

## **Improving the Occupational Health and Safety Measures in the Australian Construction Industry**

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**Abstract:** The building construction process is inherently dangerous and falls in particular are a major, and sometimes fatal, hazard. The large companies use pools of sub-contractors who tend to focus mainly on price, rather than OHS. The paper discusses the field project and the methodology in the light of the recurring theme in OHS literature of a lack of safety precautions in the construction industry. From the evidence obtained through the interviews and the literature, the paper builds a case for the model of OHS implementation requirements.

**Keywords:** health care, construction industry, Australia

**JEL classification:** I11

### **Introduction**

The aim of this paper is to establish essential improvements required in overall Occupational Health and Safety (OHS) management within the Australian construction industry. Drawing from a recent pilot study that included industry field interviews, the paper provides evidence from construction industry concerning OHS practice and needs. It is estimated that poor OHS costs the economy over \$34billion each year (NOHSC news, 2004). The physical nature of the construction process clearly distinguishes the industry and presents safety challenges (Petrovic-Lazarevic & Djordjevic, 2002). Large building projects are inherently dangerous, with fatal falls being a major hazard (Larsson & Field, 2002 and Kines, 2002). The large companies utilise pools of sub-contractors and there is a tendency for contract tenders to be based

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on price, with little margin over for OHS investments. The paper first discusses the oft-reiterated theme appearing in OHS literature and a major Australian commissioned report of a lack of safety precautions in the construction industry. Secondly, it discusses the field project and the methodology applied. Subsequently, the evidence of field interviews is further examined in the light of academic literature. The paper concludes by presenting a model of nine government/industry OHS implementation requirements arising out of the literature and field discussions.

### **Literature Review/Trends**

A plethora of Australian academic literature (Larsson & Field, 2002, Lingard, 2002, Bajaj, 2001 and Lin & Mills, 2001) supported by international literature (Dainty, Briscoe & Millett, 2001, Kines, 2002 and Atkinson, 1998) plus a recent major Australian government Royal Commission report (Cole, 2003) has pinpointed a need for improved safety management in the Australian construction industry. According to a report published by the Royal Commission into the Building and Construction Industry (Durham, 2002), there have been steady improvements in safety outcomes in the building and construction industry, which is consistent with trends across all industry. The report revealed that the incidence of injury is 50% higher than the rate of all the industries combined. It is interesting to note that within the building and construction industry, non-building construction (which includes road and bridge construction and other non-building construction) has an incidence rate some 60% higher than the overall construction average. Even in well developed nations like the US, the construction industry has been recognized historically as having higher rates of fatalities, injuries, and illnesses than other industries ( and ). These injuries are attributed to the failure to properly identify hazards and control risks during the design process (Trethewy, Atkinson and Falls, 2003).

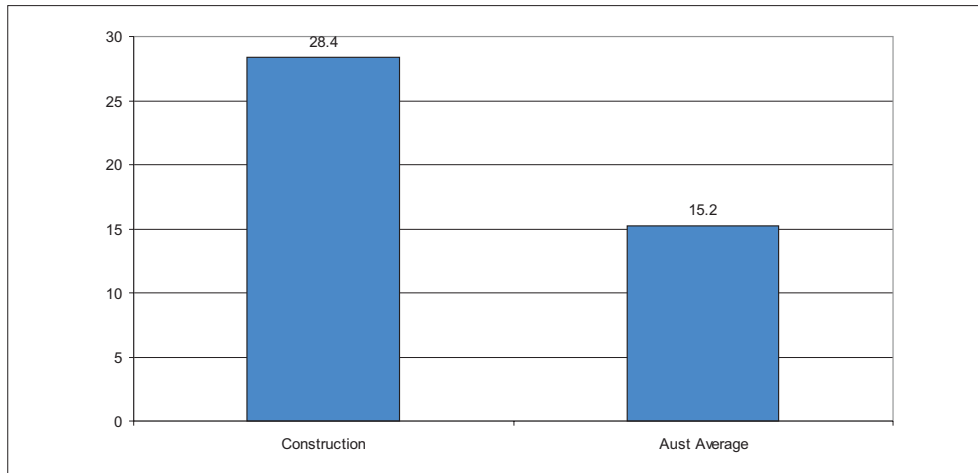
Figure 1 provides the injuries in the construction industry being almost double, at 28.4, the Australian average figure of 15.2.

