ABSTRACT

Developing safety culture, leadership in safety and improving safety performance are continuing challenges for the Australian construction industry. Although there have been improvements in OHS performance over the past decade or so, the injury and fatality rate in the Australian construction industry remains a matter of concern. In the main, legislative compliance remains the first resort.

This paper reports on a project in which safety leadership has been identified as a useful approach to develop safe behaviours in the construction industry. Improving safety culture is featured as an important tool in embedding safety awareness and compliance in everyday practices on construction sites. The problem for the industry is how to create and maintain a positive safety culture from senior management down to site level.

Recent investigations into construction site safety culture culminating in the publication *Practical Guide to Safety Leadership* have provided a means through which the industry could address this issue. This research, with significant input from industry, initially developed the *Construction Safety Competency Framework* which identified 39 Safety Management Tasks (SMTs) and 11 Safety Critical Positions which are crucial to understanding which 'safety critical position' holders in an organization are responsible for which safety task(s).

Development of training and education, industry liaison processes and stakeholder ownership are discussed as well as future implications for skills acquisition relating to safety critical tasks, recruitment and professional development.

CONTEXT

Primarily this paper reports on a project devised to continue development of *A Construction Safety Competency Framework* (Dingsdag, Biggs, Sheahan, Cipolla, 2006) by formulating comprehensive leadership implementation guides premised on safety critical positions identified in the Framework. Culminating in the publication *Practical Guide to Safety Leadership* (Biggs, Dingsdag and Roos, 2008) developmental safety culture and leadership issues identified from industry consultation are discussed as well as future implications for skill acquisition of safety critical tasks, safety leadership and related professional development objectives.

Improving safety performance premised on incorporating safety culture has been an ongoing challenge for the Australian construction industry. Although there have been improvements in OHS performance over the past 10 years or so the injury and fatality rates in the Australian construction industry remain too high. Safety culture, based on active leadership roles, has been identified as a useful way to improve safety performance in the safety literature (*vide*, Biggs, Dingsdag and Roos, 2008a; Choudhry, Fang & Mohamed, 2007; Glendon, & Stanton, 2000; Zohar, 2003). Subsequent to the Chernobyl disaster in 1986, from when safety culture was identified as a
discernible approach in minimising and injury and death, increasingly safety culture has been correlated with positive improvements in a variety of traditional ‘lag’ indicators (vide Guldenmund, 2000 and Guldenmund, 2007 for example). However, safety culture and its core components, effective communication, positive behaviours, shared knowledge and appropriate training and education appear difficult to implement in the construction industry (and other industries). Consequently, in the main, acquiescence with legislative compliance remains the first resort for many construction organisations, in particular smaller ‘second’ and ‘third’ tier companies which may not have the means to progress beyond compliance, unlike the largest ‘first’ tier principal contractors who have considerable resources at their disposal.

In all probability, in the construction industry, senior managers of the larger ‘first’ tier companies see value in promoting that safety culture affects safety positively when successfully bidding for project contracts where past safety performance is the ‘clincher’: These safety results frequently indicate that projects that have; a) low numbers of LTIs, i.e., good safety performance (with no down times owing to major critical incidents such as fatalities or serious injuries); b) co-ordinated task scheduling with no down times (elaborated further below); c) quality outcomes for project product; and d) finishing times either on or ahead of scheduled completion and e) completion under budget. Other than these success stories for well resourced principal contractors which imply that safety culture may be a contributing factor, the challenge for the industry is how to create and maintain a positive safety culture in organisations with highly variable resources.

Further, perhaps because the concept is not well understood in an industry (possibly comprising a transient workforce of more than 800,000) by management and workers alike, or maybe because there is a large array of approaches promoted by academics in learned papers and/ or by practitioners, the application of safety culture is inconsistent. It is often not fully understood, neither is it used consistently conceptually or terminologically. In addition, it is often confused and conflated with the concept organisational climate. In fact, both concepts, safety climate and safety culture are quite distinct and are subject to a divergent literature and have different organisational applications. To distinguish between the two concepts/ constructs Biggs, Dingsdag, Sheahan and Stenson (2005) when examining the convergent constructs found:

The safety culture construct is used to describe the values, norms, attitudes and beliefs that are held collectively towards safety within an organization (Cox, Tomas, Cheyne, & Oliver 1998; Glendon & Stanton 2000; Williamson, Feyer, Cairns & Biancotti 1997). It is thought that these values, attitudes, norms and beliefs guide behaviour by indicating to employees and management what will be rewarded or punished by the organization (Biggs, Dingsdag, Sheahan and Stenson 2005).

