

Work Health & Safety Perceptions

Manufacturing Industry



Safe Work Australia | February 2015

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Work Health and Safety Perceptions: Manufacturing Industry

Safe Work Australia
February 2015



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ISBN 978-1-74361-966-7 (pdf)
978-1-74361-967-4 (docx)

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Suggested citation:

Safe Work Australia (2015). Work health and safety perceptions: Manufacturing industry. Canberra: Safe Work Australia.

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Preface

The Australian Work Health and Safety Strategy 2012-2022 (the Strategy) describes the manufacturing industry as a priority industry for work health and safety. While much is known about work-related injuries and illnesses in this industry from the national workers' compensation dataset (NDS), we also need to know about hazard exposures, work health and safety attitudes and perceptions and work health and safety activities in this industry. This information will help to identify issues requiring prevention action and will ensure that resources and prevention efforts can be targeted appropriately.

This report summarises findings from manufacturing businesses and workers from eight existing Safe Work Australia data sources. The report presents areas where the manufacturing industry is doing well and areas for improvement in relation to:

- hazard exposures and workplace control measures
- work health and safety activities, and
- work health and safety perceptions and attitudes that may act as barriers or enablers to work health and safety.

This research report was written to inform the development of policies in relation to work health and safety in the Manufacturing industry. The views and conclusions expressed in this report do not necessarily represent the views of Safe Work Australia members.

Perceptions of Work Health and Safety Survey and the Regulatory Burden Survey

This report presents findings from two nation-wide surveys of employing businesses. Responses to the survey questionnaires were weighted to reflect the size, primary location and main industry of businesses in Australia. As is often the case with large surveys, the response rate was low. This increases the risk that the views and experiences of the study sample are biased and affects the extent to which those views and experiences can be generalised to the population of interest. In short, the surveys provide potentially valuable information from over a thousand individuals in each survey but we cannot be confident that the information is representative of the whole population. It is therefore important that estimates or comparisons, particularly those based on the relatively small number of medium-sized and large businesses, are seen as indicative or suggestive rather than representative or definitive.

As with all statistical reports, the potential exists for minor revisions over time.

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Executive Summary

Background

The manufacturing industry is designated as a priority industry for work health and safety due to the high number and rate of work-related injuries and illnesses. Other than work-related injury and illness data and the findings from relevant Heads of Workplace Safety Authorities (HWSA) audit and education campaigns, little information on work health and safety in the Australian manufacturing industry is available.

This report attempts to address this information gap by summarising findings from eight existing Safe Work Australia research and evaluation data sources. A concise report such as this cannot cover all topics covered in these data sources. Therefore, this report focuses on exposure to hazards in manufacturing, provision of control measures, other work health and safety practices and work health and safety attitudes and perceptions that may be relevant to work health and safety practices in the industry.

Main findings

The most common self-reported exposures in the manufacturing industry were exposure to airborne hazards, noise and vibration. Most workers with exposure to noise were provided with some type of control. However, about one in seven workers with exposure to airborne hazards and vibration were not provided with any control measure for these hazards.

According to the majority of workers and employers in manufacturing, work health and safety activities such as using personal protective equipment, identifying health and safety risks and removing hazards are undertaken 'most of the time' or 'always'. Over 80% of manufacturing employers reported that they provide health and safety training, have a work health and safety policy, have procedures for reporting work-related injuries and ill health and procedures for controlling hazards. Generally, a higher proportion of manufacturing employers reported undertaking these activities compared to employers in other priority industries. However, small manufacturing businesses appeared less likely to undertake these activities compared to large manufacturing businesses.

The majority of manufacturing businesses spent less than 30 minutes a week per activity for five of the six administrative work health and safety activities examined in the Regulatory Burden Survey such as keeping records and applying for licenses. However, 41% reported spending more than an hour per week on checking worker competencies. In many cases, manufacturing businesses were more likely than businesses in other priority industries to be undertaking various work health and safety activities examined in the 2013 Regulatory Burden Survey. They also spent more money and time on these activities compared to businesses in other priority industries. However, one in five manufacturing businesses did not identify safety issues in 2012.

Most manufacturing workers and employers believed that there is good communication on safety in their workplace. They also had positive views about management's actions to improve safety in the workplace and allowing workers to have an input into work health and safety. However, 14% of employers reported that corrective action is not always taken when they are told about unsafe practices. Moreover, almost a third of workers and 13% of employers regard risks as unavoidable in the workplace. Some workers and employers also accept risk taking if they are short on time.

Conclusions

Confirming existing evidence, workers in manufacturing were exposed to a number of occupational health hazards according to the National Hazard Exposure Worker Surveillance (NHEWS) Survey.

A few areas for improvement for control measures for specific hazards were identified. A considerable proportion (14%) of workers who reported exposure to airborne hazards and 14% of workers who were exposed to vibration reported that no control measures were provided for these hazards. The self-report nature of the NHEWS survey means that adequacy of control measures cannot be determined and there is a possibility that higher order control measures are in the workplace that workers were not aware of. However, the findings suggest that more research is needed on adequacy of control measures for these common hazards in the manufacturing industry.

Despite its high rate of work-related injury and illness, the industry appears to be doing well in terms of general work health and safety activities. The vast majority of workers reported undertaking work health and safety activities such as using PPE provided and making work practices safe. More employers reported that their workplace undertake a specific activity compared to workers, suggesting that there is a slight mismatch between employers and workers on how consistently these work health and safety activities are undertaken. The largest discrepancy was for discussing health and safety concerns in the workplace. Almost all (99%) employers reported this compared to 73% of workers in the WHS Perceptions Survey.

In most cases, more manufacturing businesses were undertaking compliance activities for work health and safety compared to businesses in other priority industries in 2012. Moreover, they also spent more time and/or money on these activities. Yet, 20% of manufacturing businesses did not identify safety issues and only two thirds put in place safety measures. This suggests that while the majority were undertaking compliance activities, there is room for improvement in some businesses.

In terms of health and safety training, the manufacturing industry is doing well. The 2012 WHS Perceptions Survey of Employers showed that a large majority of employers in manufacturing (87%) provided health and safety training to their workers in the last 12 months. The proportion is 71% among employers in other priority industries. The Regulatory Burden Survey 2013 also showed the high rate of internal and external staff training among manufacturing businesses. However, both surveys indicated that small businesses were less likely to provide health and safety training compared to medium and large businesses. Increased capacity and support for small businesses to provide health and safety training and undertake other

compliance activities is needed. This suggestion is further supported by findings in a previous study of small and medium manufacturing businesses where they nominated time and financial pressures as major barriers to work health and safety.

Other areas that could be targeted for improvement in health and safety activities include inclusion of contractors in health and safety induction training if required and addressing bullying and fatigue.

In general, manufacturing employers and workers believed that they have the knowledge and skills to protect themselves and others at work. Both groups also had positive perceptions about management actions to improve health and safety and safety communication in the workplace. There was an expectation by employers that workers will follow safety rules in their workplace and most workers reported following organisational rules on work health and safety.

However, at least one in five workers and employers accepted risk taking if there is time pressure. More research is needed to better understand risk taking behaviours in this industry.

Disclaimer

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1. Context

Background

In order to achieve the 2012–22 Australian Work Health and Safety Strategy's outcome of reduced incidence of work-related death, injury and disease, there needs to be a reduction in exposure to hazards through improved use of control measures, especially in industries with the highest rates of death, injury and disease. To this end, the Australian Strategy has identified the following priority industries for prevention activities: Agriculture, Road transport, Manufacturing, Construction, Accommodation & food services, Public administration & safety, and Health care & social assistance. The Strategy also states that attention should focus on the specific sub sectors of these industries that require the greatest improvement.

The ABS labour force data from May 2014 showed that there were 921 500 workers in the manufacturing industry which equates to 7.9% of the total Australian labour force. The manufacturing industry has been designated as a priority industry due to the high number and rate of work-related injuries and illnesses. The industry had the highest average incidence and frequency rate of serious workers' compensation claims for the five year period from 2004–05 to 2008–09 compared to other industries. In 2011–12 (provisional national workers' compensation data), the incidence rate of serious workers' compensation claims for manufacturing was 18.4 per 1000 workers which was 1.6 times the rate of all industries (11.4 per 1000 workers).

This report is one of a series produced by the Research and Evaluation team at Safe Work Australia on priority industries. These reports are intended to provide an overview of Safe Work Australia's current state of knowledge about work health and safety in priority industries. Other than work-related injury and illness data and the findings from relevant Heads of Workplace Safety Authorities (HWSA) audit and education campaigns, little information on work health and safety in the Australian manufacturing industry is currently available. This report attempts to address this information gap.

Aim and structure of the report

The main aim of this report is to provide a summary of what is currently known about work health and safety in the manufacturing industry from existing Safe Work Australia Research and Evaluation data sources. The report focuses on four main areas:

1. exposure to hazards in manufacturing
2. provision of control measures for specific hazards
3. work health and safety practices, and
4. work health and safety attitudes, perceptions and skills.

The report also highlights some differences by business size and industry (e.g. manufacturing vs. other priority industries).

The next section presents a brief overview of the data sources used in this report. Part 3 contains the main findings. Appendix A provides a brief description of each data source and the profile of respondents. Appendix B discusses the limitations of this report.

Results preamble

It is important to note that any findings in relation to business size are indicative only. Due to small numbers in some of the business size groupings, we cannot have confidence that these findings hold true for the population of manufacturing businesses. The findings in this report in relation to business size do provide a flavour of the attitudes, perceptions and behaviours in the manufacturing industry.

Due to the qualitative nature of the findings, there are no accompanying statistics such as confidence intervals to indicate the reliability of estimates or inferences.

2. Approach

The findings presented in this report are summarised from eight existing Safe Work Australia data sources. Seven of the eight data sources are survey data and involve quantitative analyses of these datasets. One data source is from a qualitative study of owners and managers in the structural metal product manufacturing industry, a sector within Manufacturing with the highest rate of work-related injury and illness. Relevant findings from this qualitative study are presented in this report to give further insight into work health and safety in the manufacturing industry. All eight data sources are briefly described in Table 1. Descriptions of each data source and profiles of respondents are provided in Appendix A.

Table 1. Safe Work Australia data sources used in this report

No.	Data source	Sample population	Design	Comments
1	CEOs and supervisors Telephone Survey 2000 (CEO–2000)	962 CEOs and supervisors across Australia (174 from manufacturing)	CATI, samples drawn from work health and safety/ work cover authorities and Dun and Bradstreet list of employers	Data weighted by business size within state/territory
2	National Hazard Exposure Worker Surveillance Survey 2008 (NHEWS 2008)	4500 workers aged 18–64 years across Australia (714 manufacturing workers)	CATI, random digit dialling, oversampling of priority industries	Unweighted
3	Motivations, Attitudes, Perceptions and Skills Survey 2009 (MAPS–2009)	762 workers over 18 years old working in one of the five priority industries across Australia (167 manufacturing workers)	CATI, random digit dialling, quotas set by industry, age groups and state/territory	Unweighted
4	Work Health and Safety Perceptions Survey of Workers 2012 (WHSP-W-2012)	1311 workers over 18 years of age across Australia (59 manufacturing workers)	CATI, dual frame (mobile and landline) sample from SampleWorx	Data weighted by state/territory, sex, age and occupation
5	Work Health and Safety Perceptions Survey of Employers 2012 (WHSP-E-2012)	1052 employers across Australia (108 manufacturing employers)	Paper based, drawn from a random sample of 10 000 businesses from the ABS Australian Business Register	Data weighted by business size, industry and state/territory
6	Work Health and Safety Compliance (Regulatory Burden) Survey 2013 (RBS-2013)	1503 employers across Australia (118 manufacturing employers)	Paper based, drawn from a random sample of 10 000 businesses from the ABS Australian Business Register (this is a different sample from WHSP-E)	Data weighted by industry, business size and state/territory and accounted for low response rates
7	Risk Management practices in structural metal product manufacturing 2013 (The Structural metal study)	54 managers/owners of structural metal product manufacturing businesses in NSW and VIC	Face to face interviews, sample obtained from the list of businesses in this industry from the Australian Taxation Office's the Australian Business Register	
8	Health and Safety at Work Survey 2014 (HSW-2014)	2350 businesses across Australia (188 manufacturing businesses)	Paper and online, drawn from a random sample of 10 000 businesses from the ABS Australian Business Register	Data weighted by state, industry and state/territory

3. Main Findings

Self-reported exposure to hazards

The most common self-reported exposure among manufacturing workers was exposure to airborne hazards

This section presents self-reported exposure to hazards included in the NHEWS survey. A description of each hazard and how exposure is defined is provided in Appendix A. Some of the hazards are composite measures (e.g. job demands and biomechanical demands) but individual hazards are also presented.

