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An Evaluation of How Safety Management Systems are Improving Safety Outcomes Within a Western Australian Second Tier Commercial Construction Company

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Abstract

Although the construction sector is known to be a highly hazardous industry, effectively targeted safety management strategies have the potential to significantly improve organisational safety cultures and project safety outcomes, regardless of the organisation's size. A review of contemporary literature focusing on the role of safety management systems within high risk industries was undertaken, in addition to a case study of a second tier commercial construction company's safety management system in order to evaluate how targeted safety management strategies improve the safety outcomes. Strategies which were identified as improving project safety outcomes revolved around the principle of contractor management and involved regular site safety inspections, communication with subcontractors via toolbox meeting, permits to control high risk work and the documented review of safe work method statements. The implementation of these strategies was shown to increase safety participation amongst project and site management teams, while also encouraging an organisational culture of continual improvement through regular internal review and monitoring. Recommendations include increased participation from senior management in the communication and monitoring of safety standards, development and tracking of sensitive leading indicators and increased safety management training for smaller subcontractors. A safety management strategy improvement model outlining the functional responsibilities of key project members was developed in an effort to improve subcontractor engagement and the active monitoring of project safety systems.

Key Words

Safety Culture. Construction industry. Safety management systems. Safety performance indicators.

1. Introduction

The primary focus of a safety management strategy is to achieve maximum control over work environments in order to promote safe working conditions for personnel. The implementation of effective safety management systems not only minimise the likelihood of workplace incidents occurring, but also assists construction teams to reach project milestones through effective planning, consultation and monitoring. While research often focuses on safety management systems within large organisations, small to medium sized firms also have the capacity to improve safety outcomes through the promotion of strong safety leadership, regular communication and consultation with the workforce and consistent workplace safety monitoring. Research was conducted to evaluate the effectiveness of safety management system strategies implemented within a second tier commercial construction company in Western Australia to observe how these strategies actively control high risk work and to identify meaningful contractor engagement safety improvements strategies.

2. Background

Serious workplace incidents continue to occur despite the best efforts of supervisory personnel and implemented safety management systems. The effects of personal injuries often extend beyond the injured party to units such as the family, community members and the national economy. With regard to Australian industries, Safe Work Australia has reported the total economic cost of work related injuries and illness as being \$60.6 billion dollars during the financial year of 2008-09; a cost representing a staggering 4.8% of the nation's gross domestic product (2014). The national Compendium of Workers' Compensation statistics during the same period reported that of the 128,735 serious compensation claims, 11% of injuries or 14,740, occurred in the construction industry (Safe Work Australia, 2011). Although overall Australian compensation statistics are trending downwards, the nation's construction industry continues to be the third most dangerous industry in Australia and the highest contributor to workplace fatalities involving compensation (Safe Work Australia, 2013). To further magnify this trend on a state level, WorkCover Western Australia data indicates that construction industry lost time injury claims increased by 32% between the financial years of 2009-10 to 2011-12 (2013). This significant increase is alarming, poses significant questions as to the effectiveness of the regulators engagement with the construction industry, and highlights the need for improved communication, education and training strategies.

3. Safety Management Systems

The importance of safety management systems within high risk industries has been a topic of research for numerous years due to increased workplace fatalities and industrial accidents (Carbonari et al., 2011; Ismail et al., 2012; Sousa et al., 2014; Teo et al., 2005). The integration of safety management systems within organisations not only assists in the promotion of safe work practices amongst workers, but also strengthens fundamental business principles related to effective project planning, risk assessment and communication with employees and subcontractors (Aminbakhsh et al., 2013; Kines et al., 2010).

Safety management systems within high risk industries are integral system components intended to control workplace risks in an effort to achieve safer working environments for personnel and the continuance of project works (Borys, 2012). The construction sector is known to be an extremely hazardous industry due to the complex interaction of human and technological processes which have the potential to significantly impact upon the health and wellbeing of personnel (Biggs et al., 2013; Sawacha et al., 1999). Since 2004 the Australian construction industry has been consistently reported as one of the most hazardous work environments in the nation in terms of the frequency of serious injuries involving worker's compensation (Safe Work Australia, 2007, 2008, 2009, 2010, 2011, 2012, 2013). The fluidity of construction work and seemingly daily introduction of new hazards make it imperative for construction companies to be able to quickly adapt to new work processes and risk management strategies (Pinto et al., 2011). The ability to understand and manage workplace fluidity and uncertainty is a primary reason for the development of safety management systems which assist organisations to accurately identify and minimise risks to levels as low as reasonably practicable (Reason, 1997).

One significant risk encountered in the construction industry relates to the eroding of company profits resulting from direct costs associated with workplace injuries (i.e. increased insurance premiums and medical expenses). Yoon et al. (2013) reports that workplace injuries result in a profit loss margin of 5-10% amongst companies throughout all industries, with the construction industry being calculated at 8.5% of the tender price. This profit loss margin is quite significant, particularly in light of the global financial crisis which resulted in the dramatic reduction of construction projects and corporate profit margins. Indirect costs associated with workplace injuries such as lost production capacity, material damage or temporary labour costs are far more difficult to quantify but also have a significant impact upon overall company earnings (Yoon et al., 2013). Thus the successful implementation of effective occupational health and safety management systems not only protect workers through the systematic identification and control of workplace hazards, but also enables organisations to tackle potential profit loss issues resulting from injuries and project disruptions.

The implementation of safety management systems within the construction industry improves the capacity for organisation to identify, plan and control project risks. It may be argued that the implementation of a certified safety system significantly improves this capacity; however the use of a certified system does not guarantee effective safety management (Hopkins, 1999). With reference to second tier construction companies, certification to AS/NZS 4801 is often sought for commercial gain and access to tender lists rather than being pursued as a means of improving safety outcomes. The application of a safety systems within the second tier commercial construction sector tends to focus more on controlling worker behaviour rather than attempting to eliminate technical risk such as design or manufacturing flaws (Nielsen, 2014). Due to the downturn in construction projects and tightening profit margins, safety management strategies and implementation resources (i.e. safety officers, safety training budgets, plant maintenance regimes) are often the first to be cut in tender lists in an effort to improve project profitability (Nahrgang et al., 2011). Such commercial decisions enable organisations to win further work, but run the risk of damaging safety cultures by reinforcing the perception that safety comes second to production (Pinto et al., 2011). This trend appears to have become an accepted practice within the construction sector and particularly so amongst subcontractors which constitute a significant proportion of the labour force (Swuste et al., 2012). Although certification to self-regulated safety management principles have the capacity to improve safety outcomes, the success of such systems are heavily dependent upon on the determination, skill and knowledge of those required to administer and monitor these responsibilities (Loosemore & Andonakis, 2007).

4. Safety Climate and Culture

Research regarding safety climate and culture has significantly developed in recent years with the creation of various definitions and industry specific measurements (Cigularov et al, 2013). The sheer volume of literature, experimental data and safety culture models make it very difficult to settle on any one definition. Guldenmund (2000) suggests that the original concept of 'safety climate' developed during the 1970's and 1980's, has evolved into what is commonly described as 'safety culture'. Both terms appear to be synonymous however influential organisations such as the Health and Safety Executive (HSE) choose to follow the distinction proposed by Cooper which considers safety cultures to refer to what people do as opposed to safety climates which characterise how people feel (2005b). This is further argued by the Health and Safety Laboratory which argues that safety climate is a strong indicator of an overall safety culture and predictor of individual behaviour and actions (2002).

The explosion of safety culture themes and slogans such as "zero harm", "one way" or "safety first", have become prevalent throughout high risk industries worldwide. Such slogans typify organisations attempting to strategically influence corporate cultures in an effort to increase organisational commitment to safety while maintaining acceptable levels of productivity. The definition used within this research considers organisational cultures to be a multilevel construct of the shared opinions of employees and subcontractors relating to fundamental elements such as policies, procedures and practices (Brondino et al., 2012; Zohar, 2008). Safety cultures are an element of overarching organisational cultures and thus refer to the opinions, values and attitudes of personnel with regard to safety. Due to differing opinions between organisational departments, offices and individual employees, it is problematic to evaluate the strength or weakness of organisational safety cultures in an effort to identify areas of improvement (Cooper, 2000). In light of such difficulties, safety practitioners continue to develop and implement safety management strategies aimed at strengthening managerial and employee commitment to positive safety attitudes and behaviours.

5. Safety Performance Indicators

An indicator can be considered as any measurement which provides information on a particular matter of interest. Most often, performance indicators are linked to defined organisational targets that provide a numerical representation of overall performance. Traditional performance indicators are categorised as either leading or lagging. Leading indicators are often described as a form of proactive monitoring undertaken through routine inspection in an effort to identify failings or 'holes' in safety critical systems. Lagging indicators however reveal systems failing or 'holes' following an incident or uncontrolled event. The Baker report suggests that lagging indicators suffer a disadvantage in that they only report corrective action after-the-fact, while leading indicators provide feedback before incidents occur (2007). Alternative views suggest that the distinction between the indicators is not clear cut and may in actual fact be meaningless as it largely depends upon the perspective of how incidents are viewed (Hopkins, 2009). Regardless, the Health and Safety Executive argue that too many organisations rely on lagging indicators as a representation of system strength (2006). The consequence of relying on failure data as opposed to preemptive indicators is that system improvements are only implemented after an incident occurs.