The Cole Report (2003) presented a lengthy case concluding that:

‘The occupational health and safety performance of the building and construction industry is unacceptable. The powerful competitive forces in the industry too often work against health and safety. The industry strives to complete projects on time. Too often safety is neglected. There must be cultural and behavioural change. That change can come about by harnessing the competitive forces in the industry to work for occupational health and safety. A combination of government, workers and employers in large and small operations being focussed on securing OHS implementation measures to

lift the Australian construction industry's OHS currently less-than-ideal record.' (Cole, 2003, p. 7)

Figure 1: Employee injuries - the construction industry and the Australian average, 2000-2001



Source: Cole, 2003

Studies have indicated that most of the injuries are caused by human error (Rasmussen et al. 1987) and technological solutions to OHS although important, are not enough (Lingard and Yesilyurt, 2003). In fact there is evidence to suggest that introducing safer technology can lead to more risky behaviour because people feel uncomfortable with the 'low' level of risk they experience and try to compensate for this in behaving in an unsafe manner. It is therefore suggested that attention to human error mechanisms should be given more importance. Taking a more holistic approach to finding the solution to the problem, Lingard and Yesilyurt (2003) have indicated that the importance of the human element means that the successful management of OHS requires attention to human factors, as well as the development of systems to manage OHS and technological solutions to reduce OHS risk. DeJoy (1985) applied attribution theory in terms of various aspects of occupational safety namely: worker risk perception, supervisory response to safety events and general safety climate. Central to attribution theory is how people process information in determining the causality of events (DeJoy, 1994) and the idea that an individual's perception of causality are important determinants of that persons subsequent behaviour. However, attributional biases may influence how workers or supervisory personnel perceive 'actual, depicted or potential safety situations which may lead for instance in the context of workers to misjudge workplace risks and to fail to take appropriate

self protective actions (DeJoy, 1985, p.61). Therefore, the safety programmes have to take into account the amelioration of these attributional biases (DeJoy, 1994).

International literature covers ineffectiveness and inefficiency in small to medium construction industry organisations caused by avoidance of OHS measures (Weil, 2001 and Mayhew & Quinlan, 1997) and the prospective role of large construction industry organisations in improving OHS standards. In addition, high rates of injuries in small to medium construction industry organisations are associated with a lack of OHS management control, worker involvement (Weil 2001) and precautionary enforcement. A qualitative study of the understanding of OHS risk control was conducted by Lingard and Holmes (2001; Holmes et al. 1999) among a sample of small businesses engaged in the Australian construction industry. Two OHS risks relevant to the construction industry, namely fall from height and occupational skin diseases, were selected for the study. The results suggested that, at the small business end of the industry, there was a 'fatalistic resignation to OHS risks being an unavoidable part of the job' (Lingard and Holmes 2001: 217). The study emphasised individual rather than technological controls for OHS risk. While small contractors may struggle to fulfil their job obligations within time and cost constraints without paying serious attention to health and safety performance, the larger companies perform better overall (Lin & Mills, 2001). This could be because firms having more resources and experience tend to deal with health and safety issues more effectively (Lingard and Rowlinson, 1994). These companies tend to introduce and apply OHS regulations including training and education of managers and workers as well as implement rigorous construction site inspection procedures (Lingard, 2002 and McVittie et al., 1997).