The most common exposure reported by manufacturing workers was exposure to airborne hazards (64%). Types of airborne hazards reported by these workers included steam, welding fumes, exhaust fumes, forklift gas, glue vapours, oxyacetylene fumes, paint fumes or spray painting fumes and smoke from furnaces and ovens.

The second most common hazard exposure reported was noise (58%).

Exposure to hand/arm or whole body vibration was reported by 44% of manufacturing workers. Workers were also asked to describe the type of equipment, vehicle or tool they worked with that exposed them to vibration. Common vibrating equipment and tools included angle grinders, drills, electric saws, forklifts, milling machines, lathes and sanders. Some workers also nominated utility trucks as a source of vibration.

Almost 40% of workers in manufacturing reported exposure to chemicals (skin contact). Workers reported a wide range of substances when asked about the types of chemicals they have skin contact with. Examples include acetone, hydraulic oil, solvents, household cleaning products, coolants, cement, detergents and paint, paint strippers and thinners.

The two least common types of hazard reported by manufacturing workers were wet work (9%) and biological materials (6%). The most common liquid reported was water. Other commonly reported liquids were oils and paint. The types of biological materials commonly reported were meat, carcasses and blood.

Approximately two in five workers in manufacturing reported exposure to high job demands. When looking at the eight individual aspects of work measuring job demands, it showed that the most common aspects of job demands reported by manufacturing workers were 'my work need my undivided attention' (92%) and 'I have to keep track of more than one thing at a time' (88%). About two-thirds of workers also reported that they had to work very fast 'sometimes' to 'all the time' at work. Just under one in five (19%) workers reported that they were unable to take enough breaks 'sometimes' to 'all the time'.

Exposure to high biomechanical demands (determined from a composite measure of eight types of biomechanical demands) was reported by 25% of manufacturing workers. The most common type of biomechanical demand was making the same hand or arm movements over and over again with 78% of workers reporting that they do this 'sometimes' to 'all the time'. The second most common biomechanical demand was working while sitting down (60% reported doing this 'sometimes' to 'all the time'). Other common biomechanical demands were working with body bent forward (54% 'sometimes' to 'all the time'), pushing or pulling using some force (52%), work standing in one place (51%) and carry or lift heavy loads

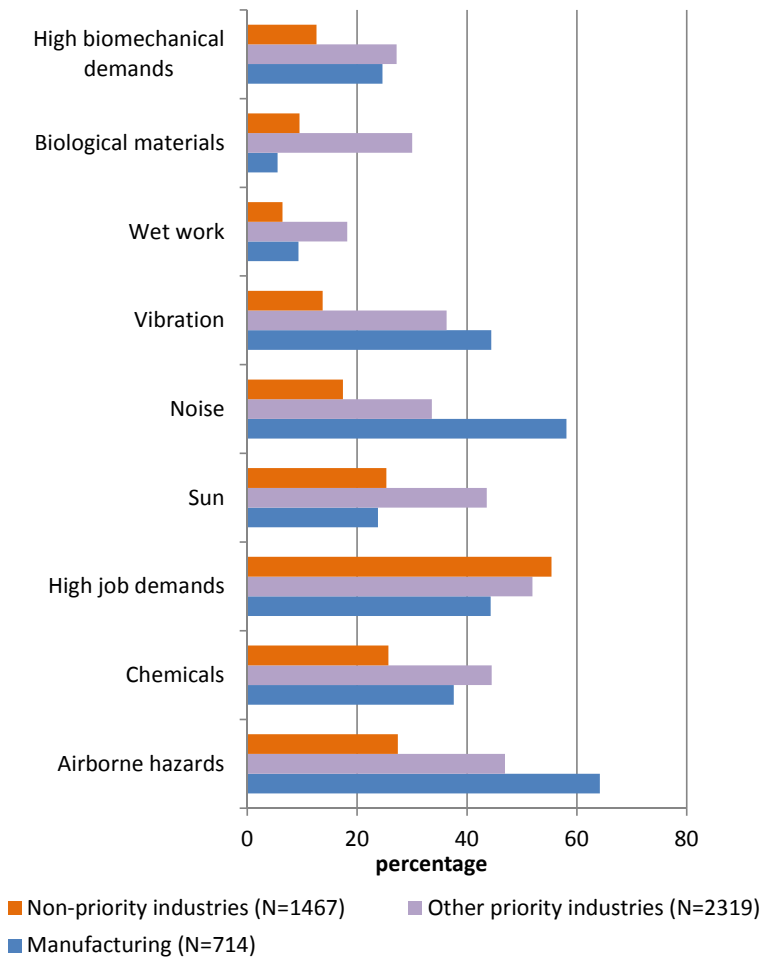
(45%). Working with hands raised above your head was the least common biomechanical demand reported with only 24% reporting that they did this 'sometimes' to 'all the time'.

Comparison with workers from other industries

A higher proportion of workers from manufacturing reported exposure to airborne hazards, noise and vibration compared to workers in other industries

Figure 1 presents the proportion of workers with self-reported exposure to nine different hazards covered in the NHEWS survey for three groups: manufacturing workers, workers in other priority industries and workers in non-priority industries. Other priority industries at the time of the NHEWS survey were Construction, Transport and storage, Health and community services and Agriculture forestry and fishing. As stated previously, the most common hazard reported by manufacturing workers was airborne hazard. Manufacturing workers were more likely to report exposure to airborne hazards and noise compared to workers in other industries.

Figure 1 Percentage of workers reporting exposure to specific hazards in Manufacturing, other priority industries and non-priority industries

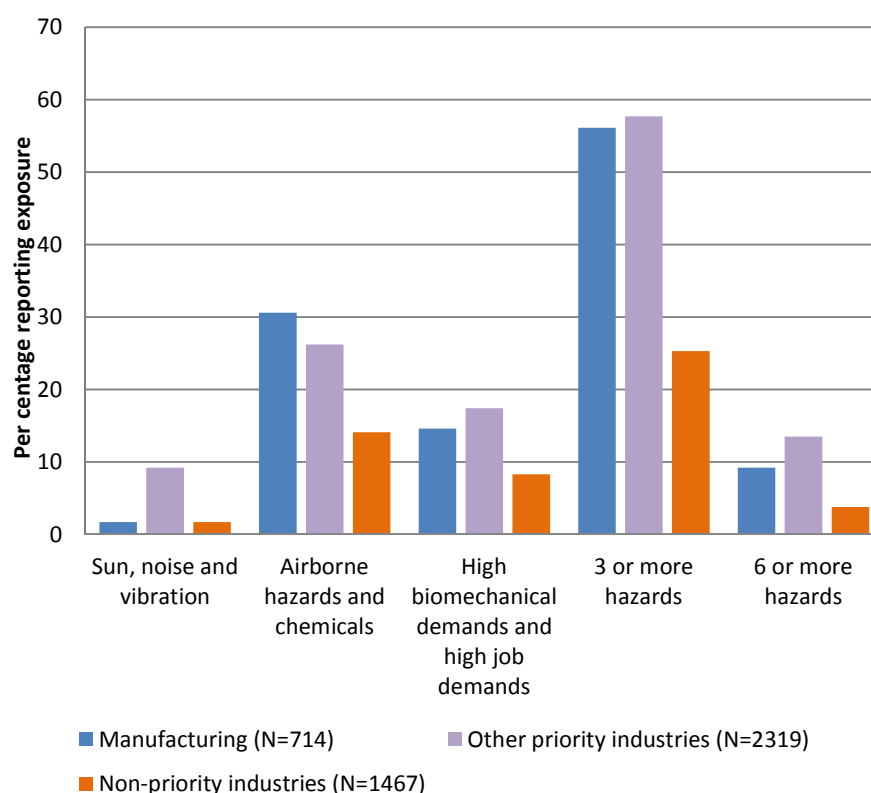


In contrast, manufacturing workers were less likely to report exposure to biological materials and high job demands compared to workers from other industries. For exposure to chemicals, biomechanical demands, wet work and sun, a higher proportion of workers in other priority industries reported

exposure to these hazards compared to manufacturing workers. However, up to a third of manufacturing workers were exposed to these hazards.

Over half (56%) of manufacturing workers reported exposure to three or more hazards (see Figure 2). This proportion was more than twice the proportion reported by workers in non-priority industries. Approximately one in eleven manufacturing workers reported exposure to six or more hazards in the workplace.

Figure 2. Co-exposure to multiple hazards by industry



Provision of control measures for specific hazards

Each worker who reported exposure to a particular hazard in NHEWS-2008 was asked about provision of control measures for the hazard. Table 6 in Appendix A provides a description of control measures for each of the nine hazards included in this report.

Figure 3 presents control measures reported by workers for sun, noise and vibration exposure. Among manufacturing workers with high exposure to sun (exposed to > 4 hours a day), one in five were not provided with any control measure. Approximately 62% of these workers were provided with PPE for sun protection such as hat and sunglasses. Only one worker was not provided with PPE but had access to administrative control measures for sun exposure. A further 17% were provided with PPE and administrative controls for sun exposure.

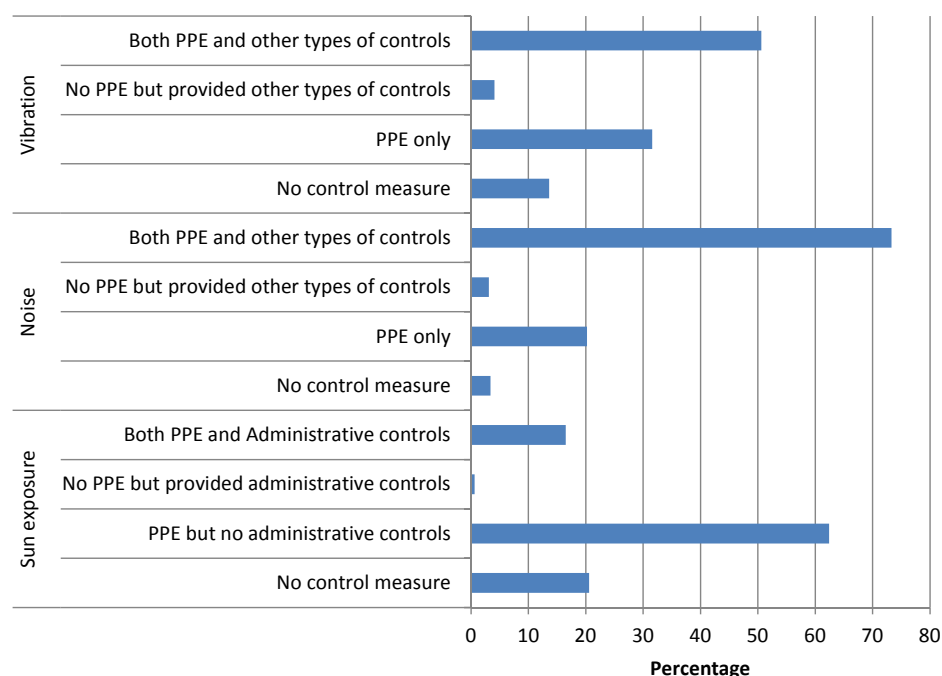
Almost all manufacturing workers who were exposed to noise were provided with some type of control measure for noise

The majority (73%) of workers with self-reported exposure to noise were provided with PPE (e.g. ear muffs and ear plugs) and other types of controls (e.g. isolating noise, purchasing quieter machinery). About one in five workers were provided with PPE only. Only 3% of workers reported that they did not have access to PPE but were provided with other types of controls. The proportion of exposed workers with no control measure for noise was small at 3%.