Whereas for safety climate they relied on the following definition:

With specific reference to the Australian construction industry, Mohammed (2002) used structural equation modelling to investigate the independent factors that accounted for safety climate. He found four independent constructs determined safety climate: management, safety, risk and competence. The management construct incorporated the following aspects: communication, commitment, supervisory environment, and supportive environment (Biggs, Dingsdag, Sheahan and Stenson, 2005).

We might come to the conclusion that the two constructs are not dissimilar and that their separation conceptually and theoretically is the result of academic 'nit picking' and that may be a valid critique. In all probability, each can be applied to an organisational setting. What is important is that they must be used uniformly across an industry, but more importantly that their application improves safety performance. What remains uncertain in practice is whether either has the capacity to do so, although in the Australian construction industry there are indications that safety performance may be influenced positively by certain styles of leadership which may, or not, be couched in safety culture.
OBJECTIVES: SAFETY CULTURE AND SAFETY LEADERSHIP AS PART OF INTEGRATED SAFETY MANAGEMENT ON CONSTRUCTION SITES.

Notwithstanding doubts over the efficacy of safety culture expressed above, in the construction industry, in order to improve safety performance there is a shared understanding that active and full participation of employees and management in working safely is essential: However, this understanding is not necessarily embedded in safety culture, but rather it is shaped by an instrumentalist perspective wrongly enshrined in Robens style legislation which a) is not premised on safety culture principles) and: b) has the mistaken assumptions that management’s and employees’ interest are the same or at least intersect when applied to safety; and c) has its premise accepted at highly variable levels by management and workers as well as by OHS professionals frequently leading to minimalism in legislative compliance.

Consequently, in many construction sites poor safety performance is due to ineffective, mediocre or even negative safety culture and lacklustre leadership. In most instances where there are unsafe practices they are characterised by:

- a lack of commitment and leadership by management;
- poor or poorly communicated organisational safety values;
- an absence of a safety culture or one that is not articulated;
- a non-existent occupational health and safety management system or one with no resources to implement procedures determined by policy;
- poor safety communications, generally top down with little or no input into safety policy by employees;
- scant or no co-operation in putting safety into practice and;
- because employees haven’t been ‘co-opted’ there is no sense of ‘ownership (Dingsdag, 2009, p.55).’

Investigations into construction site safety culture and safety leadership by the authors of the Practical Guide to Safety Leadership have provided a means through which the industry could address these issues. Initial research conducted between 2004 and 2006 (vide, Dingsdag, Biggs and Sheahan, 2006; Dingsdag, Biggs, Sheahan, Cipolla, 2006) with significant input from industry, developed A Construction Safety Competency Framework which identified 39 Safety Management Tasks (SMTs) and 11 Safety Critical Positions which are crucial to understanding which ‘safety critical position’ holders in an organisation are responsible for what safety task (s).

The safety critical positions within the industry that have a significant impact on safety culture were mapped, and the behaviours and competencies required to successfully drive a positive site safety culture were identified. Essentially, the Competency Framework identified, in detail, which process should be followed when completing particular tasks; the knowledge, skill and behaviours required to complete the task effectively; and what cultural outcomes should be achieved if the task is completed effectively. The Framework also provided some initial recommendations to industry on training, educating, mentoring and employee motivation. The Framework proved to be a useful tool in developing safety culture and was taken up or adapted by many of the organisations that participated in the research. However, feedback from industry indicated that additional resources were necessary for industry to be able to adopt the Framework more meaningfully by making the role of leadership clearer based on a step by step process.

These themes were consistently borne out during the course of an articulated subsequent research project ‘Safety Effectiveness Indicators’ conducted from 2007 to 2009 (vide Dingsdag, Biggs, 2008) as well as the Competency Framework project (Dingsdag, Biggs and Sheahan, 2006). There is also additional anecdotal evidence from the industry that safety culture can enhance the management of safety and improve safety performance. Industry respondents, many of whom were highly credentialed OHS professionals in first tier companies, when interviewed, claimed they ‘knew’ that their site safety culture had a positive, but immeasurable, impact on safety performance. When prompted to identify what the visible attributes of a vibrant safety culture might
be, the most consistent response was ‘good housekeeping.’ The rationale for these claims was that if housekeeping was attended to regularly, the more essential safe behaviours and related actions, such as conducting regular proactive risk assessments, would also be more likely to be conducted properly (Dingsdag, Biggs, 2008; p. 150).

