs in the structural metal product manufacturing industry cited the use of cranes as posing a significant work health and safety risk. However, few knew of the licencing requirements to operate them. Most participants understood the requirements once it was explained but few understood or knew of the detailed crane licencing requirements unprompted.

This was true of both non-users and most users of bridge and gantry cranes. It was also common that participants were unsure which specific type of crane their workplace used on the factory site—let alone when cranes were hired for specific tasks onsite—with particular confusion between hoists and cranes and the type of licences required.

The lack of knowledge was driven by not understanding the definitions of the different types of cranes. Many participants were unsure what three powered operations meant. They knew what type of crane they had but did not know exactly how their crane fitted into the overall types of cranes and the links to licencing requirements.

However, there was some level of understanding that moving cranes posed different dangers to fixed cranes and that exclusion zones were required. They were also aware of the requirement for dogging and rigging licences but again found it difficult to distinguish between different licensing needed to operate cranes.

SMEs reported employing the following procedures to maximise safety when using the cranes:

- a safety induction for all operators
- signs when the crane is in operation
- emergency controls
- specific workers to be a 'look out' while the crane is in operation
- following safe operating procedures
- having a maintenance schedule in place
- exclusion zones for major lifts, and
- safety supervision when the crane is being used.

Companies which did not use bridge and gantry cranes reported using scissor lifts, trollies and fork lifts to move materials around the workshop. A number of employers also reported having strict policies for the number of people required to lift an item given its size and weight and when materials are not appropriate for manual lifting.

7 Findings: Contact with the work health and safety regulator

Box 7. Section 7 highlights

- *Most participants had not visited the regulator's website or sought information directly from the regulator.*
- *Participants stated that they had been contacted by a regulator when there had been a workplace injury, when there had been a complaint made to the regulator and when the regulator was carrying out inspections.*
- *The majority of SMEs who had been inspected indicated that the visit was beneficial and that the inspector had followed up with them to see if they had put the recommendations into place. They viewed inspections as an opportunity to have an 'extra set of eyes to pick up on possible risks'.*
- *Participants also reported that the approach taken by the inspector determined how useful they found the visit. These visits were considered beneficial if the inspector took a collaborative approach and was responsive to their needs. If the inspector took a position of power, they were less likely to view the visit as beneficial.*

Most SMEs in this industry had not visited their health and safety regulator's website or sought information directly from the regulator. Some participants reported using the regulator's website to source specific information but this was the minority and was mainly in Victoria. Some reported the regulator's website to be reasonably useful. However others said it was very difficult to use and seemed to be aimed at office workers rather than trades people. In particular it was felt that it was mostly text and would benefit from having more pictures linking to the relevant information. One of these participants reported doing safety inductions through a university and found its website a lot simpler to follow:

It treats you like a tradesman, not like an office person. (Small enterprise employer)

Most employers and safety managers explained that they avoided the regulator's website as it was not perceived to be user friendly or a source of practical or personally relevant work health and safety information. If they knew specifically what they were looking for on the website they were more likely to use it. Moreover there was a concern that any contact with the regulator might bring the business into the regulator's line of sight and bring unwanted scrutiny. There was some difference between Victoria and NSW in this regard with Victorian businesses more attentive to the regulator as a source of work health and safety information.

Although few participants were aware of the training programs offered by the regulator, those who had attended reported a positive experience:

[The regulator] is useful as they provide training course and seminars, including ones I found very useful on plant safety, premiums and psychological impact. (Medium enterprise safety manager)

Employers and safety managers in the industry are likely to have received information from the regulator about work health and safety. However, they have no recollection of it, put it aside or disposed of it due to it not grabbing their attention or not being a priority. These findings indicate that there is a gap in employers and safety officers receiving and engaging with these materials.

Experiences concerning the frequency and reason for personal contact with regulators varied between enterprises. Few employers actively approached a regulator. It was generally reported that site visits were inconsistent in their frequency. On detailed probing contact with the regulator was always more than had first been acknowledged. This finding

highlights that the time poor SME employers in the industry forget many things and are in constant need of being reminded. Work health and safety is one such issue that gets crowded out when daily attention is needed.