For vibration, almost a third of workers were provided with PPE which meant provision of gloves. About half of all exposed workers were provided with gloves and other types of controls such as vibration dampeners and vibration absorbing seats. Only about 4% of workers reported having no access to gloves but were provided with other types of control measures. Just under 14% of workers reported that they were not provided with any control measure for vibration.

The provision of control measures varied depending on the type of hazard

Figure 3. Control measures for those with sun, noise and vibration exposures



14 % of manufacturing workers with exposure to airborne hazards were not provided with any control measure

Figure 4 presents control measures reported by workers for airborne hazards, skin contact with chemicals and wet work. For provision of control measures for airborne hazards, 63 out of 458 (14%) workers who were exposed to airborne hazards reported that they were not provided with any control measure for this hazard. A further 14% reported that they were provided with PPE measures for airborne hazards. Approximately 10% were provided with engineering controls or administrative controls but no PPE measures. The majority (62%) of workers with exposure to airborne hazards were provided with PPE measures and engineering or administrative controls.

Of 268 manufacturing workers who reported exposure to chemicals, 85% were provided with both PPE measures and other types of control measures for chemicals. About 4% were provided with PPE only and a further 7% were provided with other control measures but no PPE. Only 5% of manufacturing workers with exposure to chemicals reported that they did not have access to any control measure for this hazard.

Although there were 66 manufacturing workers with exposure to high wet work, an error in survey programming meant 19 workers were not asked questions about control measures for wet work. Among the remaining 47 workers for which control data were available, six workers (13%) reported that they had no control measures for wet work. About 21% reported that they were provided with PPE measures for wet work and 64% reported that they had access to both PPE measures and other control measures for wet work.

Figure 4. Control measures for those with exposure to airborne hazards, skin contact with chemicals and wet work

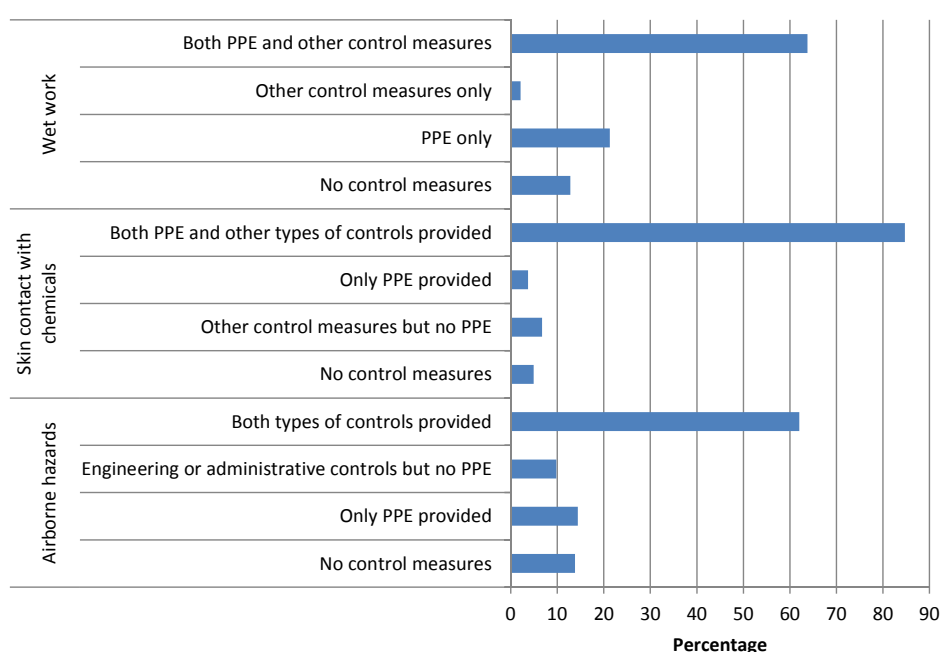


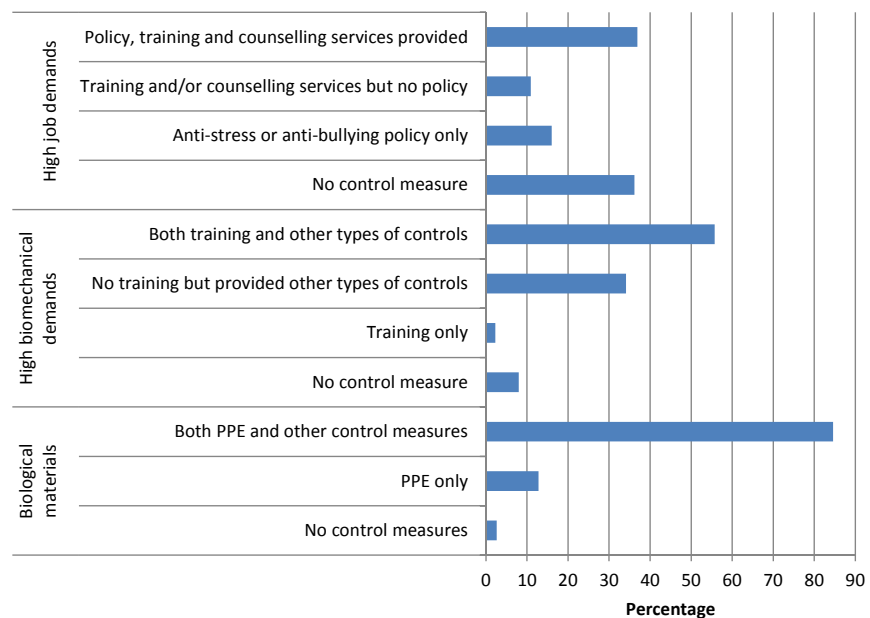
Figure 5 presents control measures reported by workers for job demands, biomechanical demands and biological materials. Approximately 45% (n=312) of manufacturing workers reported exposure to high job demands. Among them, 16% reported that there were anti-stress or anti-bullying policies in their workplace. A further 11% reported that they had access to training or counselling services but no anti-stress or anti-bullying policies. Just over a third (37%) of workers reported that they had access to both training/counselling and anti-stress or anti-bullying policy. However, a similar proportion (36%) reported that they did not have access to any control measure for high job demands.

Of 176 manufacturing workers with exposure to high biomechanical

demands, 2% were provided with training only. About 34% were not provided with training but were provided with other types of control measures. A further 56% were provided with both training and other control measures for biomechanical demands.

Although exposure to biological materials was uncommon, those who were exposed were provided with control measures for these hazards. Five workers out of 39 manufacturing workers (13%) exposed to biological materials had PPE measures such as gloves and protective clothing. The majority (85%) had both PPE measures and other control measures for biological materials such as a ventilation system, safety cabinets and training. Only one worker was not provided with any control measures for biological materials.

Figure 5. Control measures for those with exposure to high job demands, high biomechanical demands and biological materials



Areas for improvement

Manufacturing workers were more likely to report exposure to noise, vibration or airborne hazards than workers in other priority industries. While over 70% of manufacturing workers who reported exposure to noise were provided with a combination of PPE and other types of controls, 20% reported that they were only provided with PPE. For vibration, over 30% reported being provided with only PPE and no other control measure. Fourteen per cent of manufacturing workers who reported exposure to airborne hazards reported that they were not provided with any control measure for this hazard. This suggests either that workers were not aware of higher order control measures in the workplace or that there was a considerable proportion of manufacturing workplaces where higher order control measures were not provided. While noting that it was a small research study, in-depth interviews with small and medium manufacturing businesses (data source 7) suggest that in some small and medium businesses, the use of PPE or lower order control measures was more common to address some hazards than controls such as elimination or substitution.

Another area of concern is exposure to biomechanical demands. Twenty per cent of manufacturing workers reported exposure to a high level of biomechanical demands. The most common biomechanical demand was making the same movement over and over again. Only about half of those manufacturing workers with exposure to high biomechanical demands reported having access to both training and other types of controls for these hazards. Again, it was not possible to assess the adequacy of these control measures from the self-report nature of the NHEWS survey. However, these findings suggest that exposure to biomechanical demands is an important area to address in manufacturing. It is also noted that about a third of all workers' compensation claims among manufacturing workers in 2010–11 were due to body stressing which covers many of the biomechanical demands measured in the NHEWS survey (NDS, 2013).¹

¹ Safe Work Australia. (2013). Compendium of workers' compensation statistics Australia 2010–11. Canberra, Safe Work Australia.

Work health and safety practices

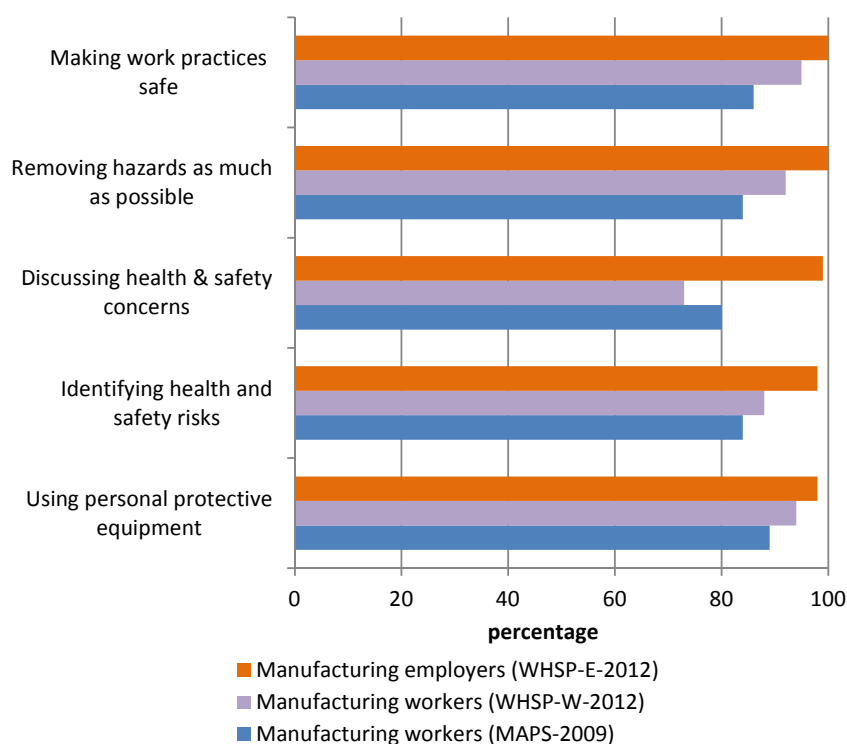
Positive findings

Work health and safety activities

About 90% of workers in manufacturing reported that PPE is used most of the time or always at their workplace

The majority of manufacturing workers who completed the MAPS Survey reported that their workplace undertakes a number of work health and safety activities 'most of the time' or 'always'. Almost 90% of workers use personal protective equipment (PPE) in their workplace when provided. The vast majority (86%) also reported that in their workplace, work practices are made safe, accidents and near misses are reported, health and safety risks are identified and hazards are removed as much as possible. About 80% reported that in their workplace, health and safety concerns are discussed (Figure 6).

Figure 6. The proportion of workers and employers who reported undertaking work health and safety activities most of the time or always from three surveys (only common items between surveys are presented)



These findings from the MAPS survey were generally similar to the findings from the 2012 WHS Perceptions Survey of Workers. In 2012, Over 90% of workers in manufacturing reported that in their workplace, PPE is used, work practices are made safe and hazards are removed as much as possible 'most of the time' or 'always'. Over 85% reported that 'at their workplace, health and safety risks are identified' and accidents are reported. About 70% reported that 'health and safety concerns are discussed' and that 'there is regular assessment of the way work is undertaken'.