Other constant safety culture attributes indicated were:

- ‘Good’ toolbox talks
- Planned alignment of the disparate phases of the construction process
- Holding pre-construction/design phase meetings with contractors and Subcontractors…’

A ‘lessons learnt’ overview of safety culture and the related task and safety performance, undertaken either at the ‘close out’ stage of the project or about 60 per cent through the project…and visible and engaged leadership and collaboration, for example:

- regular site walk-arounds by senior management and/or board members
- all management regularly seen on-site (wearing the correct PPE)
- work done collaboratively (based on consultation)
- listening to each other
- the need to treat people as people and to have respect for the individual
- commitment from workers and from management built on mutual trust
- explanations given of why actions suggested at toolbox talks/ pre-start meetings were undertaken or not (Dingsdag, Biggs, 2008; pp. 150, 151).

According to this research active and visible leadership in safety by senior management is essential and is often identified in safety research and literature as the primary requirement for a vibrant safety culture. Whether safety culture has the capacity to impact positively on safety performance or not remains a moot point and is not a topic of full discussion for this paper. In all probability, leadership in safety (and generically) has the capacity to generate a level of collaboration between management and workers to make the workplace safer. As with safety culture, whether or not a particular leadership style actually influences safety performance directly, is an unsettled point and to the knowledge of the authors of this paper there is no hard evidence that establishes beyond doubt that there is a direct relationship between it and improved safety performance.

**KEY MESSAGES: IMPLEMENTING THE PRACTICAL GUIDE TO SAFETY LEADERSHIP**

In order to make the principles of safety culture clearer the Practical Guide to Safety Leadership linked eight steps and nine cultural actions from A Construction Safety Competency Framework to essential leadership attributes to make clear that, ‘…leadership is integral to safety competency.’ Eight steps were created to explain how individual organisations could simplify the complexities of safety culture with prompts identifying the precise purpose of each step (Biggs, Dingsdag, Roos, 2008). These steps are easy to follow and were developed to ensure that they could be adapted with low cost ‘in-house’ resources so that third tier and smaller construction businesses could also incorporate them according to their organisational needs without spending large amounts of money on hiring consultants. Some industry feedback had indicated that the Framework was too ‘meaty’ to implement in its entirety although it was not the intention of the authors that it should (interestingly, critique ranged from the Framework being too complex and being too wordy to not being extensive enough, i.e., too short). The overwhelming feedback was that industry needed more direct guidance on leadership in fewer words. In each step the elementary premise from the Framework that customising and the creation of organisational ‘fit’ are essential was reinforced.
The resulting eight steps and brief implementation strategies are:

1) Understand safety culture
Understand how a safety culture can be built and maintained through staff competencies and actions. This approach should be linked to your organisational strategies and objectives.

2) Identify safety critical positions
Customise the safety critical position list for your organisation and identify who currently holds these positions.

3) Customise the Task and Position Competency Matrix
Customise the matrix to align with your organisation and map the competency requirements of your safety critical position holders.

4) Plan
Plan how material can be used in training, education and development, performance management, and recruitment and selection activities.

5) Adapt the competency specifications
Review the processes, knowledge, skills and behaviours listed for each individual safety task and adapt to your organisational context.

6) Use a step-wise approach
Break the implementation of this material into small steps – reduce ‘culture shock’ and allow for early success to build support and momentum.

7) Implement
Implement strategy and material.

8) Show continuous improvement
Evaluate, review and reflect on strategy. Continuously improve strategy and implementation (Biggs, Dingsdag, Roos, 2008; p. 2).