Hinze et al. (2002) showed that the rate of falls decreased as the cost of construction projects increased. The point of the study was to use the findings to help small construction companies reduce their rate of falls. Some studies were also conducted to determine what elements of the safety programs of large construction companies were responsible for a reduced rate of falls in comparison to small construction companies (Construction Safety Alliance, 2003). Authors Wilson & Koehn (2000) reiterated the findings of Mattila et al. (1994) in stressing the involvement of managers and workers in OHS vigilance. Some further methods of improving OHS in the construction industry have been identified as, firstly, implementation of 'zero accident techniques' (Hinze & Wilson, 2000) and secondly, five site-safety steps (Sawacha et al., 1999). Hinze & Wilson's (2000) 'zero accident techniques' referred to a set of five identified safety steps adopted by some large companies to avoid workplace accidents. These entailed pre-project and pre-task safety planning, safety orientation and training, written safety incentive programs, alcohol and substance abuse programs and accident/incident investigations. Sawacha et al. (1999) referred to the five site-safety steps of management talks on safety,

provision of safety booklets, provision of safety equipment, providing a safe environment and appointing a trained safety representative on site. They also referred to a 'safety culture' as being of paramount importance.

The implementation of OHS measures has been shown to have a positive influence on the competitiveness of the construction industry companies by reducing the financial and time-related costs associated with occupational accidents. In the Australian construction industry the assignment of responsibility for maintaining OHS on a particular project is currently not clear-cut and is complicated by varying state and federal regulations. For example in the area of WorkCover. Academic and industry literature suggests that regulatory issues and matters of managerial responsibility and accountability need to be rectified in order to improve the industry's OHS performance (Cole, 2003).

This paper is important in that it identifies some clear Australian construction industry OHS issues of concern and discusses them in the light of Australian and international literature. Of further importance, too, is its outcome of a literature-based model that also reflects the pilot study findings. The paper is therefore of relevance to Australian construction industry organisations, governments and academics involved with OHS performance, governance and industrial relations. The following sections explain the research methodology, discuss the findings and present a model of OHS improvement requirement in the Australian construction industry.

## **Methodology**

This paper is based on an exploratory research through a pilot study involving the managers of 15 large construction companies operating in Victoria (most of whom also operated in other states as well).

The review of the literature highlighted that there is close link between OHS performance and management, government and employee involvement (National Occupation Health and Safety commission, 1999). Hence the set of questions to the managers incorporated this theme. More specifically, the questions sought information on the role of managers, employees and government in overseeing OHS enforcement in large Australian construction operations. The researchers then conducted a preliminary evaluation of these issues through a series of recorded responses to the questions. The questions concerned:

- Procedures in place to resolve OHS conflicts on the construction sites;
- Responsibility for OHS;
- Levels of government and industry cooperation;
- Balancing the principles of self-regulation government regulation;

- Efforts by the Australian government to improve OHS in the building and construction industry;
- Mechanisms of enforcement of OHS and encouragement of OHS by the government;
- Determination and application of safety performance for the industry; and
- A comparison of the Australian Construction Industry's safety record compared to other countries; and
- The relationship of improved OHS performance to increased competitive advantage in Australian firms.

The transcribed responses to the questions were examined for emergent themes and the findings were related to current literature. The study forms a basis for a further, more comprehensive study endeavouring to determine the importance of OHS performance in improving competitiveness throughout the Australian construction industry

## **Findings**

### *Subcontractors and Safety*

Studies have suggested that industries where subcontracting is common, there is high incidence of serious injuries and fatalities (US Bureau of Labor Statistics, 1995; Toscano and Windau, 1994; Harison et al.1989, Mayhew et al.1997). In the responses concerning subcontractors and safety, there was also an indication of a degree of correlation with the clear academic literature theme of safety strongly relating to company size (Dainty et al., 2001, Lin & Mills, 2001, McVittie et al. 1997 and Weil, 2001), although this was never expressed explicitly. For example, most of the respondents were aware that small subcontractors did not have the resources to design and implement their own comprehensive safety policies. Two respondents mentioned that when evaluating a subcontractor, the subcontractor's safety record was not necessarily the most important factor, because price and the service track record were also important.