The employers' perspective of how often these activities were undertaken at their workplace is available from the 2012 WHS Perceptions Survey of Employers. Employers were more likely to report that their workplace undertook specific work health and safety activities compared to workers. About 93% to 100% of employers reported that the following actions were undertaken in their workplace 'most of the time' to 'always':

- use PPE
- report accidents
- report near misses
- identify health and safety risks
- discuss health and safety concerns
- remove hazards as much as possible
- make work practices safe, and
- maintain and repair equipment as needed.

A lower proportion of employers reported that their workplace 'undertakes regular assessment of the way workers work' (77%) compared to other work health and safety activities undertaken in the workplace. However, this proportion of employers reporting that regular assessment is undertaken was still higher than reported by workers (72%).

There appeared to be some differences in work health and safety activities by business size within manufacturing according to the employer survey. About 94% of large businesses reported that they undertake regular assessment of the way workers work compared to medium (72%) and small businesses (78%). The findings also indicated that the proportion of employers reporting that they remove hazards as much as possible or make work practices safe or report near misses declines as the size of business increases.

Most manufacturing employers reported that they provide first aid kits, that they have a work health and safety policy and have procedures for controlling hazards

The Work Health and Safety Perceptions Employer Survey also contained information on other work health and safety activities. For example, a large proportion (over 80%) of manufacturing employers reported that they provide first aid kits, have a work health and safety policy, procedures for reporting work-related injuries/ill health and procedures for controlling hazards. All provide emergency equipment like fire extinguishers. For these particular activities, it appeared that the larger the business, the higher the proportion of employers reporting they undertake a particular activity to minimise risks. Generally, a higher proportion of manufacturing employers reported undertaking these activities compared to employers in other priority industries.

All manufacturing employers reported that the business acts decisively when a safety concern is raised. In addition, 83% reported that safety improvements are implemented within a reasonable period of time. The vast majority (86%) also reported that corrective action is always taken when they are told about unsafe practices.

Time and cost of work health and safety activities as reported by employers

The time spent on and the cost of specific work health and safety activities undertaken to comply with work health and safety laws in 2012 by employing businesses are available from the 2013 Regulatory Burden Survey.

Administrative activities

Businesses were asked about time spent on the following six administrative activities:

- keeping records required for work health and safety compliance
- applying to work health and safety authority for licenses, permits, registrations and approvals
- checking worker competency for tasks to ensure that workers have required licences or training
- notifying their work health and safety authority when required
- preparing Safe Work Method Statements (SWMSs), and
- finding information about work health and safety obligations.

The majority of manufacturing businesses spent less than 30 minutes per week on each of these activities (Table 2). The most time was spent on checking worker competency with 41% of manufacturing businesses spending more than one hour a week on this activity alone. Generally, manufacturing businesses spent more time on these six administrative activities than businesses in other priority industries.

Table 2. Time spent per week by administrative activity by industry (RBS-2013)

	Manufacturing			Other priority industries			All industries		
Time spent per week	< 30 min	30 min–1 hour	> 1 hour	< 30 min	30 min–1 hour	> 1 hour	< 30 min	30 min–1 hour	> 1 hour
Keeping records (%)	62.3	3.0	34.7	65.1	23.9	11.1	71.3	17.1	11.6
Applying for licenses (%)	69.0	13.5	17.5	85.5	7.5	6.9	86.3	7.8	5.8
Checking competency (%)	40.9	18.3	40.8	69.8	22.7	7.5	72.1	17.3	10.6
Notifying authorities (%)	98.0	1.3	0.7	95.4	3.4	1.2	93.6	5.2	1.2
Preparing SWMSs (%)	48.4	21.0	30.6	66.3	21.2	12.5	75.7	13.1	11.2
Finding information (%)	55.2	18.8	26.0	81.9	10.2	7.9	79.4	10.5	10.1
Note: excludes missing responses									

Other compliance activities

In addition, the Regulatory Burden Survey collected information on the time spent on and the cost of 17 other compliance activities undertaken in 2012. Manufacturing businesses were more likely to report that they undertook a particular compliance activity compared to businesses in other priority industries for 12 out of the 17 compliance activities (see Figure 7).

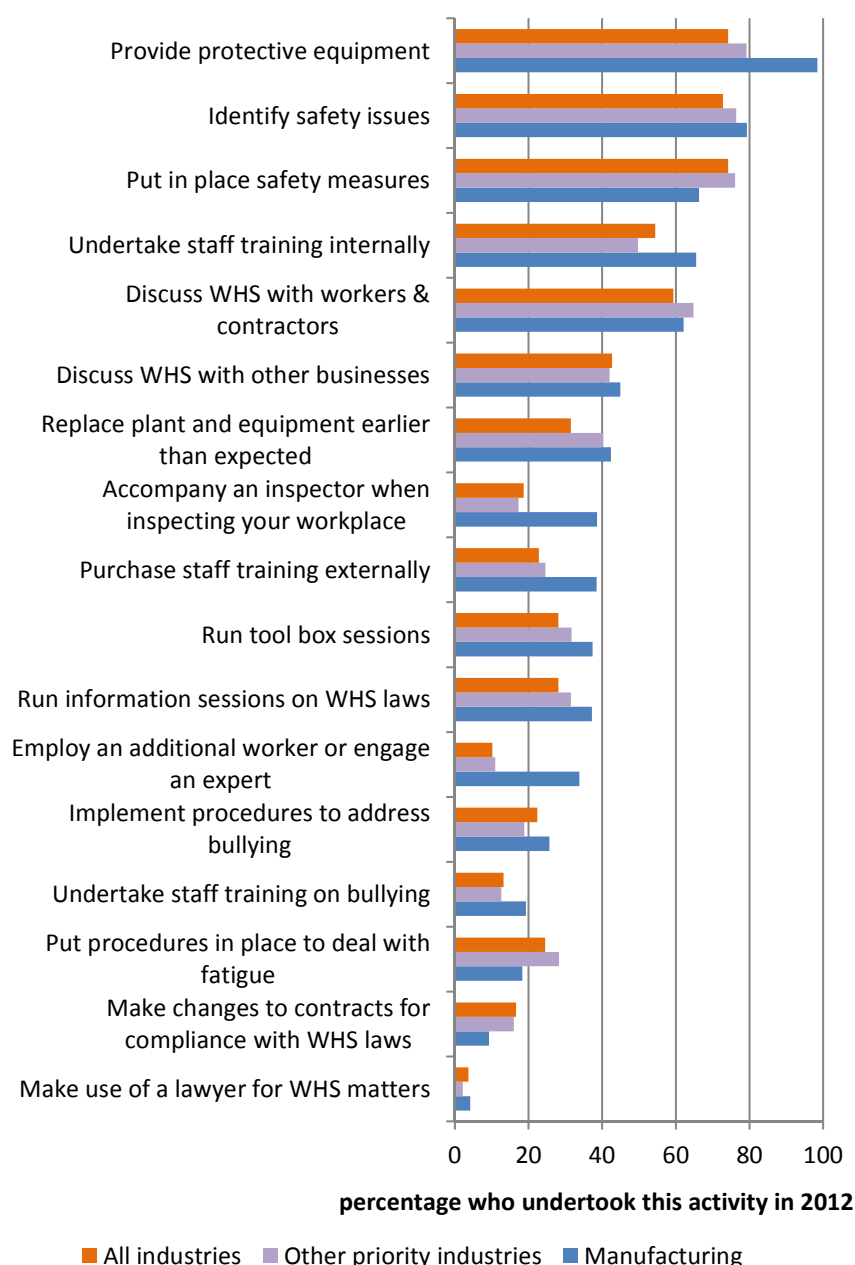
Manufacturing businesses spent more time on WHS administrative activities compared to businesses in other industries

Manufacturing businesses were more likely than businesses in other industries to undertake some work health and safety activities

Of the 17 compliance activities, the most frequently reported activities by manufacturing businesses were:

- providing protective equipment (98%)
- identifying safety issues (79%)
- putting in place safety measures (66%), and
- undertaking staff training internally (66%).

Figure 7. Work health and safety activities reported by businesses by industry in the Regulatory Burden Survey (RBS-2013)



With the exception of providing PPE, small manufacturing businesses appeared less likely to be undertaking a particular activity than medium or large manufacturing businesses. Small businesses were more likely to say they provided PPE than medium or large businesses.

Manufacturing businesses generally reported spending more money on work health and safety activities compared to businesses in other priority industries

Among manufacturing businesses that provided protective equipment, 41% spent \$1000 to \$10 000 on this activity in 2012 compared to 29% of businesses in other priority industries. Two thirds of manufacturing businesses spent less than an hour per week on providing protective equipment and a third spent 1 to 10 hours a week (compared to 13% in other priority industries who spent 1 to 10 hours a week).

Three in five manufacturing businesses that identified safety issues spent 1–10 hours a week on this activity in 2012. This proportion is twice the proportion among businesses in other priority industries (30%) that spent 1–10 hours a week. However, the cost of this compliance activity was relatively low with 74% of manufacturing businesses spending less than \$1000 a year on this activity. The cost for this activity was similar across industries.

The majority (83%) of manufacturing businesses that put in place safety measures spent less than \$1000 on this activity in 2012. Only about 2% spent more than \$10 000 on this activity. Among manufacturing businesses who undertook this activity, 70% spent more than one hour a week on this activity. In contrast only 25% of businesses in other priority industries spent more than an hour a week putting in place safety measures.

A higher proportion of manufacturing businesses also spent one hour or more on internal staff training in 2012 compared to businesses in other priority industries (72% and 15% respectively). Similarly, 54% of manufacturing businesses that provided staff training internally spent \$1000 to \$10 000; only 13% in other priority industries spent this much possibly indicating that the rest were undertaking little or no internal training in 2012.

Although only a third of manufacturing businesses employed an additional worker or engaged an expert in 2012, this appears to be the most costly activity if undertaken. Almost half of manufacturing businesses who undertook this activity spent more than \$10 000. The majority (54%) of manufacturing businesses that engaged an expert or an additional worker spent 1–10 hours a week on this activity.

The second most costly activity in 2012 for manufacturing was replacing plant and equipment earlier than expected to ensure compliance with new work health and safety laws. Almost half (42%) of manufacturing businesses undertook this activity. Among these businesses, 95% spent \$1000 to \$10 000 on this activity. Almost two thirds spent at least an hour a week on this activity.

Another costly activity undertaken in 2012 was purchasing staff training externally. This was undertaken by 39% of manufacturing businesses. The vast majority (95%) of these businesses spent \$1000 to \$10 000 when they purchased staff training externally compared to 35% who spent this amount on external training in other priority industries. Time wise, two thirds of manufacturing businesses spent one hour or more on this activity and 52% of businesses in other priority industries spent one hour or more on this activity.

Manufacturing businesses were less likely to make changes to contracts to ensure compliance with new work health and safety laws compared to businesses in other priority industries, 9% and 16% respectively. Yet, those who made these changes in manufacturing reported spending more money (23% spending more than \$1000 compared to 5% in other

priority industries) and more time (25% spending one hour or more in manufacturing compared to 8% in other priority industries) on this activity in 2012.

Manufacturing businesses were also likely to spend more money on talking about work health and safety matters with workers and contractors and running toolbox sessions for supervisors and workers than businesses in other priority industries.

The finding that manufacturing businesses were undertaking a number of work health and safety activities was supported by the qualitative findings from the Structural metal study. Common work health and safety activities reported by small and medium business owners and managers from in-depth interviews were promoting and demanding the use of personal protective equipment among workers, use of standard operating procedures, traffic management, equipment and process modernisation to minimise risk and machinery maintenance.