While both leading and lagging indicators provide critical information, difficulties arise when determining what system processes will provide the most accurate representation of safety system performance. Hale (2009) contends that in order for performance indicators to be effective, consideration must be given to the following six elements:

- 1. Validity: Does the indicator provide accurate information on the system element being measured?
- 2. Reliability: Will the indicator provide the same measurement when conducted by different people, or when undertaken in a different situation?
- 3. Sensitivity: Is the indicator sensitive enough to change so that it will accurately identify statistical significance over a short period of time?
- 4. Representative: Does the indicator provide an accurate representation of the system element it has been designed to measure?
- 5. Bias: Is the indicator easily manipulated in order to represent a more favourable outcome?
- 6. Cost-effectiveness: Does the cost of collecting the data outweigh potential losses had the indicator not been used?

Hinze, et al. (2013) provide further insight by suggesting that performance indicators can be categorised as either 'passive' or 'active'. They contend that 'passive' indicators gauge probable safety performance and are more effective long term predictors. Alternatively, 'active' performance indicators are more sensitive to change and provide a stronger gauge to short term safety performance. While it may be difficult to determine which system elements provide the best indication of safety performance, it is critical that indicators are specific to organisational goals and targets. Refocusing on leading indicators enables organisations to ensure that existing safety management strategies are implemented and monitored effectively, while also facilitating the identification of system weakness and required improvement areas.

6. Methods

Prior to undertaking a case study, a search of contemporary literature was undertaken using the Science Direct database with results limited to full text English articles published up to March 2014. The review of literature focused on the topics of safety management systems, safety climate and culture, and safety performance indicators. Such topics are highly relevant within the second tier commercial construction sector and can have a significant positive impact upon organisational safety outcomes and subcontractor safety behaviour and performance.

A case study of a Western Australian second tier commercial construction company was undertaken to identify and evaluate implemented safety management strategies which had a positive influence over organisation safety performance. The decision to incorporate a case study is based on the assertion by Yin (2009, p.25) which states that "a case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context". This research attempted to examine the important 'how' and 'why' questions commonly associated with the application of safety management systems within organisations. The array of safety management concepts identified in literature made it imperative for these theories to be tried and tested through real world application. Access to retrospective safety management system processes and records from the 1st January 2012 until 31st December 2013 (24 months in total) was granted by the Company's General Manager. Both electronic and hard copy health and safety records focussing particular attention on the effectiveness of implemented strategies in relation to the scope and risk involved within individual construction projects were accessed. The following safety management strategies were identified as being part of current business practice and have been categorised into three overarching categories and minor subcategories for evaluation purposes; communication and consultation, controlling high risk work and monitoring safety compliance:

Communication and consultation:

- Leadership visibility reports;
- Weekly toolbox meeting;
- Subcontractor Occupational Health and Safety (OHS) documentation.

Controlling high risk work:

- Safe Work Method Statements;
- Permit to work.

Monitoring safety compliance:

- Project safety audits;
- Site safety inspections.

7. Results

7.1 Communication and consultation

7.1.1 Leadership visibility reports

A review of the internal Company's safety management systems manual identifies the purpose Leadership Visibility Reports as being:

"an opportunity for the General Manager to visually inspect site safety conditions and undertake verbal dialogue with personnel and subcontractors regarding individual understanding and compliance with organisational safety policies and procedures" (Company X, 2012a, p.29).

The evaluation of this strategy identified a 150% increase against the minimum safety management systems expectation during 2012 and a 200% increase in 2013. The significant increase during 2013 can be attributed to the commencement of several large projects and the recommitment of the General Manager to demonstrate strong safety leadership. The following table 1 represents the breakdown of safety issues identified and by the General Manager during leadership visibility reports conducted in 2012 and 2013. The top five reoccurring issues commonly identified involved housekeeping (20%), plant safety (12%), personal protective equipment non-compliance (11%), working at height hazards (9%) and emergency access and egress (9%). All actions identified in these reports were officially recorded in the Company's safety management systems, communicated to Project and Site Managers and actioned by individual projects within the defined timeframes.

Table 1: Safety Issues Identified in Leadership Visibility Reports Over the 2012-2013 Period

	P	0.10 0.10						
7.1.2 W	eekly Too	olbox Meet	tings					
Weekly	toolbox	meetings	were	the	primary	method	of	safety

Identified Safety Issues 2012/2013					
Housekeeping	20%	Unsafe work behaviour	6%		
Plant safety	12%	Emergency prepared-	6%		
		ness			
PPE non-	11%	Site fencing	3%		
compliance					
Working at	9%	Excavation hazards	3%		
height hazards					
Emergency	9%	Smoking on site	3%		
Linergeney	770	Smoking on site	570		
access/egress					
Exclusion	6%	Safety signage	3%		
zones					
Electrical	6%	Review of SWMS	3%		
safety					

communication and consultation with site personnel regarding project safety issues and improvement strategies. An internal review the Company's safety management systems manual undertaken in March 2013 included an update to the existing scope and implementation of toolbox meetings. The revised systems manual (2012b, p.11) section 4.5 states:

"Site management teams are to facilitate and record toolbox meetings on a weekly basis. Toolbox meetings provide a forum to discuss safety related topics and present an opportunity for site personnel to present feedback on safety conditions to Site Management."

An internal toolbox meeting template was identified during the internal review with the document containing the following elements designed to assist site management teams in the facilitation of these meetings:

- Overview of major project works;
- Safety discussion topics;
- Recent safety inspection outcomes;
- Site safety compliance (Personal Protective Equipment (PPE), testing/tagging etc.);
- Recent company safety alerts;
- Safety reminders (i.e. must point location, first aid officer, injury reporting method etc.)

An analysis of the data indicates a toolbox meeting monthly completion rate of 69.15% during 2012, compared to 90.8% during 2013. A comparison of these rates identifies an overall improvement of 31.3% in the completion of toolbox meetings during 2013. The overall completion rate throughout the 24 month period was calculated at 95.9%.

7.1.3 Subcontractor OHS Documentation

A Company specific Occupational Health, Safety and Environment (OHSE) documentation pack (or 'subby pack') was developed in August 2012 as a means of communicating Company expectations regarding subcontractor implementation of safety management strategies. A review of submitted subcontractor safety documentation prior to August 2012 highlighted an inconsistent approach to risk management, supervision and the identification of appropriate safety controls. To combat these reoccurring issues a subby pack was developed to support subcontractors in their knowledge and understanding of safety regulation, while assisting in the development of mandatory safety documentation required by the Company.

With regard to the 'subby pack' the Company's internal Hazard Identification Risk Assessment and Control procedure (2012a, p.5) states:

"The Project Manager is responsible for issuing the Subcontractor OHS Documentation Pack to subcontractors when awarding a contract of service. It is the responsibility of the Project Manager to ensure that subcontractors resubmit completed safety documentation at least 72 hours prior to works commencing on site."

A review of ten submitted subcontractor documentation packs was undertaken at two separate intervals following the implementation of the 'subby pack' management process (six months and twelve months). The review highlighted no significant difference in the quality of submissions between the two intervals, noting that legislated SWMS's were primarily the only form of risk management documentation being submitted to the Company prior to works commencing. Date stamps associated with these submissions highlight that SWMS's are often submitted the day before works commence as opposed to the minimum standard of at least 72 hours. The only subcontractor firms submitting additional documentation, such as 'preliminary risk assessments' or 'equipment registers', were larger well established subcontracting companies.

7.2 Controlling High Risk Work

7.2.1 Safe work method statements

Safe Work Method Statements (SWMS) are a critical construction risk assessment document detailing how high risk works will be undertaken by personnel in a safe and methodical manner. The record itself is a Western Australian legislative obligation and is detailed in section 3.134 of the Occupational Safety and Health Regulations (1996). The following ten safe work method statements were identified as being developed by the Company as a means of firstly educating subcontractors regarding the hazards associated with common construction tasks, and secondly to ensure the continuance of project works in the event that subcontractor documentation did not meet the required standard.

- 1. Use of mobile plant and machinery (i.e. excavator, forklift, crane, skit loader etc.)
- 2. Excavation works;
- 3. Electrical installation work;
- 4. Demolition work;
- 5. Installation of concrete panels;
- 6. Concrete cutting and coring;
- 7. Temporary support structures (formwork, false work, etc.);
- 8. Basic scaffolding;
- 9. Welding operations, and
- 10. Removal of asbestos.

With regard to the legislative importance of safe work method statements the Company's internal Hazard Identification Risk Assessment and Control procedure (2012a, p.6) notes:

"In order to maintain a safe working environment through effective safety management, task specific Safe Work Method Statements are to be submitted, reviewed and signed by employees and subcontractors before high risk works commence."

A review of 20 subcontractor safe work method statements identified an inconsistent approach to the methodical identification of workplace hazards, assignment of safety responsibilities and site specific content. While all safe work method statements identified the project location on the title page, very few listed project specific information in relation to site specific conditions or safety rules. One safe work method statement was observed as detailing the site safety requirements and emergency muster locations of a large mining organisation. On a positive note, each safe work method statement sign-on register correctly detailed the names, signatures and dates of the workers involved with the individual project task.

In order to assess the suitability of subcontractor safe work method statements the Hazard Identification Risk Assessment and Control procedure required site management teams to review all safe work method statements prior to works commencing. The review of each safe work method statement identified an accompanying internal safe work method statement checklist detailing approval or a request for further information. An evaluation of each review checklist identified 85% had correctly listed job steps with associated hazards and control measures, 80% failed to identify individual safety responsibilities through the allocation of individual names to responsibilities and 95% lacked historical information regarding past injuries associated with the task. Of the 20 reviewed, only one safe work method statement was officially rejected and returned to the subcontractor for additional information regarding fall protection equipment and the need for involved employees to undergo industry recognised working at heights training.