When asked about subcontracting, most interviewees indicated that they perused the safety records of subcontractors when choosing between them. Where there was no policy, the usual procedure was to sign the subcontractor in under the larger company's safety policy during induction. One respondent mentioned that his company continually used the same subcontractors because they were familiar with the hiring company's OHS requirements. In fact, most respondents were in

agreement that having a good safety record increased competitive advantage for subcontractors seeking work with large firms.

There were actually mixed opinions on whether safety records influenced the competitiveness of subcontractors. Several respondents revealed that working safely might be associated with higher costs. However, one respondent mentioned that the costs of insurance due to a poor safety record would be greater still and would put a contractor at a disadvantage regarding future work. It was also reported that accidents at work reduced the morale of co-workers.

Two respondents referred to the fact that competition for jobs between contractors could lead to firstly avoiding the 'unnecessary' costs of safe work procedures and secondly to trying to stick to shorter time lines, which might compromise safety. This was in line with previous study conducted by Mayhew et al. (1997) where it was found that economic survival and the gaining of contracts in an intensely competitive environment were normally prioritised over any OHS consideration. One respondent reported that the status of the market affected the pressure for safe work procedures. For example, when there was a considerable amount of work around, contractors could choose which jobs to take, and if the hiring company required considerable safe-work procedural paperwork, the contractor might choose to work somewhere else. Some respondents believed that subcontractors might skimp on safety in order to save time and/or money; however others believed that this was prevented in the regulated environment at that time. Most respondents indicated that they believed that safe work practices would actually save time and/or money, because, by ensuring the safety of workers and reducing industrial action, law suits might be avoided.

All the respondents indicated that every subcontractor they hired went through some sort of induction on site. Some had checklists for things like the contractor's OHS policy, safety systems, contributions to WorkCover insurance and their Job Safety Analysis. Larger subcontractors usually had their own policy that would normally be audited by the main company prior to starting work. Smaller subcontractors, who normally did not have their own policy, were signed on under the head contractor's system as part of the procurement documents. Whenever a subcontractor had a safety system in place, the hiring company would check it for compliance with their own expectations. One respondent indicated that if a subcontractor did have safety system the respondent put the onus on the subcontractor for safety system implementation. However, another respondent stated that all hired subcontractors were monitored by a safety inspector or similar on site. Another respondent, however, reported that although subcontractors are not seen as the employees of the main company 'through the eyes of the law' they tried to ensure that subcontractors were complying with the OHS policy by monitoring their actions.

*Regulatory Issues at State and Federal Level*

Throughout the Australian construction industry, the issue of construction site OHS is viewed as an important one to be addressed. From an economic perspective also it has been suggested that government and businesses must take adequate measures to invest in safety even if the estimated costs seem to significantly exceed the estimated benefits (Farrow and Hayakawa, 2002). However, under the Australian constitution, OHS legislation has been traditionally handled by the states and territories and hence they tend to be proprietary about their OHS legislature. The Federal Government appears to have no real inclination to usurp the states in this role (Cole, 2003, p. 20). The Federal Government has, however, recently developed a suite of National OHS initiatives. These included the National OHS Committee, the National OHS Improvement Framework, the National OHS Strategy and, more recently, the appointment of a Commissioner for Health and Safety in the Building and Construction Industry to monitor OHS on all Commonwealth (Cole, 2003, p.15).

Using the example of the Victorian Government, where the study was conducted, pro-active legislative steps had been put into place in March 2004 to improve the state's poor OHS record. The record included that in 2004 alone there were 26 work related deaths with seven deaths in construction industry (Victorian Workcover Authority, 2004). This was by no means an atypical Australian example. Construction workers are killed at work each year as a result of falls, falling objects, electrical, and being hit by moving objects (Durham, 2002). Construction falls were attributed, by Kines (2002), to major risk factors including fatigue, surfacing and appropriateness of safety gear.