All employers/managers interviewed for the Structural metal study reported having at least an informal induction process for new workers and a level of initial supervision by a manager or an experienced worker. Most reported using buddy systems but this can sometimes fail as it heavily relied on safety training workers have received through their trade education, past experience and on the job training. A small number of employers and managers reported having specific internal safety induction training with documentation and an initial job training component. However, the interviewees reported that formal health and safety training is rarely provided due to the time and cost associated with such training.

Provision of work health and safety training

A higher proportion of manufacturing employers provided health and safety training to their workers compared to employers in other industries

Further details on health and safety training were available from the 2012 WHS Perceptions Survey of Employers. As seen in Table 3, a large majority (87%) of employers in manufacturing reported that they provided some health and safety training for each worker in the past 12 months (compared to 71% in other priority industries). The most common duration of training provided in manufacturing was one to less than 2 days (39%), followed by less than one day (28%).

All large manufacturing businesses reported that they provided some training. In contrast, 84% of small manufacturing businesses reported that they provided some training (data not shown).

Table 3. Employer reported provision of work health and safety training to workers (WHSP-E-2012)

Number of days	Manufacturing (%)	Other priority industries (%)	All industries (%)
None	13.3	29.2	31.7
Less than one day	28.1	30.7	32.3
One day to less than two days	39.0	16.6	19.4
Two to less than five days	8.2	13.7	9.0
Five to less than ten days	6.4	2.3	3.3
Ten days or more	5.0	7.5	4.3
Note: per cent per 100 employers			

In 2014, businesses were asked about work health and safety training provided in the past 12 months for specific types of workers (HSW-2014). About 78% of manufacturing businesses with new employees provided work health and safety training to new employees. About 30% of manufacturing businesses provided work health and safety training to ongoing employees. Just under half (48%) of manufacturing businesses with contractors provided work health and safety training to contractors in the last 12 months.

Most manufacturing employers provided induction training for new workers

In 2012, a large majority (87%) of manufacturing employers reported that they provided health and safety induction training for new workers in the last 12 months (WHSP-E-2012). All large businesses reported that they provided health and safety induction training to new workers whereas the proportion among small businesses was 84%. Among employers who reported that they have a health and safety representative (HSR), all paid for HSR training and provided paid time off to attend this training.

The higher rate of health and safety training in manufacturing may be partly explained by the positive attitude employers have about health and safety training. In 2012, most (97%) manufacturing employers believed that health and safety training is good for preventing accidents. This proportion is higher than reported by employers in other priority industries (87%).

Work health and safety communication and consultation

Over 80% of manufacturing employers in 2012 reported that they provide information for full time workers and part time/ casual workers. Generally, a smaller proportion of employers from small businesses provided information to different types of workers compared to medium and large businesses. However, 85% of small businesses reported that they provide information to part time/ casual workers compared to 73% among medium sized businesses.

Among employers in manufacturing, the most common method of informing workers of work health and safety matters was during a walk around the workplace by themselves or other managers with 79% reporting using this method (WHSP-E-2012). Informal communication was the second most common method reported (61%). More formal methods such as meetings on work health and safety with management, health and safety

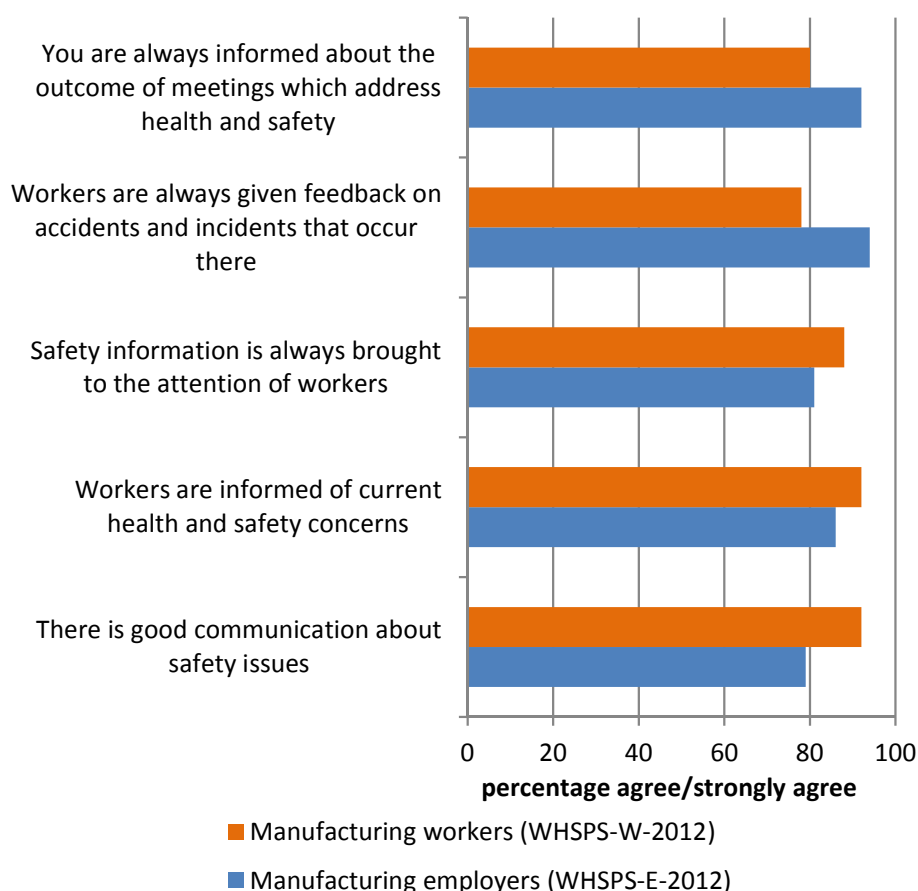
The majority of manufacturing employers and workers believed there is good communication about safety issues in the workplace

representatives and work health and safety committees were generally used by larger businesses.

A large majority of workers (WHSP-W-2012) and employers (WHSP-E-2012) in manufacturing believed that safety communication in the workplace was good. Almost 80% of employers in manufacturing reported that there is good communication about safety issues and the proportion among workers was higher at 92% (Figure 8). Similarly, the majority of employers and workers reported that workers are informed of current health and safety concerns, 86% and 92% respectively. Over 90% of employers in manufacturing also reported that workers are always given feedback on accidents/ incidents. The proportion among workers who reported that workers are always given feedback was lower at 78%.

According to in-depth interviews with small and medium sized structural metal manufacturing businesses in 2013, the method and form of communication in workplaces varied. Workplace meetings that include discussions on health and safety were common but the frequency of these meetings differed between workplaces. Small businesses were more likely to report having an informal method of communication such as a one to one discussion or on the spot discussion if a safety concern is noticed. Formal consultation processes on work health and safety were not common. Only a few businesses had formal safety committees and these were medium enterprises. However, the businesses reported having an 'open door policy' where workers are encouraged to speak to management when they notice a health and safety problem.

Figure 8. Communication and consultation in the workplace on work health and safety



Areas for improvement

Just over 1 in 10 workers reported that PPE is not consistently used in their workplace

Although the vast majority of workers reported that their workplaces undertake the work health and safety actions examined, some did not. In 2009, approximately one in five manufacturing workers reported that health and safety concerns are not usually discussed at their workplace. In addition, 11% reported that PPE is not consistently used and 16% reported that hazards are not usually removed as much as possible. One in seven also reported that at their workplace, work practices are not made safe consistently.

Some areas of improvement were also identified from the 2012 Perceptions Survey of Employers. In 2012, about 14% of manufacturing employers reported that they did not always take corrective action when they were told about unsafe practices. Almost one in five (18%) of manufacturing employers in 2012 reported that the time it takes before safety improvements are implemented is too long. A similar proportion of employers reported that they listen to safety concerns but often do not have time to address them.

About 28% of manufacturing businesses from the 2014 Health and Safety at Work Survey reported that 'the time it takes before safety improvements are implemented is too long'. About 11% of manufacturing businesses also reported in 2014 that 'workers ignore safety rules to get the job done'.

Only two thirds
of manufacturing
employers included
contractors in
induction training

When analysis was restricted to those who had contractors working for them, just under two thirds of employers in manufacturing reported that they included contractors in health and safety induction training. Only about a third of small manufacturing businesses reported that they provided induction training for contractors compared to 78% among medium businesses and 98% among large businesses. All small manufacturing businesses that had a contractor working for them reported that they had good awareness of their responsibilities towards contractors. This suggests that lack of awareness of was not a factor.

Manufacturing businesses were doing better at providing work health and safety information to contractors compared to providing induction training for contractors. Among manufacturing employers who stated that they had a contractor working in their workplace, 96% provided work health and safety information to contractors and there appeared to be no differences by business size.

Comparison of findings from the two WHS perceptions surveys showed some discrepancies between workers and employers on consultation and enabling workers to improve health and safety. Although all employers reported that the business considers workers' suggestions regarding safety 'most of the time' or 'always', only 77% of workers expressed this belief. This means over one in five workers felt that the business does not usually listen to workers' suggestions to improve safety. Moreover, 23% of workers reported that the business does not usually give workers the opportunity to express their views about work health and safety matters compared to 1% among employers expressing this belief. About 30% of workers also reported that the business usually does not involve workers when proposing changes that may affect their health and safety.

23% of workers
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about work health
and safety matters

Lastly, although manufacturing employers provide more health and safety training compared to those in other priority industries (WHSP-E-2012 & RBS-2013), more training may be needed. In 2009, when workers were asked about what could be done to improve safety, training and education was the most frequently mentioned suggestion (36 mentions out of 155 responses or 23%). Findings in the next section suggest that lack of training and education is still considered as an issue by both manufacturing workers and employers in 2012.

Perceived causes of work-related injury and illness

Participants were asked about perceived causes of work-related injury and illness in four surveys. Their answers provided some insight into what were considered to be the main causes of work-related injury and illness (Figure 9). The analyses were restricted to a core of nine common items that were asked in all four surveys.

In 2012, manufacturing workers most frequently nominated 'dangerous equipment/machinery', 'just not thinking' and 'lack of training and education' as causes of work-related injury and illness. Workers in the 2009 MAPS survey most frequently cited 'the worker being careless', 'just not thinking' and 'pressure or stress' as the top three main causes. Although a direct comparison is not feasible due to differences in sample design, this suggests a possible shift in manufacturing workers' perceptions about most common causes of injury and illness between 2009 and 2012.

The three most frequently nominated causes by manufacturing employers in 2012 were 'the worker being careless', 'just not thinking' and 'lack of training and education'. In 2014, the 'worker being careless', 'just not thinking' and 'unsafe work practices or procedures' were the top three most frequently nominated reasons for work-related injury and illness by manufacturing businesses.

In general, the findings seem to indicate that both workers and employers in manufacturing attribute human error as a common cause of injury and illness.

Table 4. Ranking for the most important possible causes of workplace injury and illness among nine common items between surveys

Ranking among main causes	Manufacturing employers (WHSPS-E-2012)	Manufacturing businesses (HSW-2014)	Manufacturing workers (WHSPS-W-2012)	Manufacturing workers (MAPS-2009)
First (the most frequently mentioned)	The worker being careless	The worker being careless	Dangerous equipment or machinery	The worker being careless
Second	Just not thinking	Just not thinking	Just not thinking	Just not thinking
Third	Lack of training/ education	Unsafe work practices or procedures	Lack of education/ training	Pressure or stress
Fourth	Risk taking	Risk taking	Pressure or stress	Lack of training or education
Fifth	Pressure or stress	Lack of training and education	The worker being careless	Dangerous equipment or machinery
Note: Only nine common causes that were included in all four surveys are presented.				

Attitudes and perceptions on work health and safety

Positive findings

Safety efficacy

Most workers in manufacturing were confident that they had the skills and knowledge to protect themselves and others at work

Several items in the 2009 MAPS survey measured workers' perceived efficacy for safety and sense of responsibility for safety of self and others. The overwhelming majority (over 93%) of manufacturing workers reported that they had thought about and taken on board safety issues in their workplace and they felt confident acting in accordance with safety principles in their workplace. A similar proportion also reported that they were confident that they have the knowledge and skills to protect themselves and others at work. Most (94%) manufacturing workers also believed that they can solve most health and safety problems if they try hard enough.