7.2.3 Permit to Work

A permit to work system was implemented throughout all Company projects and was observed to work in conjunction with safe work method statements as a means of further enhancing site management control over specified high risk tasks. The checklist permit required personnel to acknowledge, implement and monitor additional safety controls requested by the Company throughout the course of work. The Company's safety management systems manual delegated the Site Manager as the individual responsible for issuing, reviewing and approving permits to work prior to tasks commencing. While the business practice did not require completed permits to be stored electronically on the Company server, a review of individual permits was undertaken to identify whether updates or adjustments had been made to increase the effectiveness of assigned controls. The following Table 2 outlines permits implemented within current business practice, including the permit revision status.

Table 2: Permit to Work Revision Status

The 'Working at Height' permit has undergone four significant

Permit	Revision
Concrete cutting and coring	Rev. 1
Confined space work	Rev. 1
Excavation work	Rev. 2
Hot work	Rev. 1
Isolation work (Electrical, Hydraulic, Gas)	Rev. 1
Mechanical Lifting	Rev. 3
Working at Height	Rev. 4

revisions, with the inclusion of detailed controls relating to the safe use of elevated work platforms (i.e. boom lift and scissor lift) and the erection of defined exclusion zones. Prior versions omitted such controls with revisions being actioned as a result of a working at height incident. The addition of a 'lift plan' was included into the 'Mechanical lifting' permit as a result of an incident involving a dropped panel, while the 'Excavation' permit included additional controls relating to the protection of underground services and prevention of trench collapse.

7.3 Monitoring Safety Compliance

7.3.1 Project Safety Audits

In order to proactively monitor and gauge the success of safety management strategies employed throughout the organisation, the Company safety manager was responsible for undertaking project safety system audits. The Company's internal audit schedule detailed the requirement for each project to undergo a formal compliance audit every three months with findings reported to the General Manager and Project Management team. Audits were observed to be undertaken using an iPad and safety application in an effort to provide photographic evidence of site conditions, personnel safety compliance and completion of mandatory safety documentation (i.e. safe work method statements, permit to work, plant maintained records etc.). An evaluation of 33 compliance audits was undertaken with identified corrective actions represented in table 3. The analysis identified the top five reoccurring safety issues as involving barricading/edge protection (13.8%), plant and equipment safety (9.8%), electrical safety (7.5%), OHSE documentation (7.3%) and personal protection equipment (7.1%). The proactive recording and analysis of these audit findings have enabled the Company to identify reoccurring non-conformances and develop strategies to improve compliance.

Table 3: Hazards and Improvements Identified During Formal OHSE Audits Over the 2012-2013 Period

A review of all occupational health and safety monthly performance reports issued during 2012 and 2013 indicate that educa-

Hazards and improvements identified during OHSE audits			
20	012/2013		
Barricading / Edge Pro-	13.8	Rebar / Star	2.2%
tection	%	picket caps	
Plant & Equipment	9.8%	Public Safety	1.7%
Electrical Safety	7.5%	Management commitment	1.7%
OHSE Documentation	7.3%	Fire extin- guishers	1.5%
PPE	7.1%	Emergency Preparedness	1.3%
Working at Height haz- ards	5.9%	Incomplete toolbox meetings	1.1%
Housekeeping	5.7%	Training requirements	1.1%
Unsafe work behaviours	5.7%	Emergency access/egress	1.0%
Scaffolding hazards	5.6%	Environmen- tal hazards	1.0%
Incomplete registers	4.4%	Hazardous substances	1.0%
Review SWMS	3.0%	Smoking	0.6%
No permit	2.9%	Incident rec- ords	0.5%
Safety signage	2.7%	First aid equipment	0.3%
License / Competency	2.5%		

tional topics involving the top five reoccurring safety issues were regularly communicated to project sites and Company employees. Each performance report issued during 2013 detailed two specific occupational safety and health topics directed at site management teams and outlined high risk corrective actions identified during sites audit inspections. The crosscommunication of these risks was supported by practical suggestions which could be implemented by site management teams in an effort to eliminate or minimise workplace safety risks.

7.3.2 Site Safety Inspections

Site management teams were required to proactively monitor worksite environments through the completion of a weekly 'Site Inspection Checklist'. The formal checklist was designed as a leading indicator and assists in the active identification of common construction site hazards and safety management system improvements. The site management teams were required to request the formal involvement of subcontractor personnel within the inspection process in an effort to receive external feedback regarding the performance of site safety management strategies. The Company's internal Hazard Identification Risk Assessment and Control procedure (2012a, p.9) notes: "Effective safety inspections will assist site management teams to provide a safe working environment for all personnel. Subcontractor representatives should be invited to participate during each site safety inspection.

An analysis of five random electronically stored site safety inspection records was undertaken for five projects with the average number of hazards listed in the following table 4. An analysis of the results suggests that the larger the project, the more safety hazards will be identified during weekly inspections. As detailed in the following table, project 'A' has the largest tender price of \$86 million and identified an average of 5.5 hazards/ issues per safety inspection. While it would appear logical that smaller projects would identify fewer hazards, project 'E' which has the smallest tender price of all the review projects, appears to go against the trend by achieving the second largest hazard identification average of 4.2. Reoccurring safety actions identified in site safety inspections appear to be closely aligned with those identified within internal OHS audits.

Table 4: The Average Number of Hazards Identified During Five Random Site Safety Inspections Over Five Projects During 2012 - 2013

Project	Tender price	Average number of hazards	Reoccurring safety actions
А	\$86 mil- lion	5.5	 Electrical testing/tagging, Exclusion zones, PPE non-conformance, SWMS and permit compliance, Housekeeping.
В	\$26 mil- lion	3.6	 Electrical testing/tagging, Working at height compliance, Housekeeping.
С	\$15 mil- lion	3.2	Electrical testing/tagging,Hazardous substances,Housekeeping.
D	\$5.2 million	3	 PPE non-conformance, Housekeeping, SWMS and permit compliance,
E	\$2.4 million	4.2	 Hazardous substances, SWMS and permit compliance, Use of mobile plant, PPE non-conformance.

8. Discussion of Results

The aim of this study was to evaluate the effectiveness of safety management system strategies implemented within a second tier commercial construction company. While effective safety strategies within the construction sector are traditionally measured through the achievement of low level lagging indicators (i.e. injury rates), such measurements do not accurately reflect the prevention of incidents through the identification of system errors. A literature review of contemporary safety research indicated that organisations place too much emphasis on lagging rather than leading performance indicators as a measurement of safety success (Health and Safety Executive, 2006; Hinze et al., 2013; Hopkins, 2009). In this vein, success may be more accurately defined as the implementation of positive safety strategies which promote safety planning, communication and monitoring of safety systems and work practices. This approach would prove to be a more accurate reflection of safety success, particularly amongst second tier construction companies which attempt to improve organisational safety cultures over a period of time.

An evaluation of company safety management strategies identified a consistent approach focusing on subcontractor management and the manner in which project teams can effectively communicate, control and monitor project safety risks. The emphasis on subcontractor management was a result of the Company's requirement to engage secondary contractors to undertake all specialised works on its behalf. This requirement was common throughout the construction industry and provides principal contractors with economic flexibility and the capacity to engage expert trades. The prevailing trend towards secondary contracting has also proven to contribute to occupational safety and health difficulties which hamper principal contractors in fulfilling legislative safety obligations.

The completion of leadership visibility reports and weekly toolbox meetings achieved significant improvement over the researched period of two years. While leadership visibility reports may be less effective in identifying safety system weakness, its role in facilitating senior management engagement in safety communication and consultation, particularly amongst project workers, is invaluable. The safety issues identified over 2012-2013 are not uncommon throughout the construction industry; however the increased participation between the Company's General Manager and subcontractors strengthened the safety messages communicated by project and site management personnel. Positive two-way communication between site management teams and subcontractors promoted strong positive safety cultures and safety participation amongst workers. Research suggests that effective safety communication between company senior management, site management and workers not only improves safety performance and the control of high risk work, but also supports positive safety cultures through strengthening worker perception of senior management's commitment to safety (Hardison et al., 2014; Kath et al., 2010). The findings of this study are similar to those of Zohar and Luria (2003) which repeatedly identified improvements in safety behaviour and perception of positive workplace safety cultures as a result of persistent safety discussions initiated by supervisors. The weekly occurrence of toolbox meetings provided site management teams with an opportunity to raise concerns regarding site safety performance, while also providing a forum to recognise the safe work practices of individuals and subcontracting companies. Though often viewed as a common communication strategy within the construction industry, weekly toolbox meetings can significantly increase the frequency of safety communication from site management teams leading to improved worker safety behaviours and project outcomes.

The subcontractor workplace safety and health documentation process was originally designed to ensure that subcontractors appropriately communicate how construction works will be suitably safely controlled, supervised and monitored throughout the course of project works. Following a review of subcontractor documentation submissions, two distinct causes have arisen as to why this safety management process failed in its effectiveness:

- 1. A majority of subcontractors engaged by the Company appear not have sufficient resources (financial or knowledge base) to accurately identify and correctly document workplace safety and health risks and to implement safety risk control measures. While large firms have the capacity and resources to submit appropriately detailed safety documentation, information received from smaller subcontractors was often incomplete and lacking important detail necessary in the safety management process. These findings were similar to those reported by Loosemore and Andonakis (2007) who identified that the highly competitive nature of subcontracting often results in the neglect of workplace safety and health responsibilities due to financial and time pressures.
- 2. Company safety expectations detailed in the 'subby pack' appear only to be forwarded to subcontractors upon an award of contract. Subcontractors unfamiliar with the Company's safety management processes may not have accurately accounted for the time and resources required to demonstrate safety compliance during the tender process. As a result, the standard of subcontractor risk management is often below that required by the Company prior to work commencing, and throughout project works.