The Victorian regulations require strict adherence to new stringent safety legislation concerning operation above two metres. It is also now a legislative requirement in the State of Victoria that the government 'WorkSafe' organisation be brought into dispute resolution if the safety committee is unable to resolve a safety issue. However, one respondent maintained that while WorkSafe would come in and determine whether a site was safe or not, they would not participate in any political disputes between parties to determine if the call-out was for a valid reason. The role of WorkSafe seemed to have changed, in that due to recent litigation involving written advice given by WorkSafe, they no longer advised on safety issues nor validated advice given by other parties. A few respondents indicated a need for WorkSafe to be more proactive about safety issues, rather than just getting involved after an incident had already occurred. There were 25 per cent mentions of the role of WorkSafe being a 'policeman' or 'Big Brother' and that they needed to be more active in this role. Apparently this was especially so in the residential building industry than commercial construction, because of the absence of unions in residential construction. It was further reported that WorkSafe would only come out



to a residential building site after an incident had occurred, and that if they had a greater presence on site, people would be more likely to work safely to avoid being fined.

In all, there were mixed opinions about the effectiveness of the role of WorkSafe. One or two respondents reported that WorkSafe inspectors sometimes did not have a construction industry background. On the other hand, some respondents had noted a more proactive role being taken on by the inspectors. For example, one respondent specifically mentioned a positive experience with WorkSafe:

‘WorkSafe inspectors now are more encouraging. They just don’t come in and tell you, they actually work with you and explain, and I think that is the most important part. A recent example was that they worked with us and did a lot of follow-up instead of just handing over an infringement notice; they’re actually a bit more proactive now. They are giving us the path and leading us down to the right conclusion. There is more communication between the inspector’s objectives and our objectives.’

However, another respondent questioned the ‘zero tolerance’ policy of WorkSafe, saying that the current system of handing out up to three notices before prosecution is not strict enough and that fines should be issued at the first discovery of unsafe work conditions. The same respondent did note though a more proactive stance on the part of WorkSafe, quoting a case where a company was issued a fine for unsafe working at heights although there were no injuries. Although on the surface it seemed that there was adequate ability of contractors to carry out formal identification of hazards one could not ascertain to what extent these formal hazard identification and control systems were in place. This concern was also previously discussed in the study conducted by Trethewy, Atkinson and Falls (2003) where it was found that there was a large disparity between submitted safety documentation considered acceptable to different Principal Contractors in control of a workplace and actual work practices. The same study raised concern over the issue of non-conformance, the extent and level of training and awareness of safety and environment legislation. Closely related to this issue is the use of non-standard, subcontractor-prepared subcontract conditions which is considered to be wide spread in Australia’s construction industry. Many conditions in such subcontracts like the terms of payment, extension of time, rise and fall, liquidated damages and delay and cost of delays all impact on the projects performance and it has been suggested that clients should take more active interest in the general contractor-subcontractor relationship to minimise the presence of these subcontractual risks (Uher, 1991).

There appears to be some contention about whether companies should be self-regulated or strictly follow government policies. One respondent stated that the OHS Act had forced businesses to become self-regulated, which was difficult for small companies to do. Also, the nature of the industry as a conglomeration of businesses made self-regulation difficult. The lack of a level playing field between small and large companies meant that some would not worry about self-regulation and do whatever was necessary to get the job done cheaply. 10 percent of respondents said that self-regulation was open to too much interpretation and there needed to be government regulations to adhere to. According to some respondents, the benefit of self-regulation lay in flexibility for different levels of risk in different situations. A framework was necessary but there also needed to be room for project managers to make decisions based on their experience with particular projects. It was suggested by several respondents that it was the government's role to make the regulations and codes of practice, but it was the responsibility of the company to make sure that these transferred to the work site. It was also suggested that the government regulations should come from industry suggestions because policies designed by non-industry or inexperienced people 'made everybody's life difficult'.

#### *Employee Attitudes and Organisational Culture*

From the responses, it was concluded that the construction industry culture at sub-contract level was typically 'price-focussed', with 'hazard bonuses' as a monetary compensation for dangerous work. Mayhew & Quinlan (1997) pointed critically to an Australian '...insidious form of capital flight whereby hazards and risk have been quietly out-sourced along with contracts and jobs.' This observation appeared relevant to the study.