The same questions in the perceptions surveys of workers and employers produced similar results. However, in 2012, the proportion of workers believing that they can solve most health and safety problems if they try hard enough appeared lower at 78% compared to 94% in the 2009. Note that due to differences in sample design between the two worker surveys, only qualitative comparisons could be made.

In 2012, most (93%) manufacturing workers believed that their workplace is safe. Similarly, most (93%) manufacturing employers believed that their workplace is safe.

Motivators for work health and safety

Concern about being personally responsible for someone's injury or illness was the main motivator among workers for taking action to improve work health and safety

The MAPS survey asked workers about their motivators for taking action to improve health and safety. The most frequently reported motivator was concern about being personally responsible for someone's injury or illness (84% agreed with this statement). Other reasons include management or supervisor requirements (80%) and receiving positive feedback, recognition or reward from management/supervisor for taking action (82%).

Motivators for health and safety were also examined in the CEO-2000 survey. The most common reason for personal compliance with health and safety regulations by manufacturing CEOs and supervisors was that it was their responsibility to their employees and workmates (27%). Over one in five (22%) CEOs and supervisors also reported that their reason for compliance was to protect the safety of workers.

Information on motivators was also available from the Structural metal study. In 2013, most employers and managers in the structural metal product manufacturing 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 the company's reputation. For example, one participant explained:

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)

Employers and managers in the structural metal product manufacturing industry also accepted that it was the employers' responsibility to ensure

health and safety. However, they also reported that health and safety was best achieved by working in partnership with their employees.

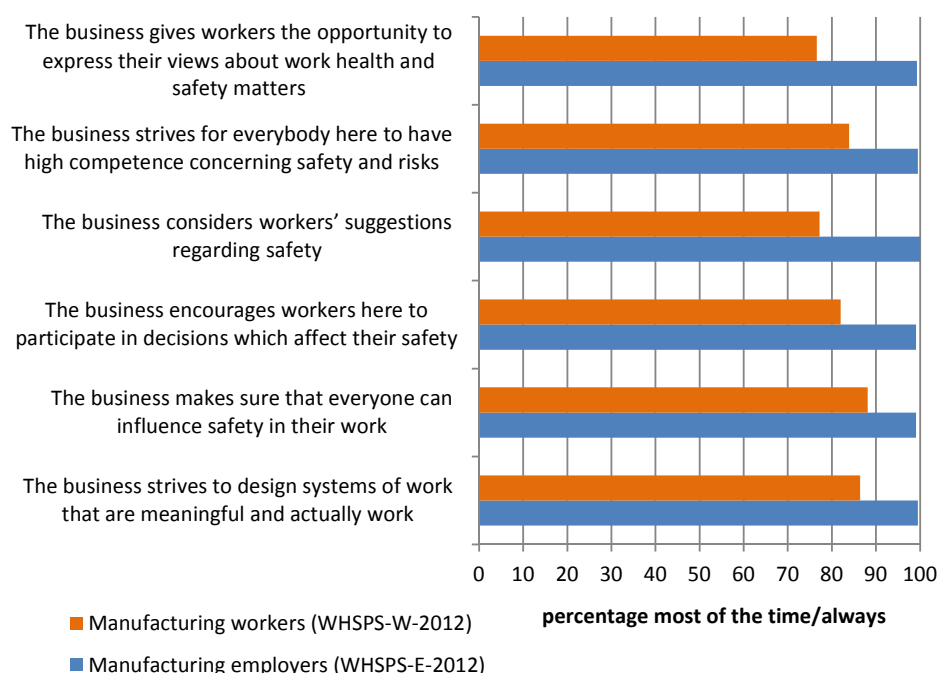
Management's and workers' actions on work health and safety

In 2009, 90% of manufacturing workers agreed that managers and supervisors express concern if an unsafe situation occurs. About 83% of workers also reported that managers express concern if safe work practices are not adhered to. The vast majority (86%) also reported that management corrects unsafe situations or practices when they become aware of them. About 89% of workers reported that they are encouraged to raise health and safety concerns.

In 2012, both workers and employers in manufacturing had positive perceptions about management's action to improve safety and involve workers in health and safety (Figure 10). However, more employers had these positive beliefs compared to workers. For example, all employers reported that the business strives to design systems of work that are meaningful and actually work compared to 86% among workers. Similarly, 99% of employers reported that the business makes sure that everyone can influence safety at work compared to 88% among workers. All employers also reported that the business considers workers' suggestions regarding safety. In contrast, 77% of workers had this belief.

99% of employers reported that the business makes sure that everyone can influence safety at work

Figure 10. Management's actions to improve work health and safety



Workers and employers had similar views on rule following. Employers in manufacturing expected workers to follow company policies on work health and safety and workers reported doing so. Almost all employers expected workers to work safely even if they do not think it is important and 95% of workers reported doing so.

The majority (81%) of employers in manufacturing reported that supervisors in their workplace are concerned about preventing bullying and harassment

in this workplace (WHSP-E-2012). The proportion expressing this belief was 78% among small employing businesses but was 91% among medium and large businesses.

Over 90% of all manufacturing employers have access to a range of solutions whenever unexpected surprises crop up. This proportion was similar across business size within manufacturing but higher than the proportion reported by employers from other priority industries (79%).

According to the 2013 in-depth interviews with owners and managers of structural metal product manufacturing businesses, most were aware that they worked in a high risk industry. However, they believed 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. Employers/managers also reported that as they had put in place as many safety precautions as they could and they had a low injury record, the health and safety measures they had put in place were adequate. When accidents happened, they were likely to be the result of careless employees.

‘Safety pays’ concepts

Most manufacturing CEOs believed that addressing work health and safety would result in financial benefits for their workplace

Information on the benefits of health and safety was collected in the CEOs survey. Most manufacturing CEOs and supervisors agreed with various statements that addressing health and safety in their workplace would result in financial benefits for their workplace. About 90% agreed that improvements in health and safety reduced injury-related absenteeism. Three in four agreed that improving health and safety was associated with reducing costs and 65% agreed that improvements in health and safety led to increases in worker productivity. However, for about 40% of manufacturing CEOs and supervisors, the cost of compliance to make the workplace safe was considered higher than penalties for non-compliance.

Almost all manufacturing CEOs and supervisors viewed lost time from workplace injuries as an important factor in their approach to health and safety (CEO-2000). The majority (91%) viewed the time and cost of legal defence if there was a prosecution for safety breaches as an important influence. About eight in ten (84%) also rated the threat of work being stopped from safety breaches as important.

Areas for improvement

Safety efficacy and trust in the efficacy of the health and safety system

Although most workers felt confident about their health and safety capabilities, some workers did not. About 8% of workers agreed that they have difficulty handling health and safety issues that come their way.

About 11% of manufacturing employers thought that health and safety inspections/ reviews have no effect on safety (WHSP-E-2012). This is despite 97% of manufacturing employers reporting that health and safety inspections/reviews help find serious hazards.

Risk awareness and risk taking

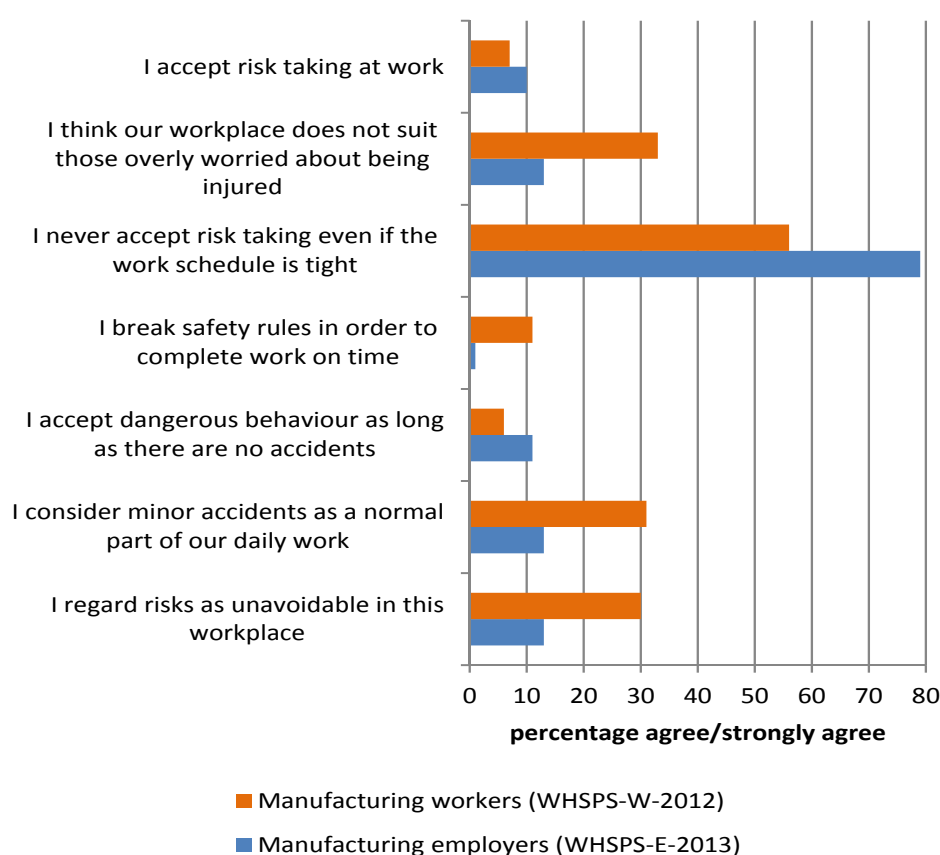
30% of manufacturing workers regarded risk as unavoidable

44% of manufacturing workers did not agree with the statement that they never accept risk taking even if the work schedule is tight

The CEOs survey in 2000 found that just over a third of manufacturing CEOs and supervisors thought that some accidents are not preventable.

In 2012, about 30% of manufacturing workers regarded risks as unavoidable. A similar proportion considered minor accidents as a normal part of daily work. A third reported that their workplace did not suit those overly worried about being injured. One in 14 workers (7%) accepted risk taking at work generally and 44% did not agree with the statement that they never accept risk taking when the schedule is tight. About 11% break safety rules to complete work on time and 6% accepted dangerous behaviours as long as there are no accidents (Figure 11).

Figure 11. Risk taking in the workplace



About 24% of manufacturing workers reported taking shortcuts that involved little or no risks and 10% reported that they break rules due to management pressure (WHSP-W-2012). Some manufacturing workers (17%) also reported that the conditions at the workplace stop them from following rules and 9% reported ignoring safety rules to get the job done. These findings suggest that there is a considerable proportion of manufacturing workers who felt some risks and injuries could not be avoided, accepted risk taking and broke safety rules. This is particularly the case when there are time pressures or pressure from the management.

1 in 10 employers in manufacturing reported that they accept risk taking. 1 in 10 also acknowledged that conditions at the workplace stop workers from following safety rules

It is noted that more workers from other priority industries regarded risks as unavoidable (44%) and accepted general risk taking at work (18%) compared to workers in manufacturing.

In 2012, more manufacturing employers accepted risk taking compared to manufacturing workers. One in ten manufacturing employers (10%) reported that they accept risk taking at work compared to 7% among manufacturing workers (Figure 11). Similarly, 11% of employers in Manufacturing accepted dangerous behaviours as long as there are no accidents compared to 6% among manufacturing workers. Among employers in other priority industries, 4% accepted risk taking at work.

On the other hand, manufacturing employers were less likely to report than manufacturing workers that time pressures caused them to accept risk taking or break safety rules (WHSP-E-2012). Even so, over 20% of employers in manufacturing reported that they accept risk taking even if the work schedule is tight. Similarly, the proportion among employers reporting that they break safety rules in order to complete work on time was 1% compared to 11% among workers. Moreover, only 13% of employers in manufacturing regarded risks as unavoidable in their workplace compared to 30% of workers who had this belief.