In terms of controlling high risk works, the Company's implementation of administrative control strategies appeared to facilitate open communication with site management teams and subcontractors. However, the safe work method statement risk management process was only effective when individual workers acknowledged and responded to their individual safety responsibilities detailed in documentation. An appraisal of random subcontractor safe work method statements identified very few to have been updated with site specific hazards or reference to site conditions prior to works commencing. This finding suggests that safe work method statement content is often 'stock standard' and is rarely revised to ensure safety controls are appropriate to workplace conditions and environments. This outcome is reflected in a study by Borys who identified significant unresolved gaps between worker perception of their task as detailed in safe work method statements and the work which was actually performed (2012). While appearing to comply with legislative requirements to identify and control high risk works, generic safe work method statements prove only to undermine the effectiveness of this important risk assessment processes by weakening worker participation and communication regarding individual safety control responsibilities.

The permit to work management process proved to be a positive indication of the Company's desire to further control high risk work. While safe work method statements methodically detail how works are to be undertaken, permits require the implementation of additional safety measures in an effort to provide greater control over highly hazardous work processes. An evaluation of the permit to work system identified an encouraging review process involving the revision and amendment of individual permits when greater clarity was required or when additional Company oversight was required. Research conducted by Iliffe, Chung and Klentz (1999) emphasise the importance of the permit to work system as a facilitator of clear and accurate communication between various parties which outlines individual and collective safety responsibilities. The Health and Safety Executive (2005a) provide further support to this argument by suggesting that the permit to work system is more effective when site management teams are notified of impending permits and have the opportunity to consult with personnel prior to works commencing. While the permit to work system within the second tier commercial construction sector may not function as effectively as within other high risk industries, its purpose in strengthening clear communication between site management teams and subcontractors is beneficial in not only the safe execution of works, but the continued monitoring of safety controls throughout high risk works.

Proactive safety monitoring is critical within the construction industry due to fluidity of subcontractor works and the continued introduction of new workplace hazards. Effective safety inspections can proactively identify weakness in site safety controls and recommend appropriate action to eliminate or segregate recognised hazards. An internal review of Company procedures highlighted a positive approach that ensures that those undertaking safety inspections are appropriately experienced and competent in the identification of construction hazards and risks. Engaging suitably qualified and knowledgeable individuals in the safety inspection process reduced the likelihood of hazards or dangerous work practices being overlooked, unchallenged or unreported. This risk reduction strategy was identified as being further strengthened through consultation with subcontractor personnel who were requested to provide weekly feedback and suggestions as to how the Company may improve project safety and workplace conditions. Engaging the workforce in an effort to solicit critical feedback regarding project safety strategies and performance is a process supported by contemporary research as it engenders trust and communication between workers and management (Frick, 2011). Hopkins (2006) argues that management's behaviour towards safety is often the most critical component in the development of positive safety behaviours and the facilitator of meaningful safety engagement. Thus requesting worker participation in the site inspection process not only provided important critical safety feedback, but demonstrated site management's willingness to consider and listen to worker safety concerns and ideas for improvement. For instance, a specialised scaffolder recognised a poorly constructed mobile work platform and made appropriate suggestions as to how the structure could be more safety braced and secured. A further example involved a plumber correctly identifying electrical cables being buried at the incorrect depth and suggested that trenches be re-excavated to the correct level in order to prevent future damage or human contact. While it may be argued that defined safety inspections can be limited to the knowledge and experience of those undertaking inspections, proactive consultation with the workforce not only facilitates greater safety participation amongst the workforce, but also improves the outcomes of this vital monitoring process.

This research has identified a gap within contemporary literature regarding the management of subcontractors within the second tier commercial construction sector. While significant resources have been deployed to research effective contractor management principles within highly volatile industries, only a small proportion of studies attempt to discuss this within the context of the construction sector. While this does not diminish the importance of these studies, it does highlight the need for further investigation as to why the construction industry continually reports poor safety outcomes, and how practical improvements can be facilitated through improved industry engagement.

The study further emphasises the need for construction companies to concentrate on leading indicators as measurements of organisational safety performance, rather than focusing on traditional lagging indicators or incident data. This is particularly significant within the second tier commercial construction sector which is often criticised for being reactive, rather than proactive, in effectively communicating, controlling and monitoring project safety risks.

The case study identifies practical solutions which improves subcontractor safety engagement and compliance with principal contractor safety expectations. An evaluation identified positive communication, control and monitoring strategies as a commercially viable method for principal contractors to improve project and organisational safety performance outcomes amongst employee and subcontractor workforces.

9. Recommended Safety Management Improvement Model

Based on the findings of this research the safety management strategy improvement model outlined in Table 5 has been developed to assist small to medium sized commercial construction companies to improve organisational and project safety outcomes through effective communication, risk control and monitoring practices. The model is based on the safety management principles identified within this case study. The model outlines the functional safety responsibilities of senior management, project/site managers and employees/subcontractors which lead to positive organisational and project safety outcomes. While principles within the model may be utilised throughout all sectors of the construction industry, further evaluation and study will be required to determine how this model can positively influences safety outcomes amongst small to medium sized organisations.

 Table 5: Safety Management Strategy Improvement Model Identifying Functional Safety Responsibilities Leading to Positive Organisational and Project Safety Outcomes

	Senior Management	Project Teams (Project & Site Manager)	Employee/Subcontractor (Workers)
Communication & Consulta- tion	 Emphasis that worker safety is more important that con- struction timeframes. Visibly engage the work- force through site safety walks and discussions. Communicate specific or- ganisational safety expec- tations (working at heights, chemicals or plant safety etc.) 	 Communicate project safety risks to workers via safety management plans, site in- ductions and toolbox meet- ings. Highlight safety concerns, recent incidents and reoccur- ring safety actions via formal and informal communica- tion. Proactively seek workforce feedback and safety sugges- tions. 	Challenge unsafe work behav- iours. Participate in safety discus- sions. Offer suggestions to improve workplace safety. Communicate hazards to site management and fellow workers on site.
Control	Set clear and unambiguous safety responsibilities for leadership. Positively reinforce leader- ship accountability for safety outcomes. Establish meaningful safety performance indicators.	Engage suitably experienced subcontractors. Observe personnel working to ensure compliance with SWMS. Risk assess critical project works and confirm subcon- tractor understanding of safe- ty controls and expectations.	Review and understand work task SWMS and permits to work. Acknowledge and fulfil indi- vidual safety responsibilities. Seek opportunities to learn safer work processes and hazard identification strate- gies.
Monitor	Visit project sites to confirm implementation of safety strategies. Meet with project leadership to discuss project safety outcomes.	Participate in the site safety inspection process. Identify and record project safety breaches and improve- ments. Confirm worker understanding of work task SWMS and permits.	Assess work task safety con- trols for effectiveness. Confirm co-worker and ap- prentice understanding of work task and individual safety responsibilities.
Improved safety outcomes	ip commitment to worker safety. ors. ndividual safety responsibilities. ents. safety documentation or risk con-		

10. Conclusion

Organisations within the construction sector find it difficult to influence workers as the labour force is highly transient, with regular movement between project sites and principal contractors. This study demonstrates how the effective implementation of an occupational health and safety management system within a second tier commercial construction Company has significantly reduced the occurrence of workplace incidents through effective safety communication, increased control of high risk work and proactive safety monitoring. While the implementation of such safety management strategies is not new, the case study highlights how successful safety outcomes can be achieved through continual workforce engagement. A review of contemporary literature revealed a tendency for high risk organisations to rely solely on lagging performance indicators as an accurate representation of safety management success, rather than proactive leading indicators (Health and Safety Executive, 2006). The construction industry which is known to be one of the most hazardous industries within Australia has individual organisations continuing to emphasise injury rates as an indicator of safety achievement. While lagging indicators have a key role of illustrating injury occurrence over a defined period, it must be remembered that leading indicators provide a better reflection of system vulnerability prior to incidents occurring.

Of the strategies evaluated in this case study, the most influential safety culture drivers involved regular communication with subcontractors via toolbox meetings, control of high risk works through defined safe work method statements, use of permits and monitoring safety system strength through project auditing and inspection. Although many of the safety management strategies evaluated in this study are not new to the construction industry, improvements in organisational safety outcomes can be significantly improved when these strategies are consistently applied within business practice. With particular reference to the second tier construction sector, the implementation of well developed, worker centred safety strategies will achieve greater occupational safety and health outcomes than complex over analysed programmes. While safety management systems do not guarantee improved safety outcomes, its effective implementation in business practices through strong consultative safety leadership will improve the likelihood of engendering a culture of safety minded personnel and subcontractors.

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Workers' Noise Induced Hearing Loss in the Agricultural Sector and Other Industries

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Abstract

This Article critically reviews the effects of noise induced hearing loss in the agriculture sector in contrast to other industries. Parallels and differences experienced by workers with hearing loss returning to work in the farming sector compared to other sectors is described as is work related noise induced hearing loss and workers' compensation in Western Australia for the occupational illness.