Most of the respondents reported that individual attitudes about safety risks were important drivers of safety practices. 30 percent of respondents intimated that not only were some people inherently more likely to take a risk, but also that younger workers in particular, may not feel confident enough to speak up about a safety concern because they might feel intimidated by production-driven supervisors. Five companies had dealt with this issue by having a system of anonymous reporting backed up with a privacy policy, or by ensuring that everyone was made aware during induction that they could bypass their supervisor and take concerns directly to a safety officer or union representative. One respondent reported that on large commercial projects, safety representatives and/or site managers were likely to pick up on a safety concern from regular inspections even if an employee did not bring it up.

Most respondents reported that their company encouraged putting value on safety in the organisational culture. This is in line with the safety climate theory which is defined as the coherent set of perceptions and expectations that employees have regarding safety in their organisation (Zohar, 1980). Dejoy (1994), for instance highlights on the importance of good safety performance which is associated with active management support and involvement, a balanced view of accident causation and full acceptance of safety as an integral part of the management system. There is evidence to suggest that safety 'culture' in the company can actually increase productivity (Frame, 2005). Annual performance evaluations, training, and brochures and posters were all ways of encouraging employees to value safe work practices. One respondent stated that the value in educating employees about the benefits of safe work practices was not just in increasing compliance, but in changing attitudes towards safety committees, seeing them as an ally instead of a threat. He said this was achieved by creating a 'no blame' culture that the employees trusted and took seriously. Other specified methods of increasing the motivation for safe work practices included the development of a safety incentive scheme, regular newsletters about safety and safety meetings. Particular mention was made of the role of training.

#### *Lack of Cooperation between Industry, Unions and Government*

The Australian Building and Construction Industry Royal Commission Report (Cole, 2003) pointed clearly to a greater need for union cooperation with the state and federal governments in order to properly address OHS issues. It criticised the unions for being absent from a Royal Commission's 'Health and Safety Conference', 'because they did not want to give credence to the Commission' (Cole, p. 8). Echoing the underlying theme of union/government conflict and antagonism, several interview respondents brought up an issue of the unions using safety issues as a 'weapon' or 'lever' for stopping work and other industrial action. A couple of respondents were of the view that the agenda of the unions sometimes complicated the industrial relations process, making managers sometimes sceptical about real OHS concerns on-site. For example, it was reported that employees were paid during a work stoppage only if it came about from a safety concern, thus the unions might stop work for safety reasons while they were in fact fighting for something else, for example, a travel allowance.

Positive aspects of the unions were also mentioned in some interviews. For example, one respondent believed that without the attention of the unions, safety could possibly slide. Another respondent described the role of unions as 'policemen'. However, the point was also brought up that the unions might go too far in this role, and that it was difficult to know where to draw the line between 'overkill' and unsafe

practice. One respondent did mention a belief that management, unions and authorities did want the same thing, but just had different ways of going about getting it. Most of the respondents indicated that they followed a standard dispute resolution procedure that usually involved taking the dispute up the chain of command where necessary. One respondent stated that if a formal procedure wasn't followed, an industrial dispute might follow. He also added that:

‘When the issue is only safety, resolution is easy, but often there is something else underlying the safety issue, and this is what complicates resolution. Some projects run very well and others run very poorly, and this is caused by individuals that make or break the project.’

The respondents seemed to agree that the procedure used for resolving disputes depended on the nature of the dispute. Normally minor issues were resolved on the spot through involving a supervisor, with the next step, if warranted, involving union representative or OHS officer. One respondent was of the view that for difficult disputes, it was important to involve all the stakeholders in the resolution. He added that meetings were held each day to reach resolution and the solution was communicated down to the workers so that everyone was aware of the agreement reached. He said this was important because the agreement might involve new procedures and possibly more induction. Two other respondents also stressed the importance of maintaining a high level of communication between stakeholders for effective dispute resolution. A further respondent reported that if an issue could not be resolved, it would go to the industry's Disputes Forum, but that this was rare.