One in ten manufacturing employers also acknowledged that conditions at the workplace stop workers from following safety rules. About 18% of employers also agreed that workers take shortcuts that involve little or no risk. Almost one in seven (13%) employers reported that not all health and safety instructions are strictly followed at their workplace.

27% of workers reported that the pressure of their job means they take shortcuts on safety.

Findings from the 2009 MAPS survey provide further insights.

Approximately 29% of manufacturing workers agreed that sometimes it is necessary to depart from health and safety requirements and 27% reported that the pressure of their job means they take shortcuts on safety. A similar proportion also reported that they get so involved in the work they are doing that they sometimes forget about safety. One in nine workers reported sometimes skylarking at work with their colleagues and taking risks that jeopardise each other's safety—the most common age group of workers reporting they do this was the 25-34 years old age group. One in 20 manufacturing workers felt that it was none of their business if others ignore unsafe situations or unsafe work practices in their workplace. About a quarter of manufacturing workers in the MAPS survey believed that bosses do not consider worker safety at all times.

Perceptions of health and safety representatives (HSRs)

Over a third of manufacturing employers did not agree that a good HSR plays an important role in preventing accidents

While all employers who had HSRs in their workplace reported that HSRs make useful suggestions to improve health and safety in their workplace, only 60% reported that HSRs are actively involved in representing health and safety matters (WHSP-E-2012). This was a much lower proportion than reported by employers in other priority industries (95%). Over a third of employers (36%) in manufacturing also did not agree that a good HSR plays an important role in preventing accidents. In addition, only 42% believed that having a HSR is a useful mechanism to consult workers in their workplace compared to 99% expressing this belief among employers in other priority industries.

Supply chain pressure

The use of supply chain pressure to improve health and safety practices appeared to be low in manufacturing in 2000. No recent information on supply chain pressure is available

There is no recent information available on supply chain pressure. However, a set of four questions examined supply chain pressure in the CEO-2000 survey. The use of supply chain pressure to improve health and safety practices was generally low. Just over a third (34%) of manufacturing CEOs and supervisors agreed that they actively monitored safety procedures of their subcontractors. Only 11% reported that they would only use a supplier if they could see the supplier's documented safety procedures. It also appeared that customers of these manufacturing businesses exerted little pressure on these businesses. Just over one in twenty agreed that their customers would not purchase their products and services if they did not have documented safety practices.

Appendix A- Description of data sources used in this report

CEOs and Supervisors Telephone Survey (CEO-2000)

In the late 1990s, a large, multiphase project was commissioned by the National Occupational Health and Safety Commission (NOHSC) to examine factors that motivate CEOs and supervisors to be interested in health and safety and promote it in their workplace. CEOs and supervisors were targeted as they were considered to be influencing health and safety outcomes in the workplace. A component of the project was telephone interviews with 962 CEOs and supervisors across Australia. The sample base of prospective employers for the survey was drawn primarily by each Work Health Authority / WorkCover jurisdiction from their registration or inspection database. When jurisdictions were unable to provide the sample, a list of employers was purchased from Dun and Bradstreet. The sample was stratified by business size. For micro (1-4 employees) and small (5-19 employees), data was collected from CEOs or owner managers. For medium sized businesses (20-99 employees), data was collected from CEOs and supervisors. For large businesses (100 or more), only supervisors were interviewed. The survey focused on nine industries that were considered to be priority industries for health and safety at the time of this project: Agriculture, forestry & fishing, Manufacturing, Electricity, gas & water supply, Construction, Retail trade, Transport & storage, Communication services, Government administration & defence and Cultural & recreation services.

Information presented in this report is from this third phase of the study. Analyses focused on 174 CEOs and supervisors from the Manufacturing industry. The analyses are weighted by business size within states/territories.

Profile of respondents

Based on weighted data, approximately 98% of respondents from manufacturing were CEOs and the rest were supervisors. About 71% were male. Approximately 76% were responsible for final decisions on occupational health and safety. Most (96%) were from micro and small businesses.

A final report on the survey component of this project is available [here](#).

National Hazard Exposure Worker Surveillance Survey (NHEWS-2008)

The 2008 National Hazard Exposure Worker Surveillance (NHEWS) Survey was a telephone survey of 4500 workers around Australia. The survey aimed to estimate the prevalence of exposure to occupational disease causing hazards for Australian workers. The NHEWS survey contained questions asking workers about whether they exposed to specific hazards (e.g. whether they worked in direct sunlight). It also collected information on control measures provided for each hazard.

The NHEWS survey focussed on the five national priority industries identified in the first Australian National OHS Strategy (2002-2012) and hazards that were associated with priority occupational diseases in Australia at the time.

Profile of respondents

A total of 714 manufacturing workers across Australia participated in this survey. The mean age of these workers was 44 years old. About a third of the workers in this industry were Technicians and trades workers. The majority of workers in manufacturing were male. Over half of manufacturing workers had a trade certificate or TAFE qualification.

Eight reports from NHEWS-2008 are available on the Safe Work Australia website.

Supplementary information for NHEWS-2008

Table 5. Definition of exposure for hazards covered in this report

Hazard	Definition of exposed worker
Sun	Self-reported exposure to sun for 4 or more hours a day during the week preceding the survey
Wet work	Self-reported exposure to hand washing 20 or more times a day and/or hands immersed in liquids for more than two hours per day during the week preceding the survey
Biomechanical demands	Self-reported exposure to eight measures of biomechanical demands whose combined exposure score was at the upper 25th percentile
Job demands	Self-reported exposure to eight measures of psychological job demands whose average score was at the median for the sample or above
Noise	Self-reported exposure to loud noise* the week preceding the survey
Vibration	Self-reported exposure to hand/arm and/or whole body vibration the week preceding the survey
Biological hazards	Self-reported exposure to biological materials the week preceding the survey
Chemical hazards (dermal)	Self-reported exposure to working with chemicals in the week preceding the survey
Airborne hazards	Self-reported exposure to dusts and/ or gases, vapours or fumes the week preceding the survey
Note: * defined as noise so loud that you would have to raise your voice to be heard to speak to people who are at one arm's length away from you. This has been reported to be roughly equivalent to 85 dB(A).	

In addition to the brief descriptions of exposure provide in Table 5, further details for how exposure was defined for each hazard are described below.

Sun exposure

Exposure to sun generally refers to people who work outside in direct sunlight. However, the definition used in the NHEWS survey also included transport workers and office workers if the sun shone directly on them even though they were indoors or were inside a vehicle. Exposure to direct sunlight was assessed by the NHEWS survey using the following question:

“On a typical day at work last week, how long (hours per day or hours per week) did you work in direct sunlight, with or without protective lotions or clothing?”

In this report, if a worker reported four or more hours of exposure to sunlight per day, they were classified having sun exposure.

For further details, please see the report on sun exposure from the NHEWS survey at this link.

Wet work

Exposure to wet work was assessed by two items in the NHEWS survey:

- On a typical day at work last week, how many times did you wash your hands with water, including when using the bathroom?
- On a typical day at work last week, excluding time spent hand-washing, how long (hours per day or hours per week) did you have your hands immersed in or covered by any liquid (including water) with or without gloves?

Those who reported that they washed their hands more than 20 times a day and/or those who reported that they had their hands immersed or covered by any liquid for more than two hours a day were classified as having exposure to wet work in this study.

For further details, please see the report on wet work exposure from the NHEWS survey at this link.

High biomechanical demands

Worker exposure to individual biomechanical demands was measured in the NHEWS survey by asking respondents about the specific biomechanical demands involved in their work. Responses were on a five point frequency scale (1= Never, 2= Rarely, 3= Sometimes, 4= Often, 5= All the time). Respondents were asked about nine biomechanical demands. These were:

- lifting or carrying heavy loads
- making the same hand or arm movements over and over again (repetitive hand movements)
- work with the body bent forward
- work in a twisted or awkward posture
- work with the hands raised above the head
- work while sitting down

- squatting or kneeling while working
- pushing or pulling using some force, and
- work while standing in one place.

A composite measure reflecting both the intensity and the number of concurrent biomechanical demand exposures was constructed for this report.

This composite measure provides a way of identifying workers with the greatest exposure to a combination of different types of biomechanical demands. The composite exposure score, which was based on a similar analysis conducted for the EU Working Conditions Survey, was created in two steps:

1) The raw composite score for each respondent was calculated by taking the mean of the responses to the nine biomechanical demands. As all the nine biomechanical demand items in the NHEWS survey were measured using the same five point scale (from 5 'all of the time' to 1 'never'), the average exposure on a scale of 1–5 is calculated for a composite variable representing combined exposure. The greater the exposure to multiple biomechanical demands and the more intense the exposure, the higher an individual's composite score would be.

2) For easier interpretation, a standardised score (z-score) was then calculated across the distribution: 0 represents median exposure, a positive score is greater than median exposure and a negative score is less than median exposure, measured in standard deviation units. A positive score indicates higher exposure and can be considered a negative from a worker health and safety perspective. The formula for calculation of z-score is (Gravetter and Wallnau 2009):

$$z = \frac{(x - \mu)}{\sigma}$$

The variables in the z-score formula are:

z= z score

x= raw score

μ= mean of the population

σ = standard deviation of the population.

Although it was originally intended to include all nine biomechanical demand items in this composite measure, reliability analysis showed that the Cronbach's alpha for the 9-item scale was less than ideal (0.653). Generally, an alpha of 0.7 or more is considered acceptable. It was found that removing the item, 'working while sitting down', increased the Cronbach's alpha to 0.809. Therefore, a decision was made to exclude 'work while sitting down' from the composite exposure scale. The final composite score, therefore contained eight items and excludes 'sitting down', a measure of sedentary behaviour.

It should be noted that this methodology assumes that all biomechanical demands contribute equally to biomechanical hazards and the likelihood of injury. This may not be the case in reality. Furthermore, the presence of multiple biomechanical demands may have a multiplicative effect on injury risk, rather than a summative effect as calculated (by taking the mean)

here. Therefore, in terms of the latter assumption, the z score may confer an underestimate of the biomechanical demand exposure health risks of workers.

Workers whose composite z score was in the upper 25th percentile were classified as having exposure to high biomechanical demands.

For further details, please see the report on exposure to biomechanical demands from the NHEWS survey at this link.

High job demands

Worker exposure to job demands was measured in the NHEWS survey by asking respondents about the specific job demands involved in their work. Responses were on a five point frequency scale (1= Never, 2= Rarely, 3= Sometimes, 4= Often, 5= All the time). Respondents were asked about eight aspects of job demands. These were:

- I am pressured to work long hours
- I have unachievable deadlines
- I have to work very fast
- I am unable to take enough breaks
- I have to neglect some tasks because I have too much to do
- It's hard for me to juggle work requests from different people
- I have to keep track of more than one thing at a time, and
- My work needs my undivided attention.

The job demands score for each respondent was calculated by taking the mean of the responses to the eight items listed above. These items form a job demands scale which had good reliability (Cronbach's alpha= 0.77). Those with the job demands score at the median or higher were classified as having exposure to high job demands.

Noise

Noise exposure was assessed using the following question:

"On a typical day at work last week, how long did you work in loud noise?"

Loud noise was defined as noise so loud that a person would have to raise their voice to be heard when speaking to people who are at one arm's length away from them. Research suggests that this definition corresponds roughly to an A-weighted background noise level of 85 dB(A) (Ahmed et al. 2004; Neitzel et al. 2009).

In this report, workers who reported exposure to loud noise, regardless of the duration of exposure, were classified as being exposed to noise.

For further details, please see the report on noise exposure from the NHEWS survey at this link.

Vibration

Exposure to vibration was assessed using the following question:

“On a typical day at work last week, how long did you work with tools, equipment or in vehicles that vibrate?”