Keywords: Noise induces hearing loss. Agricultural workers. Occupational health. Workers' compensation.

Introduction to work related noise induced hearing loss.

Concha-Barrientos, Campbell-Lendrum, and Steenland (2004) defined sound as a sensory experience or perception. Noise is an extension of sound, but it is an unwanted sound that can have adverse implications on a person's health (Concha-Barrientos et al., 2004). Noise is pervasive, and can be derived from the environmental away from work (e.g. traffic, music), or can come from an occupational context. The later, referred to as occupational noise, is noise produced within work environments (Concha-Barrientos et al., 2004).

According to Chepesiuk (2005), excessiveworkplace or work process noise is an occupational hazard, as it can pose the risk of culminating in workers experiencing adverse health issues such as increased blood pressure, difficulties sleeping, stress and noise-induced hearing loss (NIHL). According to Nelson, Nelson, Concha-Barrientos, and Fingerhut (2005), on a global scale occupational noise is accountable for about 10% of hearing loss among adult workers in western countries. Nelson et al. (2005) makes further claims that NIHL is regarded as the most prevalent problem stemming from excessive noise within workplaces and that claims of the extent of NIHL in western society are reflected by its presence in Australian workplaces. In 2014 Safe Work Australia reported that there were 540 workers' compensation claims per million employees for work related noise induced hearing loss in Australia and that this was a decrease from the number of claims made the previous year as evidenced in the following graph.

Safe Work Australia (2010), claims that the industries most affected by NIHL include manufacturing, construction, transport and storage industries. Another industry in Australia that is severely impacted by NIHL is the agricultural sector. According to the Lower et al. (2010), 65 per cent of Australian farmers suffer from NIHL.

There have been limited empirical studies conducted on the consequences of NIHL on Australian farm workers, however previously published literature review findings related to NIHL in the agricultural industry are critically reviewed and contrasted to studies of other industries in order to establish the impact of NIHL on workers, their families and the company that they work for. The effects of NIHL on the farm worker parallels that of other industries, however, the barriers to preventing the NIHL worker from returning to work differentiate from that of other sectors due to organisational dynamics.

In Australia, the law classifies a noisy workplace as one in which occupational noise is above 85dB(A) over an 8 hour period (WorkCover WA, 2010). McCullagh and Robertson (2009) purport that the contributing factors to NIHL among farmers is their limited utilisation of ear protection, but more profoundly it is their engagement in work related activities such as the use of loud vehicles, firearms, and power tools. Carruth et al. (2007, p. 228) makes similar claims that long-term exposure to farm equipment noise "was an important cause of highfrequency hearing loss". Canton and Williams (2012) identified that farmers' exposure to these noises has resulted in more than 50% of dairy farmers in New Zealand suffering from NIHL. The significance of the above statistic is its parallel to Australia's NIHL issue relative to the agricultural sector. Both nations report 50% and above farm workers suffering from NIHL (Canton and Williams, 2012; Lower et al., 2010).



Canton and Williams (2012) state that NIHL is a permanent hearing loss condition that adversely affects the delicate and sensitive hearing systems of the inner ear "characterized by loss of hearing ability particularly in the voice recognition range" (p.355). The findings of Archer et al. (2012), indicate that NIHL poses severe health effects to workers as the extent of loss of hearing is cumulative and increases in relativity to the length of exposure and level of noise. Similarly, Sliwinska-Kowalska and Davis (2012) state that "prolonged exposure to noise at high intensity is associated with damage to the sensory hair cells of the inner ear and development of permanent hearing threshold shift, as well as poor speech in noise intelligibility" (p.274).

In a workplace context, individuals with NIHL can encounter struggles undertaking job tasks involving verbal communication and auditory signals (McCullagh, and Robertson, 2009). As stated by a worker in a report from the Parliament of Australia (The Senate. Community Affairs Reference Committee. 2010, p.39), "I can't work in anything that requires the use of a phone, or face to face customer interaction, and I'm even prevented from studying to broaden my career aspects, due to the lack of interpreters available, so I miss out greatly on getting anywhere in life". Although the above extract is an account of an office worker's experience with NIHL, the symptoms that the subject displays parallel to the experiences encountered by NIHL farm workers. For instance, Canton and Williams (2012, p. 355) claim that NIHL farm workers display communication difficulties which include; understanding conversations and the inability of the NIHL worker to "discriminate speech sounds". Canton and Williams (2012, p. 355) also highlight that NIHL reduces the farm worker's "ability to detect, identify, and localize sounds quickly and reliably, such as warning signals".

The subject of diminishing communication experienced by NIHL sufferers is a recurring theme in many of the sources investigated. Canton and Williams (2012), make a strong point that the difficulties in communicating experienced NIHL farm workers often leads to them lessening interactions which ultimately results in increasing social isolation towards family and co-workers. Canton and Williams (2012) also present the perspective of co-workers and family communicating with NIHL individuals, who report that communication with, and listening to, sufferers of NIHL can require an exerted effort, consequently this can lead to the sufferer experiencing stress and anxiety. From a workplace perspective, NIHL farm workers are greatly affected by difficulties in listening due to their hearing impairment, and this can result in their performance being misconstrued by co-workers as being a behavioural problem (Canton and Williams, 2012; Carruth et al. 2007). Consequently, these types of experiences by NIHL farm workers can affect the working groups' productivity, and in so doing lead to the NIHL farm worker becoming socially isolated from the working group (Canton and Williams, 2012; Carruth et al. 2007).

The experiences of NIHL farm workers parallel to that of sufferers in other industries. As purported by Access Economics (2006), individuals may feel inhibited and encounter participation difficulties in keeping up to date with employee-employer conversations, meetings, and significant contributions in workplace advancements and organisational change. As stated by a teacher suffering from NIHL "I cannot any longer take full part in meetings, undertake lecturing or teaching or run community consultation, all work I used to do" (The Senate. Community Affairs Reference Committee, 2010, p.39). Consequently, workers with hearing impairment (NIHL) are often sidelined in the workplace and maintaining and gaining employment is a constant battle.

In addition to the communication obstacles encountered by NIHL sufferers in the workplace (all industries), communication issues with friends and family can also arise due to the effort of having to assume the interpreter role and (or) repeating themselves in conversation (Canton and Williams, 2012). Canton and Williams (2012) highlight that a major consequence of NIHL, is "the increased effort required to follow conversation that can lead to fatigue, anxiety, and stress giving rise to a poorer quality of life and an increased prevalence of symptoms of depression" (p.355). A similar view is also held by Arlinger (2003) who claims that sufferers of NIHL are highly likely to experience a decline in quality of life as they become increasingly less engaged in social aspects and circumstances. This scenario can lead to feelings of isolation and a negative selfimage. In a study conducted by Jones (1987) (cited in Hallberg and Barrenäs, 1993), spouses of sufferers of NIHL reported that their partner's loss of hearing negatively affected family interpersonal relations with a decrease in such aspects as joke telling, conversation participation and in intimate interactions.

Unlike other occupations (e.g. office workers) that generally are employed by mid to large organisations; agricultural workers generally are employed in small family run businesses. As claimed by Canton and Williams (2012), farming is usually a family operated business employing 10 people or less, and often involving the entire family. As such, and unlike other industries, the barriers (e.g. absenteeism and high turnover) that can prevent the injured employee from returning to work do not generally apply to the agricultural sector. However, NIHL agricultural workers "develop strategies to cope with hearing loss in order to minimize or prevent the disadvantages of living with a hearing loss" (Canton and Williams, 2012, p.355). Canton and Williams (2012) claim that NIHL farm workers "show a clear preference for avoiding and minimizing strategies, such as denial (of hearing loss) in conjunction with verbal and nonverbal communication strategies such as repetition, lip reading, and positioning oneself" (p.355). Due to the nature of their work, and also the fact that most farming businesses are familyrun, such strategies and behaviours exhibited by NIHL farm workers does not prevent them from continuing to work. This situation however is in most cases non-applicable to NIHL workers in other sectors as other industries (e.g. corporate), rely heavily on communication and teamwork. Moreover, the organisations are generally not family run and usually are comprised of employees that have varying roles and responsibilities that involve oral communication. As such, these organisational structures/dynamics influences the organisational behaviours. Taking that into consideration, organisational behaviours exhibited by NIHL workers generally include:

- Absenteeism;
- Lateness at work;
- Decreased job satisfaction from both the worker (with NIHL) and their peers;
- Reduced productivity from the work groups that include the individual(s) with NIHL;
- High turnover (WorkCover WA, 2010).

Such factors come at considerable costs to the NIHL worker and the organisation. As purported by Stone (2010), organisational behaviours such as employee absenteeism amounts to a financial burden for the employer due to numerous reasons which include:

- the absence of the worker means the productivity of the business is reduced;
- if the employer chooses not to replace the absent employee, the cost incurred include sick pay and overtime rates for core staff; and
- if the employer chooses to replace the absentee, the costs include such items as recruiting and training substitute staff (Stone, 2010).

In essence, the loss of hearing due to NIHL can negatively influence the relationships of sufferers in the work environment, within the community, and at home. NIHL poses a threat to a person's social status, self-worth and can lead to selfstigmatisation. Sufferers of NIHL generally have to anticipate situations involving communication and interaction in social situations (Carruth et al. 2007). This form of anticipation can culminate in anxiety and vexation, which can influence the family and work facets of their life. As highlighted so far, NIHL can pose a significant barrier to workers returning to work due to the severity of the handicap.