The Framework also identified nine broad culture actions considered essential to the development of a positive safety culture. These were also refined for the *Practical Guide to Safety Leadership* and were supported with case studies and key learnings from organisations that had participated in its industry consultation process and who were asked to provide successful examples of their implementation of the Framework incorporating safety culture and leadership. The nine key elements of these culture actions are also essential leadership behaviours if safety culture is to succeed:

1. Communicate company values
2. Demonstrate leadership
3. Clarify required and expected behaviour
4. Personalise safety outcomes
5. Develop positive safety attitudes
6. Engage and own safety responsibilities and accountabilities
7. Increase hazard/risk awareness and preventive behaviours
8. Improve understanding and effective implementation of safety management systems
9. Monitor, review and reflect on personal effectiveness (Biggs, Dingsdag, Roos, 2008; p. 3).
Each culture action was then explained in more detail so that that their inherent contribution and value to implementation was made clear. In order to clarify the difficult areas of understanding expressed in the critique of the Framework, as an exemplar Step 1 was linked to all nine culture actions which are expressed in actual safety actions well understood as normal OHS procedures (but not necessarily as culture actions) and practised (in highly variable fashion) in the construction industry. In order to minimise word length the remaining seven steps relied on industry examples based on case study excerpts, brief overviews of leadership roles expected of senior managers and brief implementation guides for each step.

A partial overview of Step 1: Understand safety culture, explains the process used for its implementation and is reproduced here:

Why is this step important?
A safety culture is an organisational culture that places a high level of importance on safety beliefs, values and attitudes - and these are shared by the majority of people within the company or workplace. It can be characterised as ‘the way we do things around here’. A positive safety culture can result in improved occupational health and safety (OH&S) and organisational performance.

For a safety culture to be successful it needs to be led from the top - that is, safety culture needs to be embraced and practised by the CEO and senior managers. Their behaviour is directly related to safety performance as it demonstrates by example to employees what actions will be rewarded, tolerated or punished, which in turn influences what actions and behaviour employees initiate and maintain.

The first part of management commitment is to examine individual attitudes towards safety. Senior managers need to ask themselves:
- how important is safety?
- is safety important most of the time or all of the time?
- is it OK to compromise on safety if it’s going to be more expensive?

Companies that want to have a positive safety culture, which everyone owns, should develop and promote managers with the right knowledge, skills and attitudes to successfully undertake the responsibilities of the safety critical positions…(Biggs, Dingsdag, Roos, 2008; p. 3)

‘Culture action 1 Communicate company values Relate behaviours, decisions and attitudes that are expected, supported and valued by the company…(Biggs, Dingsdag, Roos, 2008; p. 3)’

The real message for any safety values approach is safety first. Safety should become a part of your everyday values and action, and not be seen as an ‘extra task’.

Messages can be communicated and embedded via:
- company OH&S policy statements
- safety posters
- toolbox talks
- ‘walk-arounds’ by management
- regular reinforcement by all ‘non-safety’ managers (Biggs, Dingsdag, Roos, 2008; p. 3).

The concluding stage of Step 1 includes a checklist which, when the eight steps’ relevant criteria have been completed, can be ‘ticked.’ This process is intended to be implemented according to each organisation’s time and resource capacity. Attuned with risk assessment and related safety ‘tools’ (for example (AS/NZS 4360: 2004 and AS/NZS 4804: 2001) and continuous improvement
principles, the process is iterative. With these customary industry practices in mind a loose copy of the checklist is also included in the *Practical Guide to Safety Leadership* 'tool kit' so that it could easily be photo-copied to encourage continuous use. In order to make the tool kit complete, for cross referencing purposes, a hard copy of *A Construction Safety Competency Framework* is included and a separate blank (Safety Management) Task and (Safety Critical) Position Competency Matrix, as well as a CD-Rom of the package’s entire contents so that they can be ‘dumped’ electronically and integrated into the organisational health safety management system for example.

**CONCLUSION**

In order to make safety leadership and safety culture a living process, planning of safety leadership principles should be introduced. This process could be encouraged through the development of appropriate training and education based on adult educational principles as well as through performance management and recruitment and selection activities. These are elaborated in Step 5: Plan. Developing a job description for getting the candidate who has the correct task skill attributes can also assist in selecting the person with the necessary safety and leadership competencies as well as the relevant behavioural competencies. Similarly, the skill and safety competency levels of existing employees are key issues for training, education and development. Also, performance management should be designed to promote and encourage the desired behaviours that align with the organisation’s safety values. Incorporating safety competency and demonstrated safety performance improvement in performance appraisals reinforces organisational values, while also giving incentive to individuals to focus on safety as part of their everyday actions.

**REFERENCES**