Vibration was not defined in the survey. Workers who reported exposure to vibration, regardless of the duration of exposure were classified as being exposed to vibration.

For further details, please see the report on vibration exposure from the NHEWS survey at this link.

Biological hazards

Exposure to biological hazards was assessed using the following question:

“On a typical day at work last week, how long did you work in places where there were biological materials, such as blood, urine, animal flesh, meat or laboratory cultures?”

Workers who reported that they worked in in places where there were biological materials were considered to be exposed to biological hazards in their workplace.

For further details, please see the report on exposure to biological materials from the NHEWS survey at this link.

Chemical hazards

Exposure to chemicals was assessed using the following question:

“On a typical day at work last week, how long did you work with chemicals such as cement, cleaning products, disinfectants, solvents, resins, paints, pesticides or other chemical substances?”

Workers who reported working work chemicals regardless of the duration of exposure were classified as being exposed to chemical hazards.

For further details, please see the report on chemical exposures from the NHEWS survey at this link.

Airborne hazards

The specific questions relating to exposure airborne hazards were as follows:

- On a typical day at work last week, how long (hours per day / hours per week) did you work in a place where your work or other people's work created dust or made the air dusty?
- On a typical day at work last week, how long (hours per day / hours per week) did you work in a place where there were gases, vapours, smoke or fumes?

Workers who reported exposure to either dust or gases, vapours, smoke or fumes, regardless of the duration of exposure, were classified as being exposed to airborne hazards.

For further details, please see the report on airborne hazards from the NHEWS survey at this link.

Table 6. Description of control measures for each hazard

Variable	Description
Control measures for sun exposure	Whether PPE and/or administrative controls are provided for sun protection. Administrative controls for sun exposure were reorganising work outside peak UV hours, providing covered areas and reorganising tasks/timing/location. PPE control measures for sun included provision of sunscreen, protective clothing, hat or sunglasses.
Control measures for noise	Whether PPE and/or other control measures for noise are provided. PPE measures for noise were provision of ear muffs or ear plugs. Other control measures for noise were training on how to prevent hearing damage, rotating jobs, placing noisy equipment in an isolated room, purchasing quieter machinery whenever possible and signage.
Control measures for vibration	Whether PPE and/or other control measures for vibration are provided. The PPE measure for vibration was provision of gloves. Other control measures for vibration were provision of vibration dampeners, vibration absorbing seats, purchasing products with less vibration and training.
Control measures for airborne hazards	Whether PPE or administrative/engineering controls are provided. PPE measures for airborne hazards were provision of masks and respirators. Administrative/engineering control measures for airborne hazards were providing ventilation systems and reducing time spent in places with airborne hazards.
Control measures for chemicals	Whether PPE or other control measures for chemicals are provided. PPE measures for chemicals were provision of gloves and protective clothing. Other control measures for chemicals were labelling and warning signs, washing facilities, training on safe handling of chemical products or substances.
Control measures for biomechanical demands	Whether training or engineering/redesign controls are provided. Training for biomechanical demands was provision of manual handling training. Engineering/redesign controls included provision of lifting equipment, provision of trolleys, changing layout of the job, and changing the size and shape of loads.
Control measures for job demands	Whether training/counselling was provided or whether their workplace had an anti-stress/anti bullying policy. Training was on how to manage stress.
Control measures for wet work	Whether PPE or other control measures were provided for wet work. PPE measures for wet work include provision of gloves, barrier cream or moisturisers. Other control measures include limit the time spent with hands immersed in water or liquids, provide labelling and warning signs, and provide OHS training on working with water or other liquids.
Control measures for biological materials	Whether PPE or other control measures are provided for biological materials. PPE include provision of gloves, masks, protective clothing and safety goggles. Other control measures include labelling and warning signs, safety cabinets, ventilation systems, sharps containers, biohazard bags, isolation and providing training on safe handling of biological materials

Motivations, Attitudes, Perceptions and Skills (MAPS) Survey (MAPS-2009)

The Motivations, Attitudes, Perceptions and Skills (MAPS) Survey was conducted in 2009-10 using a telephone survey. Those who were eligible to participate in the study were people over 18 years of age who were in paid work or had been at some time in the past six months and worked in one of the five priority industries at the time – Construction, Agriculture, forestry & fishing, Manufacturing, Transport & storage, and Health & community services. There were quotas set by industry, age groups and by state or territory.

This analysis focussed specifically on workers in the manufacturing the industry (n=167). The analyses were undertaken with two questions in mind:

1. What were the motivations, attitudes and perceptions of manufacturing workers in relation to work health and safety?
2. Were they different from those of workers in other priority industries?

It is noted that the sample is not representative and therefore the results cannot be generalised. However, the sample was obtained randomly and covered all states and territories.

Profile of respondents

The majority (72%) of workers in manufacturing were males and were 35 to 54 years of age. The vast majority (87%) worked for an employer and only 4% were self-employed. The majority (78%) had been in the industry for more than five years.

The final report from this study is available on Safe Work Australia website at this link.

Work Health and Safety Perceptions Surveys

The Perceptions of Work Health and Safety Surveys aimed to provide a baseline measure of work health and safety attitudes, beliefs and actions shortly after the model WHS laws were introduced. The survey targeted four types of respondents: employers, sole traders, health and safety representatives and workers. This report presents findings from the worker and employer surveys.

Work Health and Safety Perceptions Worker Survey (WHSP-W-2012)

The worker survey was conducted using Computer Assisted Telephone Interviews (CATI) during September to October 2012. The survey used a dual frame approach (both landline and mobile). A sample for random digit dialling was purchased from the commercial sample provider SampleWorx with an aim of completing 650 interviews from landline numbers and 650 interviews from mobiles. For the landline sample, the qualifying respondent was chosen by asking to speak with the person who had the most recent birthday of all those in the household who were at least 18 years of age and had worked in paid employment (for an employer) in the past 6 months. For the mobile sample, the person who answered was qualified to answer the survey if they were at least 18 years and had worked in paid employment (for an employer) in the past 6 months. A total of 1311 interviews (manufacturing n= 59) were completed out of 5618 in scope contacts, giving a response rate of 23%. The worker survey data were weighted by state/territory, sex, age and occupation to match population proportions obtained from the August 2012 quarter of the Labour Force Survey.

Profile of respondents

Based on the weighted data, 71% of manufacturing workers were male. About 37% of workers were from small workplaces (1-19 employees at respondent's workplace), 37% of workers were from medium workplaces (20-199 employees at workplace) and 26% were from large workplaces (200 or more employees at workplace).

Work Health and Safety Perceptions Employer Survey (WHSP-E-2012)

The employer survey was a paper based survey, conducted from October 2012 to January 2013. A random sample of 10 000 employing businesses were drawn by the Australian Bureau of Statistics for this survey and the same sample is used for the survey of sole traders. The sample took into account the number of businesses in each industry. A total of 1052 employers completed the survey of which 108 were in manufacturing. Taking into account the completed interviews by sole traders (n=520, not presented in this report), the response rate was about 16%. The data were weighted by business size, industry and state/territory. The data presented in this report are limited to the employers.

Profile of respondents

Based on the weighted data, the majority (82%) of the businesses have been in existence for 6 or more years. About 72% of manufacturing respondents were male.

Work Health and Safety Compliance (Regulatory Burden) Survey (RBS-2013)

The Regulatory Burden Survey (RBS) was conducted to collect information from businesses on the cost and other impacts of complying with the model work health and safety laws. The survey was conducted in April to June 2013 and examined costs incurred by businesses in 2012. The RBS was a postal survey using a random sample of 10 000 Australian businesses from the Australian Business Register drawn by the Australian Bureau of Statistics. There were two different survey forms: the sole trader survey and the employer survey. The data presented in this report are limited to the employers. A total of 1504 employers completed the survey of which 109 were in manufacturing.

Profile of respondents

Based on weighted data, most manufacturing businesses had been in operation for five or more years. About three in four (73%) had a turnover of \$200 000 to \$1 999 999 in 2012.

Work Health and Safety in Structural Metal Product Manufacturing (The Structural metal study-2013)

This qualitative study aimed to determine factors that contribute to the high rate of work-related injury and illness in the structural metal product manufacturing industry. It explored attitudes towards work health and safety, risk management practices and factors influencing work health and safety in the industry. The two states with the highest concentration of structural metal product manufacturing businesses were selected for this study (New South Wales and Victoria). The targeted sample for this study was employers and managers of small and medium businesses. The sample was drawn from the Australian Taxation Office's Australian Business Register.

Profile of participants

A total of 54 employers and managers in the structural metal product manufacturing industry participated in this study that involved face to face interviews. Twenty one respondents were from small businesses in Sydney and two were from medium sized businesses. In Melbourne, 18 employers and managers of small businesses participated in the study. A further 13 respondents in Melbourne were from medium sized businesses. The majority of businesses had been in operation for ten years but a few had been in operation for over 20 years. Very few businesses were new to the industry.

The final report from this study is available on Safe Work Australia website.

Health and Safety at Work Survey (HSW-2014)

The Health and Safety at Work (HSW) Survey was conducted in June to August 2014. It was conducted to measure the impact of model WHS laws on businesses 18–30 months after the laws were introduced in most Australian jurisdictions. The survey sought information on the following:

- Sources of work health and safety information
- Awareness and effect of officer duties
- Perceptions of work health and safety and risk management activities
- Cost (time and money) of adopting and complying with the model WHS laws; and
- Health and Safety Representative (HSR) training, costs and activities.

The survey included owners, senior managers, Chief Executive Officers and Chief Financial Officers in businesses that employed workers as well as owners of non-employing businesses ('sole traders' or partnerships).

The Health and Safety at Work Survey was a paper-based questionnaire posted to a random sample of 10 000 businesses in June 2014.

Respondents also had the option to complete the questionnaires online.

The Australian Bureau of Statistics drew the sample from businesses listed on the Australian Business Register, which contains all businesses that apply and receive an Australian Business Number. The Australian Bureau of Statistics considered the size, primary location and industry of each business when drawing the sample. The data were weighted by business size, industry and state/territory. A total 2350 businesses participated in this of which 188 were manufacturing businesses.

Profile of respondents

Based on weighted data, approximately 35% of manufacturing businesses had a turnover of \$50 000 to 199 999. Twenty two per cent of manufacturing respondents had a turnover of \$2 million or more.

Appendix B. Strengths and limitations

This report summarises findings from a number of Safe Work Australia data sources. Although most data sources included in this report are national, based on random sampling and cover a wide range of issues, some caveats must be noted.

Surveys such as the Regulatory Burden Survey and the Work Health and Safety Perceptions Employer Survey were professionally sampled using the best available sampling frame to ensure representative data but some response bias cannot be discounted. As such, the findings should be taken as indications only and not as statistically significant differences between groups. However, the substantial number of surveys completed for these surveys means that responses do provide an indication of work health and safety perceptions and practices and baseline data for comparison with follow-up surveys. Findings presented by business size should be taken only as indicative, particularly for medium and large businesses as a high proportion of the survey respondents were small businesses.

Due to differences in the study design and the availability of survey weights for only some surveys, some data sources are not directly comparable. As such, the report does not provide a reliable source of information on trends across time in the manufacturing industry. These two reasons explain why comparisons of workers and employers are generally limited to findings from the two comparable Work Health and Safety Perceptions Surveys.

Information on hazard exposures and control measures provided for specific hazards are all self-reported. It is possible that workers may not be aware of higher order control measures in the workplace such as ventilation. Information on hazard exposures was also limited to the hazards that were included in the NHEWS survey. Common safety hazards in manufacturing such as falls from heights, being hit by moving objects and hazards associated with the use of machinery were not included in the NHEWS survey as they do not generally result in disease.

The report covered a large amount of information available from several data sources while attempting to be as concise as possible. As such some of the findings and conclusions may appear too simplistic. Interested readers are referred to original project reports in Appendix A for further information. It should be noted that the original project reports from the surveys are general and are not focussed on the manufacturing industry alone.