Participants stated that they had been contacted by the regulator for the following reasons:

- when there has been a workplace injury
- spot checks both onsite and in the factory/workshop—several SMEs reported that they had been audited by the regulator within the last four years, some as frequently as every two years, and
- when there has been a complaint made to the regulator.

A majority of enterprises across NSW and Victoria had been visited by an inspector intermittently in the last 30 years. Almost all SMEs who had been visited said it was beneficial as it was ‘an extra set of eyes to pick up on possible risks’. Many had said that the inspector had followed up with them to ensure they had put the recommendations into place. Most participants reported that this was a useful exercise to ensure that they were on top of safety issues.

It was emphasised that the approach used by the inspector during the visit determined how helpful it was. If inspectors took a position of power visits were viewed negatively. In contrast, if inspectors were responsive to SMEs’ needs and circumstances in addressing safety issues visits were well received by SMEs in the industry. All indicated that although they always felt a little nervous should an inspector visit their workplace they all welcomed the idea of them being more proactive in helping them ensure their workplaces are safe. A fresh pair of eyes may pick up something new or different that had been missed. All commented that inspections should be proactive preventative visits rather than policing events where fines are handed out. A number of participants also thought inspectors were hesitant to be proactive to avoid being held accountable later if any incidents occur. This undermined the perceived motivations and credibility of the inspector.

Even though they did not particularly like the inspector visits (likened to a visit by the tax man) they thought more frequent visits and ensuring that **every** enterprise in the industry was visited would be helpful. One reason was that they responded best to face to face feedback and information due to time pressure. The second reason was the belief that this would make the system fairer. Employers perceived that the regulators focussed on those who ‘operated within the system and who tried to do the right thing’ and let others ‘under the radar’ get away with unsafe practices and undercut them for business.

Almost all participants reported that they would prefer to avoid contact with the regulator partially because they believe it is best to be ‘under the radar’. Contact with the regulator was perceived to have an unknown outcome that might prove detrimental to their business. For example they associated the regulator strongly with work sites and factories being shut down for a period by inspectors that have taken a highly literal view of safety standards. Importantly most participants relied on anecdotal evidence containing only small amounts of detail to form their judgment of the regulator.

SMEs in the structural metal product manufacturing industry explained that they would like to feel there is collaboration between the regulator and themselves. This would see both parties working together towards a common goal supported by the regulator providing assistance rather than fines or shut downs. However few have invited the regulators to engage with them in this way to date.

Many held the view that regulators need to have a physical presence in the workplace, both at the factory or workshop and onsite and provide advice and assistance to improve work practices and standards before an incident occurred. They would also like the chance to

provide feedback and input if a particular code was changing. In this way many viewed the current role of the regulator as post-incident but felt that it should be more preventative.

You only see them when they crack down on you. If they could provide advice to prevent a situation occurring rather than arriving and shutting down a site which results in a monetary cost due to fines and lost production then they would be seen as providing the right kind of assistance. (Small enterprise employer)

8 Findings: Participants' suggestions for improving workplace safety

Participants provided suggestions that they considered would be useful for improving work health and safety in their industry. These include:

Reward and recognition Support the best SMEs by recognising companies for their safety track record. This will also help them to be employers of choice for workers who hold work safety as an important factor in where and with whom they work.

Training support: Provision of reimbursement or other support to assist staff to attend safety training, preferably training that is specific to their industry and work.

Redefine the relationship between the regulator and SMEs: Participants would like the regulator to be responsive to their needs and work with them to improve safety instead of just focusing on penalties.

Employ inspectors with trade experience: Several employers and safety officers would value input from inspectors with real trade experience so that they understand what it is like to work in the industry and provide practical advice. This was of particular concern to one participant who reported:

The last person that visited me was a scientist and he just didn't seem to understand the practicalities. (Small enterprise employer)

Establish a training register: This would enable advice to be provided on further training required and a system where people with more tickets receive higher wages based on the assumption that people with more tickets will have safer work practices:

The more qualified the more experience therefore making it easier for regulators. If [the Regulator] keeps a register of everyone's training and what they could do to improve and advise them of what they could do to improve this would ensure a higher qualified work force. (Small enterprise employer)

Establish a machine register: The register should keep a record of old machines and should be able to provide SMEs with maintenance reminders and communicate information about new rebate schemes for replacing or improving machinery.