NIHL and Workers' Compensation in Western Australia

In work-related circumstances in which employees sustain injuries and or illnesses, or die, financial compensation as well as other forms of assistance has become accepted as the norm in Australian society. The reasoning behind workers compensation is to provide financial and or other assistance for workers sustaining occupational injuries, diseases and/or fatalities (Gutherie et al., 2009). Besides being a compulsory requirement and as means of coverage to the injured worker, workers compensation insurance acts to protect the employer from incurring monetary and operational repercussions from workers' compensation claims (Balnave et al., 2009).

In Australia, workers' compensation is a legally mandatory insurance (Balnave et al., 2009). Every Australian employer is legally obligated in their state legislation to have and ensure an up-to date workers compensation insurance policy to cover their workforce (Balnave et al., 2009). Each Australian state and territory has its own workers compensation laws (Balnave et al., 2009). Workers compensation is a 'no fault system' meaning that compensation will be paid whether or not the employee was negligent or breached another law (Balnave et al., 2009, p. 396). In Western Australia, the main legislation pertinent to workers compensation is the Workers Compensation and Injury Management Act 1981 (Balnave et al., 2009).

Although legislation for workers compensation might be seen as straightforward; that is, a worker receives an injury and is in return compensated, in some circumstances the compensation process might be complex and prolonged. This situation is usually applicable to such occupational illnesses as NIHL because the illness and its symptoms may take time to develop (WorkCover WA, 2010). Secondly, it may be due to the fact that numerous protocols need to be conducted by the employee, the employer and the insurance company before it is established that the individual is suffering from work related NIHL. Hence, prolonged periods of time may pass before NIHL is accepted as work-related and for the employee to receive compensation. The following information is an overview of the compensation process for NIHL. The purpose of the overview is to provide insight into the obligations of the employee, the employer and the insurance company in accordance with the Workers' Compensation and Injury Management Act 1981 of Western Australia (WA).

The Workers Compensation and Injury Management Act 1981 (WA), defines noise induced hearing loss as a diminution of a worker's hearing that is permanent, is due to the nature of the work which the employee was employed to undertake, and which is not a personal injury caused by an accident.

The Western Australian Occupational Health and Safety Noise Regulation (1996), sets an 8 hour exposure limit of continuous A-weighted sound pressure allowed as 85 dB (A), and a peak noise level of 1140 dB (C). Any worker who receives noise above a peak exposure of 140dB (linear) at any time, is legally required to have a hearing test (WorkCover WA, 2014). The Workers Compensation and Injury Management Act 1981: Schedule 7 — Noise induced hearing loss; stipulates that the employer of a prescribed noisy workplace must finance and make arrangements for baseline hearing tests for their entire work force. The legislation further specifies that the employer must also arrange for baseline hearing tests for new workers within a 12 month period of beginning employment (WorkCover WA, 2014).

A baseline hearing test is an audiometric test which helps to determine the percentage of hearing loss incurred by the worker (WorkCover WA, 2014). Additionally, the preliminary audiometric test is used as a gauge for future tests. That is, the results of the baseline test is used as a benchmark to compare against future audiometric tests. This course of progression helps to determine the extent of the worker's hearing loss, and in so doing also help in the compensation process. The Workers' Compensation and Injury Management Act 1981 Noise induced hearing loss Schedule 7 cl. 5; specifies that after the baseline hearing test and from this point onwards it is the responsibility and initiative of the employee to make written requisitions to their employer for ensuing audiometric testing. The employer is legally obligated to follow through on the employee's request and must also ensure that written confirmation is provided to the employee of the scheduled date and time for testing. It is mandatory for employers, of workplaces that could be noisy, to employ the services of audiometric testers endorsed by Work-Cover WA.

The results from the subsequent employee test are then to be compared to the results of the initial baseline test. Should the results of the test after the base line hearing test indicate that the worker(s) has incurred hearing loss of 10% or above, the regulatory authority, WorkCover WA is legally obligated to then notify both the worker and their employer of the results. Work-Cover WA, will then make arrangements for the affected worker to get further tested by an audiologist and, if necessary, an ear, nose and throat specialist (WorkCover WA, 2014). This process will in turn help to confirm if the worker(s) is suffering from NIHL, and if they are eligible for compensation as a result of this occupational illness.

In the case where reports indicate that the worker has suffered hearing loss of 10% or greater (NIHL), the worker is required to complete a claim form and forward it to WorkCover WA (WorkCover WA, 2014). WorkCover will then forward this claim to the employer, who under the provisions of the Workers Compensation Act 1981 must lodge the claim with their insurer within five days (Workers' Compensation and Injury Management Act 1981). The obligations of the Employer to this point include:

1. Providing details of the injury to the Insurer. Other infor-

mation pertaining to the NIHL injury must also be provided such as the results of the audiometric tests and any other related medical expenses.

- 2. If the claim is accepted by the Insurer and the worker with NIHL is unable to work due to this hearing loss, the employer must commence making payments (income replacement) through their insurer.
- 3. The employer is also obligated to provide appropriate work duties to the NIHL worker to help them rehabilitate and return to work quickly. This could involve changing the employee's role and duties (WorkCover WA, 2014).

The obligations of the Insurer include:

- 1. Having a 14 day period to respond to the employer and worker. The Insurer is obligated to make a decision as to whether the claim has been approved, disputed or still pending.
- 2. In the case where it has been determined that the worker has suffered from NIHL, the insurer will determine the liability for workers' compensation and will pay for the costs (WorkCover WA, 2014).

In due consideration of the workers' compensation legislation and the actual compensation process pertinent to NIHL individuals, the most prevalent barrier for all parties involved (worker, employer and insurer) is the prolonged process of determining whether the injury is work-related. The employer of a prescribed noisy workplace must ensure baseline hearing test are conducted (Compensation and Injury Management Act, 1981). It is only after the baseline test has been conducted that subsequent tests can be requested by the worker. As such, the Act specifies that the subsequent test must be carried out within a year from the baseline test (Compensation and Injury Management Act, 1981). If the subsequent results indicate the worker a loss of 10% or more, further tests will be conducted. Hence, additional time may elapse in waiting for the confirmation of results and as to whether the worker is eligible for compensation.

Under the provisions of this Act, it is the responsibility of the employee to request in writing to their employer a subsequent test following the baseline test. If a worker believes that they have incurred hearing loss due to work-related activities but fails to lodge a request for subsequent audiometric tests, this could have an adverse impact on the outcome of their workers' compensation claim. This is because there would be an absence of contrasting results between the base-line and the subsequent test, thus determining whether the employee has NIHL will prove to be unverifiable. Conversely, if the employer fails to ensure that the subsequent tests are conducted following the baseline tests, this could affect the outcome of the compensation claim if they wanted to dispute that the worker's hearing loss is work-related. Secondly, failure to carry out the worker's requested mandatory tests could be interpreted as a legislation breach and the employer could incur monetary losses such as fines and penalties (e.g. an increase their insurance premiums), and breaches of safety laws (Duty of Care).

Under the provisions of WA's Workers' Compensation and Injury Management Act 1981 s 93J, the individual with NIHL might be deemed ineligible for workers' compensation in circumstances whereby the insurance company and the employer dispute that hearing loss was not as a result of work-related activities. For instance, the insurer and the employer might dispute the worker's claim, based on the worker's engagement and exposure to recreational noise (e.g. the worker could be a musician or attend festivals frequently). Such circumstances impede the ability of the worker to be compensated for hearing loss even though they work in a prescribed noisy workplace. The most notable barrier for the insurance company is the failure of the employee and the employer to carry out their obligations. That is, if the baseline test and subsequent tests are not conducted in accordance with the Act, there is no substantial evidence to indicate that the worker has incurred NIHL through workrelated activities.

Summary

Information pertaining to the occupational illness of noise induced hearing loss has been reviewed and the implications of this injury to farm workers has been explored. This review has highlight the impact of this injury on the individual, their family and the company that they work for. NIHL is a significant handicap for workers across all industries. The process of workers' compensation for the NIHL worker in Western Australia was described. The fact that workers' compensation for NIHL workers is a convoluted and complicated activity, reflects not only the severity of the illness, but also is wake up call for both workers and their employers (in all industries) to ensure that their duty of care to one another is implemented, reciprocated, continuously reviewed and risk control measures improved in relation to work related noise. Such strategies will mitigate the likelihood of workers' lives being devastatingly and irreversibly changed forever due to work related noise induced hearing loss.

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Employees' Barriers to Making a Worker Compensation Claim in Australia

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Abstract

The underlying reason why employees are not claiming worker compensation, despite being eligible, has been overlooked even though it is governed by legislation. A significant amount of workers are not claiming compensation due to unawareness or lack of understanding of the policy, to which improvements in the workplace in the form of employee education, occupational health and safety programs and interventions may be introduced. This literature review discusses factors such as gender, age and other reasons that can affect an employee's decision not to claim worker's compensation for work-related injuries.

Keywords

Barriers. Workers' compensation claim. Work related injuries. Influencing factors.

Introduction

Work related injuries affect both the employee and employer, as well as government bodies. In Australia, there is legislation that governs an employee's benefits and entitlements in the event of an occupational injury occurrence. Under the Western Australian Workers' Compensation and Injury Management Act 1981, section 18 states that employers are liable to compensate workers for injuries, and section 5 defines injury to include "personal injury arising out of, or during the course of employment, or whilst the worker is acting under the employer's instruction" (Workers Compensation and Injury Management Act 1981 Western Australia). Despite this legislation being in place, there are employees who are not claiming workers' compensation even though they are eligible. According to a report by the Australian Bureau of Statistics [ABS] (2014), 531,800 people experienced some form of work-related injury or illness between July 2013 and June 2014, of which 39% did not claim workers' compensation.