#### *Low Level of OHS Training in Employees/Middle Management*

Lingard (2002) referred to a study involving a concerted first-aid training program for construction workers that was associated with a clear improvement in the incidence of workplace injuries over a 24 week period. In line with this view several other writers, for instance, Laukkanen (1999) also emphasised on safety instruction and on the job training at sites including the teaching of first aid skills and accident prevention. The study also supported the need for comprehensive occupational health and safety measures including rehabilitation needs to improve both safety and the development of construction work. In terms of identifying and preventing hazards in the workplace by contractors, Trethewy et al. (2003) have stressed on the importance of training provided by those personnel who have intricate knowledge of the work tasks. The study supports the Australian construction industry view that one of the better ways to identify hazards is for contractors to carry out ‘tool box talks’

that directly involve those workers who carry out the work. The study suggested that this type of training in forums as ‘tool box talk’ is particularly relevant where contractors do not speak English or English is not their first language. The process would enable the contractors to discuss the task in an informal way, identify hazards related to various job steps and then to develop safe work procedures ‘on-the-job’. The authors have also highlighted on the usefulness of involving an external person in this process to identify the ‘ingrained’ hazards accepted as the ‘norm’. A recognition of the importance of OHS training was clearly apparent in the study under discussion in this paper.

Several respondents indicated that they saw training as a way of fostering safe work practices not only by changing attitudes towards safety, but also by increasing knowledge and awareness of safety risks in the workplace. One company training created a pack for each project to ensure that all the required training was undertaken for the project’s success. It was reported that the time factor could be a problem because it took people away from the job. However, there was general agreement that the newly introduced ‘Red Card’ system, where workers and managers all had to meet certain training requirements at induction was a good idea. A few respondents mentioned that experience was as important, if not more important, than training, because training on its own was not enough to ensure a good judgement call about a safety issue. Another concern raised related to the type of training courses available with a reported difficulty in finding a worthwhile construction-industry-specific training course. Most respondents felt that the responsibility for ensuring adequate training lay with management, but some also thought that unions have a role in encouraging people to undertake training. In fact, one respondent felt that the responsibility for ensuring the safety of workers lay completely with the union. However, in other interviews, concerns were raised in relation to the role of unions in work site safety.

#### *Lack of Uniformity in OHS Standards, Targets and Enforcement*

The question of whether or not safety performance targets should be set for the industry as a whole received varied responses. Respondents indicated some of the difficulties concerning this notion. Some of these difficulties included possible dishonest reporting and manipulation of incident statistics and the exclusion of near misses in these statistics, even though the near misses might be an indicator of an unsafe work environment. There was also the notion that the focus should be on what companies do to prevent accidents rather than on recording accident statistics. One respondent’s company already had positive performance measures in place, where employees were recognised for safe work practices. A couple of respondents stated

that it would be good to have a safety benchmark for the industry to measure themselves against and another stated that management would like to know how they were performing from site to site, acknowledging that measuring performance would be difficult. It was also mentioned that safety performance figures might be useful as a speedy way of measuring up the safety performance of subcontractors during the selection process.

Some respondents believed that WorkSafe inspectors focused too much on prosecuting, and that this was a disincentive for honest reporting. One stated that the Government should aim for a situation where companies volunteered safety breaches rather than being caught enacting them. A couple of respondents suggested that the larger companies working on commercial projects actually set the standards. Large construction companies have the resources to aim for higher standards of safety than those nominated by the government. One respondent reported that legislators watch what large companies do about ensuring safety on large projects and draw inspiration for policy from that.