Establish a mobile device app and an online forum: Workers in this sector have a need to carry around with them all their current tickets and qualifications. These cover trade qualifications, site inductions, tickets and other licences. Some participants reported having three wallets to hold them all and many lose track of whether they are current or if further training is needed simply because of the quantity of them. Some may have 25–30 such formal credentials to carry with them. Having an app and online forum would enable workers to record their tickets and qualifications so that these systems can provide reminders for renewals. It could also enable monthly or bi-monthly SMS messages to be sent to workers with up to date work health and safety statistics, training courses and provide workers with an opportunity to share learnings on risks and safety insights. Examples of such forums could include Industry Association blog site or Facebook group.

Provide a fast search engine: A search engine that allows employers and safety officers to look for solutions to work health and safety problems would be seen as a valuable tool.

Provide information that is tailored to their needs: The type of information that employers would like to receive from the regulator included:

- step by step processes for easily implementing safety procedures

- any changes to requirements
- major incidents that have occurred in the industry—they can then bring this to their workers' attention and ensure they have the correct safety procedures in place, and
- a list of all requirements for their industry with some helpful hints for implementation so that each company does not have to search the website for the regulations.

The information needs to be personally relevant and clear and concise.

Greater communication and contact with the regulator: Most participants interviewed wanted greater communication between employers and the regulator and for the regulator to come out and speak to the employees once or twice a year to emphasise the importance of safety. This was considered important because it was felt that workers get complacent hearing about work health and safety from their bosses. SMEs in the metal product manufacturing sector listed the best methods of communicating health and safety information as including:

- running courses at workplaces on handling glass, working with power tools or lifting
- running free seminars and covering the wages for workers to attend
- television advertisements
- mail
- quarterly newsletter on tips and guides on how to work safe
- email updates and messages with links to more information or stories
- informal talks with workers in the driveway or onsite of workplaces, and
- webinars where employer could view safety programs applicable to their workplace at convenient times.

9 Conclusions and implications

The purpose of this study was to determine factors that contribute to the high rate of work-related injury and illness in the structural metal product manufacturing industry. It explored work health and safety knowledge, attitudes and current risk management practices from the perspective of employers and managers of SMEs in the industry. This report adds to the existing research and information available on the Manufacturing industry in order to inform evidence based prevention activities.

SMEs in this industry viewed health and safety as important. However, several factors were acting as barriers on improvements in health and safety. These include the attitude that they had done all they could as most were calculated risk takers but also accepted that some incidents were unavoidable. Work health and safety was not a priority as they were faced with increased competition and uncertainty. Many were also working in isolation which meant few opportunities to share safety practices and practical solutions within the industry.

In general, health and safety knowledge in this industry was limited. Participants assumed that their low incident record was a confirmation that they were doing well and that health and safety was mainly 'common sense'. Training on health and safety was limited as it was considered costly. Participants did not actively seek information and programs available on health and safety and therefore, were likely to be unaware if there were changes in regulations and standards. Visits from health and safety inspectors were viewed as an opportunity for safety audits and to find out what improvements were needed. Some employers reported relying on hiring 'safe' workers who tended to be mature workers with the right safety attitudes and licenses to ensure the workplace is safe.

This reliance on workers having the right license and qualification might also reflect that employers and managers did not have a good understanding of different licensing requirements needed and relied on workers for this knowledge. Participants were confused about the requirements for bridge and gantry cranes. For example they did not know what three powered operation meant. They also did not know exactly how their crane fitted into the overall types of cranes and the links to licencing requirements. If employers do not understand different licensing requirements, they cannot ensure that their workers have the right license, training and knowledge to work safely.

Participants also identified a number of factors that influenced work health and safety. These include a reduction in skilled workers due to changes in the apprenticeship system and an increase in overseas workers with different safety knowledge and language barriers. Increased competition and financial pressures as well as workers' attitudes to health and safety were also identified as having an effect on health and safety.