Findings by Scherzer, Rugulies and Krause (2005), Hodges, Kirkhope, Naphtall and Slevison (2013), Qin, Kurowski, Gore and Punnett (2014) and Safe Work Australia (2009, 2011), suggested several factors and reasons that could influence an employee's decision not to submit a workers' compensation claim following a work-related injury. These reasons included that some employees found the reporting and claim process complicated, some felt that lodging a claim would pose as a risk to their job security, while others perceived the pain or injury to be manageable. In addition, many employees did not think they were eligible for workers' compensation. This is supported by a statistic in a report by Safe Work Australia (2011), which cited nearly one in ten employees for workers' compensation for a work related injury or work caused il-health.

It is important to address the issue of workers who do not claim workers' compensation as presentism (employees coming to work when they are sick or injured) by these employees affects their employers who become exposed to potential lost productivity and profits due to lower employees productivity. The Australian Bureau of Statistics (ABS) report that in 2014 out of the 531,800 people who suffered a work related injury or illness, 61% had some time off work and 29% had at least 5 or more days off from work. The failure in claiming workers' compensation also affects government statistics, as it could lead to the National Data Set of Workers' Compensation Statistics underreporting the number of injury occurrence in Australian workers (Safe Work Australia, 2009). Furthermore, trends in work-related injuries may become disguised as certain types of injuries appear to be less common than they actually are, or result in particular groups of workers being overlooked in targeted Occupational Health and Safety campaigns (Safe Work Australia, 2009). Qin et al. (2014) states that in order to estimate the scope of workplace injury, have efficient resource allocation, and to measure the effectiveness of intervention, the most important data source stems from workers' compensation claims.

This literature review discusses the different influence factors, such as gender, age, and other reasons that could likely affect an employee's decision not to claim worker's compensation for a work-related injury.

Method

Search Process

To identify factors that may affect an employee making work related injury claims, a literature review search was conducted via databases that included Pubmed, ScienceDirect, and ProQuest. In addition, several government sector websites including Comcare, Safe Work Australia (SWA), and Australian Bureau of Statistics (ABS) were used to obtain statistical information, while the State Law Publisher was used in reference to the relevant Australian legislation.

The keywords used in search channels included worker compensation claims, work related injuries, barriers, and influence factor. ProQuest found 59,607 results, which was reduced to 530 by refining the search using additional keywords, and filtered to show Western Australia results between year 2000 to 2015. Pubmed found similar articles to ProQuest when the keywords 'barrier' and 'worker compensation claim' was used, with 17 results. Another search engine, ScienceDirect revealed 5,680 results from keywords 'work related injury' and 'worker compensation claim'. This was reduced to 1,397 articles when filtered by years 2010 to 2015. To obtain statistical information, an initial search was conducted at the ABS website using keyword 'worker compensation'. 1,526 results were found, with 715 matching all words; this was reduced again by filtering by years 2010 to 2015. Out of the total publications searched, 19 articles were found to be relevant to this topic, of which 10 have been cited in this review. Statistics from 6 reports were obtained through the Safe Work Australia website, which was used to provide the statistical information to analyse the trends in worker compensation claims.

Definition and legislation

In this article, the following definitions and legislation apply:

- Work-related injuries and illnesses are defined as any injury or illness or disease which first occurred, in the last 12 months, where a person suffers either physically or mentally from a condition that has arisen out of, or in the course of employment (ABS, 2014).
- Lost Time Injury is defined as an occurrence that resulted in a fatality, permanent disability, or time lost from work of one day/shift or more (Safe Work Australia, 2015a).
- Workers Compensation and Injury Management Act 1981 is the legislation that sets the minimum standards for meeting legal requirement related to Workers' Compensation and return to work procedures following a work related injury or work related ill health in Western Australia.

Discussion

In order to develop an effective injury prevention program, access to accurate statistics on work-related injuries was fundamental and research involving workers of all ages showed that under-reporting of work related injuries was prevalent (Tucker, Diekrager, Turner, & Kelloway, 2014). It was suggested that factors affecting employees not claiming workers' compensation are multifaceted. Qin et al. (2014) presented that reasons for not claiming workers' compensation could vary from organisational factors, occupational factors, injury and illness factors, to personal factors. This discussion examines the category of gender, age, and other reasons.

Gender

Over the years, it was a consensus that males in general, are more likely to claim workers' compensation for their injuries compared to females. In a report conducted in 2009-2010, 47% of male workers claimed compensation for a work-related injury, compared to females at 39% (Safe Work Australia, 2011). In the ABS (2014) Work Related Injuries Survey 2013-2014, the percentage of males who experienced work-related injuries or illness was 61%. The higher claim levels may be due to the tendency of male workers to be more frequently exposed to higher-risk type jobs, such as manual labour. This is supported by Shin, Oh, and Yi (2011), who through statistical analysis, found that males are positively and significantly associated with a high occurrence rate of occupational injuries and diseases. The percentage of female workers who did not apply for a claim in 2009-2010 was 61%, compared with male workers at 53% (Safe Work Australia, 2011). Reed and Dahlguist (as cited in Shin et al., 2011) found that women are more likely to be employed in safer jobs than men, while Grazier and Sloane (as cited in Shin et al., 2011) also found that women are more risk averse compared to men.

There were several influence factors deterring both the male and female workers from applying workers' compensation claim. Safe Work Australia (2009) reported, male and female workers did not apply for compensation for nearly four- tenths of their injuries that involved some time lost from work because they considered the injury too minor to claim. For a further onetenth of these injuries, male and female workers felt it was inconvenient or too much effort to apply. Male employees did not apply for compensation for more than two in ten injuries because they did not know they were eligible for compensation. For female employees, nearly two in ten did not apply due to concerns about their current or future employment. Age differences were another key factors that determine the occurrence of work-related injury. According to the Australian Bureau of Statistics (2014), the highest age group who submitted claims was the 50-54 year olds, with 52 per 1000 persons, followed by the 15-19 year olds, at 50 per 1000 persons. In Safe Work Australia's 2013 report, it was found that 63% of young workers did not submit claims for their injuries. In contrast, 58% of older workers did not claim compensation. 43% of the young workers who did not claim compensation felt that their injuries were too minor to lodge a claim, and a further 10% were either not aware of workers' compensation, or did not think they were covered. In another report by Safe Work Australia (2015b), only 6% of participants with work-related musculoskeletal pain reported their condition to their employer, and only 1.2% claimed workers' compensation.

Young female employees were least likely to claim workers' compensation while males aged 45–54 years were most likely to claim compensation for injuries that involved some time lost from work (Safe Work Australia, 2009). Shin et al. (2011) found that workers aged between 25-54 years old tend to take more risks compared to workers lesser than 25 years of age, or more than 54 years of age.

Other reasons

Numerous publications document the barriers of workers not claiming work-related injury compensation and this has mainly been attribute to sematic information processing (Hallden, 2014). Scherzer and Wolfe (2008), identify barriers including not knowing about reporting procedures, fear of jeopardizing one's job and difficult interactions with workers' compensation agency personnel. According to ABS (2014), a total of 326,100 Australian workers did not claim workers' compensation when injured in 2013-2014, with 44% of these workers explaining that the main reason for not claiming was due to the injury being minor or insignificant, 10% did not think they were eligible to make a claim, and a further 10% were not covered or were not aware of the workers' compensation policy in the company that they worked for.

A report by Pransky, Snyder, Dembe, and Himmelstein (1999) found that workers explained several reasons for not reporting their injuries, including fear of reprisal, a belief that pain was an ordinary consequence of work activities or aging, a lack of response from management for previous incidents, and to avoid the risk of losing their jobs. As self-employed individuals are not covered by worker's compensation, their injuries are not included in the statistics. Additionally, occupational diseases may have a long latency period which makes it difficult to link the disease to work performed at a specific time or place, and thus the inability to claim worker's compensation (Safe Work Australia, 2015c).

Conclusion

The workers' compensation system was designed to be nonadversarial, and help compensate workers for time away from work and loss of income due to injury sustained in the workplace (Hallden, 2014). Removing the barriers that prevent workers from claiming compensation is important as it reduces the under-reporting of statistics, and in turn, helps identify appropriate and targeted interventions and workplace safety programs to reduce the overall risk and occurrence of injuries. An important area that requires implementation is the education of employees in the workers' compensation process, to increase knowledge and awareness of each workers' individual eligibility and entitlements as this will reduce the perceived deprivation of worker benefits.

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Preventing Bullying Can Increase Productivity Levels and Reduce Negative Health Effects

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Abstract

The psychological hazard of bullying within workplaces is a hazard which can have severe negative health impacts and is an issue that is a great source of concern for many employers. From increasing the risk of developing cardiovascular disease, depression and anxiety, to also having the ability to decrease productivity levels of employees. Not only can bullying cause an instant health effect, but it can also affect a person's lifestyle and family relationships. The following article analyses published literature associated with the effects of bullying and describes how preventative programs against bullying have the ability to increase productivity levels and reduce negative health effects within a workplace. The article considers legal obligations of employers and review their responsibilities in managing and preventing this hazard.

Key words

Psychological. Prevention. Bullying. Productivity. Mental health.