## **Conclusions**

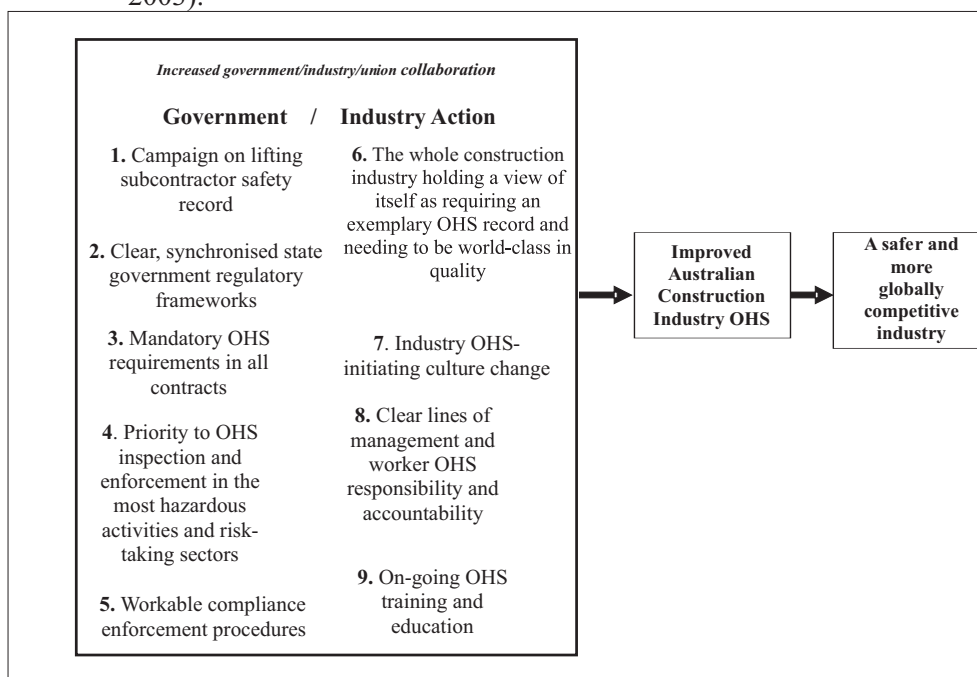
A clear message from the Australian construction industry pilot study is that there needs to be increased, on-going, government, construction industry and union communication and collaboration, at both state and federal levels. This is essential for the much-needed OHS improvements to start taking place. (See point 1 in Figure 2: Model of Australian OHS Implementation Requirements.) This need is complicated by the differences in legislature between the states, the historical lack of national cohesiveness concerning OHS and the traditions of low trust and adversarial relationships between industry management and the builders' unions. Figure 2 further displays a set of nine required government/industry collaborative inputs drawn from the interview responses, the literature and Royal Commission Report (Cole, 2003).

### *Implementation Requirements*

It is envisaged that should the suggested actions be implemented, they might ultimately lead towards the outputs of an improved Australian construction industry OHS scenario and ultimately a safer, more globally competitive industry. The nine inputs to a safer, more globally competitive industry include five mainly government-based initiatives and four mainly industry-based initiatives. The government actions concern the setting of unified national OHS policy guidelines for

the states to address through legislation. More specifically, these are: a campaign on lifting subcontractor safety records, clear, synchronised state government regulatory frameworks, mandatory OHS requirements in all contracts, priority to OHS inspection and enforcement in the most hazardous activities and risk-taking sectors, and implementation of workable compliance enforcement procedures.

Figure 2: The required government/industry collaborative inputs drawn from the interview responses, the literature and Royal Commission Report (Cole, 2003).



The industry inputs to a safer, more globally competitive industry would entail four actions. These are the whole construction industry holding a view of itself as requiring an exemplary OHS record and aiming to be world-class in quality, initiating OHS-culture change, having clear lines of management and worker OHS responsibility and accountability, and implementing on-going OHS training and education. There would need to be considerable cross-stakeholder dialogue in the development of detailed OHS strategies and implementation planning, with union input being essential.

The inputs to an improved construction industry as displayed in Figure 2 are to be further assessed in the light of the major research findings in the anticipated follow-up Australia-wide project. It is envisaged that the wider study will examine

OHS requirements in more detail and assess construction industry OHS in the light of combined Australian state and federal legislative frameworks.

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