In addition to attitudes and barriers for improvements in health and safety this report provides a picture of what participants considered to be common hazards and safety challenges in the industry. Common hazards reported were being hit by moving objects, falls from heights, manual handling and machine related hazards. Other than musculoskeletal problems, noise and acute effects of chemicals, work-related disease-causing hazards were not mentioned. Participants mentioned additional hazards and challenges for onsite work. These include crowded sites which meant having to share the workplace with other tradespersons, pedestrians accessing insecure worksites, and inconsistent safety messages and practices required by the site safety officer in charge of the site.

Examination of risk management practices in the industry provided an insight into safety practices and risk control measures used by SMEs in general and for specific hazards and activities. Most small businesses had basic risk control measures in place with a reliance of PPEs and other lower order risk control measures. There were a few better performers who

were implementing higher order control measures and were actively working to improve safety. However, these tend to be medium sized enterprises with more resources. Most participants indicated a lack of time and resources for making improvements in work health and safety.

Finally, many participants reported that their past contacts with the regulator were useful and beneficial. However, their perception that it was better to be 'under the radar' of the work health and safety regulator prevented them from contacting and accessing the materials and support provided by the regulators. Once these resources were pointed out to them there was acknowledgement that these would be useful materials and programs for them. However, even if these materials were mailed to participants they were likely to either discard them or file them somewhere and not use them as health and safety is a low priority. Participants expressed that they would like the regulator to be more responsive to their needs and circumstances and offered a number of suggestions which they believed would improve work health and safety in the industry.

It is noted that these findings are from a qualitative study. Therefore, the findings may not be reliable or generalisable. For some findings like a lack of knowledge of licensing requirements follow-up studies may be required to determine the extent to which this is a problem across the industry.

Nevertheless, the findings of this study suggest that improving health and safety in this industry will be a complex task and will require a multifaceted approach. A strategy is needed to engage SMEs in this sector to lead to increased awareness and use of materials and assistance provided by the regulator. This is because the current programs, assistance and materials are accessed and used by those who are engaged and are actively looking to improve work health and safety. However, a different strategy may be required to engage the majority of this sector who felt they had done all they could, did not understand that compliance was a continuous rather than one-off process and were not proactive in improving health and safety. Participants' suggestions of the types of materials and information they wanted could provide a starting point for developing and targeting communication and information aimed at this sector. In addition, programs and rebates to update old machines to new and safer machinery could be helpful in improving work health and safety. Participants' request for a more responsive and collaborative approach by health and safety regulators also needs to be addressed. Current risk management practices in SMEs may also be reviewed to identify where improvements could be made to reduce the high rate of injury and disease in this particular industry. Action is also needed on other issues such as concerns with apprenticeships programs, the lack of induction at residential construction sites and the need to ensure that overseas workers have adequate training and health and safety knowledge.

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Lists

Figures

Figure 1: The four mind sets found in the industry.....	9
Figure 2: Manual boom gate	28
Figure 3: Pneumatic boom gate	28
Figure 4: Mirrors on all main doors.....	28
Figure 5: Fully multidirectional lift truck	28

Tables

Table 1: Interview sample by location and business size	5
Table 2: Common hazards in factory/workshop identified by participants.....	23
Table 3: Common hazards onsite identified by participants.....	24
Table 4: Safety practices commonly used and those used by better performers	25
Table 5: Reported manual handling risks and risk controls by frequency of use and location	30
Table 6: Reported hand tool usage risks and risk controls by frequency of use and location	32
Table 7: Machinery and guarding risks and risk controls by frequency of use and location .	33
Table 8: Environmental risks and risk controls by frequency of use and location.....	34

Information boxes

Box 1: Highlights from this report	3
Box 2: Section 3 highlights.....	7
Box 3: Section 4 highlights.....	14
Box 4: Programs and information provided by work health and safety regulators.....	17
Box 5: Section 5 highlights.....	21
Box 6: Section 6 highlights.....	36
Box 7: Section 7 highlights.....	38