Introduction

Over the past 20 years within Australia, there has been growing research within the field of psychological hazards and only more recently the effects of workplace bullying (Johnstone, Quinlan and McNamara, 2011). In today's modern society, the issue of bullying within the workplace is a widespread problem that must be addressed in a systematic manner (Cascardo, 2011). With bullying having the ability to impact an individual's family relationships, psychological well being (causing depression or anxiety), general physical health (cardiovascular disease) and productivity levels, it is important that this psychological hazard is prevented (Brank, Hoetger and Hazen, 2012). Within Australia, it is estimated that over 33% of all employees have at some point in their careers been bullied (Standing Committee on Education and Employment, 2012). In response to this, preventative programs have been put in place to help combat these negative effects.

Methodology

To investigate the topic of preventative programs on bullying and their success with increasing productivity levels and decreasing negative health impacts, an initial literature review search was undertaken utilising the Curtin University Library Catalogue. To successfully navigate such a search database, the keywords of bullying, prevention, productivity and mental health were utilised. Initially the keywords "bullying and workplaces" resulted in 1,324 articles. However, a more refined search using the keywords "bullying and workplaces and mental health" resulted in a smaller result of 41 peer reviewed articles. This provided an initial starting point for further research. In addition to this, keywords were changed from "bullying and workplaces" to more specific criteria such as "bullying and cardiovascular disease and workplaces" along with "bullying and depression and workplaces", which resulted in 2 and 29 peer reviewed journal articles respectively.

Articles were chosen based on their relativity to the chosen topic, in regards to prevention programs, cardiovascular health and mental health effects that were a result of bullying. Articles that included topics such as sexual harassment or physical abuse in the workplace were not included in this review. A search undertaken on the Safe Work Australia website resulted in a range of relevant documents being found, which included Australian compensation claims reports and the Code of Practice on how to manage work health and safety risks. Along with this, further searches on Australian government websites produced additional reports in regards to workplace bullying and relevant legislation. In addition, further articles in the form of reviews were utilized in order to gain understanding and general background knowledge on bullying and prevention programs that are currently in place. Of the reviewed publications 12 peer reviewed journal articles, 8 government publications and one law are included in this literature review.

Discussion

Workplace bullying

As stated by Sauter, Murphy and Hurrel (2012), psychological disorders are leading occupational health problems. Psychological disorders are linked to a range of mental health disorders, which include depression, anxiety and general distress (Lahelma, Lallukka, Laaksonen, Saastamoinen, and Rahkonen, 2010). These psychological disorders are generally brought on by issues such as bullying, discrimination and harassment, all of which can and need to be prevented (Chan-Mok, Caponecchia and Winder, 2014). For this review the focus was on bullying and the effects this issue can have on an employee's mental/general health and productivity levels.

Workplace bullying has been defined as "the repeated and unreasonable behaviour directed towards a worker or a group of workers that creates a risk to health and safety." (Safe Work Australia, 2013, p. 2). To clarify this further, unreasonable behaviour includes withholding information that is key for effective work performance, setting tasks that are unreasonable, spreading misinformation or malicious rumors, and finally, changing work arrangements to deliberately inconvenience an employee (Safe Work Australia, 2011). It is stated widely that this degree of workplace bullying can lead to work-related stress, which in return can cause feelings of hopelessness, severe depression, anxiety and even cardiovascular disease (Bentley et al., 2009).

Legal obligations

Legally, in accordance to the OSH Act 1984 of Western Australia (Division 2, S19A), "an employer shall as far as practicable, provide and maintain a working environment in which the employees of the employer are not exposed to hazards..." (Occupational Safety and Health Act 1984, 2014, S19A). Therefore, under the OSH Act 1984, the psychological hazard of bullying results in the employer breaching the act, as they have not provided an environment where the employee is safe from psychological hazards. Consequently, the employer has committed an offence and is liable for the employee's injury and associated costs (Occupational Safety and Health Act 1984 of Western Australia).

Along with this, "an employer is required to 'manage risks' by eliminating health and safety risks so far as is reasonably practicable, and if it is not reasonably practicable to do so, to minimise those risks" (Safe Work Australia, 2011, p. 3). Therefore legally, it is mandatory that business owners uphold and introduce programs to minimise and control this hazard, whilst also reporting on the effectiveness of such approaches. By doing this, a clear relationship between prevention programs and productivity/ negative health effects would be shown (Safe Work Australia, 2011).

Impacts of workplace bullying

Amongst the other workplace hazards (including physical, chemical, mechanical or biological), psychological hazards are perhaps the most difficult to identify and are therefore harder to manage (Chan-Mok et al., 2014). The effects of bullying on a single employee have the ability to manifest and cause greater psychological effects and health disorders (Chan-Mok et al., 2014).

In a recent study, it was found that work related stress, as a result of bullying, increased the chance of developing cardiovascular disease by 1.6 times and also increased the chance of developing depression by 4.2 times (Kivimaki, Virtanen, Vartia, Elovainio, Vahtera and Keltikangas-Jarvinen, 2002). In addition to this, a recent 2012 report found that 6.8% of Australian employees had been bullied (six months prior to being interviewed) (McCarthy, 2013). However, a larger study found that the actual rate of Australian workplace bullying could in fact exceed 33%, which results in the risk of bullying causing a negative health effect to rise (Standing Committee on Education and Employment, 2012). The clear discrepancy in data collected, indicates that bullying is an issue that can go undetected, with the possibility that employees/employers are unaware of the common definition of bullying, or are unwilling to self report, which indicates prevention programs are not being utilised to an effective degree (Standing Committee on Education and Employment, 2012).

It is therefore evident that workplace stress, as a result of bullying could be the cause of severe adverse effects to not only the mentality of an employee (depression), their general health (cardiovascular disease), but even the possibility of decreased work productivity (Standing Committee on Education and Employment, 2012).

Compensation costs

As a result of workplace stress, it is documented that productivity is also affected (McTernan, Dollard and LaMontagne, 2013). In a recent study it was found that bullying related depression, discrimination or related job stressors, cost Australia \$12.6 billion annually (McTernan et al., 2013). This cost was due to related absenteeism, presenteeism and treatment costs (McTernan et al., 2013). The study also found that as a result of workplace stress (which included and highlighted the issue of bullying as a leading cause of workplace stress), lead to employees taking an average of 1.5-3 days off work, otherwise known as absenteeism (McTernan et al., 2013). In regards to presenteeism, employees who came to work whilst in a bully induced depressive state were only partly functional, which translated to approximately 2.3 days off work (McTernan et al., 2013). The degree to which bullying can cause a loss in productivity is clearly evident, not only are employers losing employees, but there is also a cost to replace and make up for the amount of lost time (McTernan et al., 2013).

In addition to productivity costs, a recent safety and compensation report stated that within Australia, stress-related mental disorders accounted for \$200 million worth of workers compensation claims a year, otherwise known as mental health injuries (Australian Safety and Compensation Council, 2006). Furthermore, it was also stated that in 2002, mental stress claims had the highest median cost of \$9,700 and the second highest average cost of \$16,400 (Australian Safety and Compensation Council, 2006). In addition to this, during 2010-2011, bullying/ work related stress claims within Western Australia rose to a median direct cost of \$18,100 (Safe Work Australia, 2015). It was also stated that from 2001 to 2012 there was a 17% increase in the number of serious claims caused by mental stress (which was inclusive of bullying), an increase of 37% in median time lost (productivity) and an increase of 69% in median compensation costs (Safe Work Australia, 2012). With such a high financial cost as a result of work related stress (inclusive of bullying), it is evident that this form of injury is not only increasing (leading to negative health impacts and more loss time injuries), but it is something that Australian businesses need to address and prevent.

Preventative programs

There are a range of programs in place to combat the psychological hazard of bullying. At the present time, the Australian Government Comcare has a large range of bullying resource kits available online. These resource kits include fact sheets, self assessment tools and possible tool box meeting discussions (Australian Government Comcare, 2015). However, these resources do not document the degree to which bullying can affect an employee, and are usually directed at either the employee/employer doing the bullying, or the employee/employer who is victimized. Additionally, there are no figures or statistics indicating the degree of success that is had by such kits.

In a recent journal article, mention was made of ways in which organisations had implemented programs and policies in order to reduce workplace bullying (Ekundayo, 2014). According to the author, in order to manage bullying effectively, management should consider providing training to all new employees, review any performance gaps and ensure a zero-tolerance bullying written policy is in place (Ekundayo, 2014). However, a recent qualitative study noted that on average only 16.1% of a company's employees would regard their written policy on bullying as effective and only a minority (27.3%) of employees would receive any real training in regards to bullying (Salin, 2008). Along with this, it was also stated that employees felt more comfortable when management would regularly monitor performance gaps, which would ensure that the underlying problem would be found (Salin, 2008).

Additionally, a 2011 study which implemented a training program for zero tolerance bullying (including how to identify bullying and role play scenarios for both employees and employers), found that as a result of the program, employees had a higher level of trust that their workplace bullying issues would be addressed appropriately and found that their overall productivity and work ethic within the workplace had also increased (Meloni & Austin, 2011). From this study, it can be seen that a prevention program can in fact increase an employee's productivity levels and perhaps their overall mental health (Meloni & Austin, 2011).

From the studies and statistics mentioned above, there is a clear indication that a simple written policy is not effective enough to prevent the issue of bullying and a more hands on approach is required. As mental stress claims account for such a large proportion of Australia's compensation costs, it is clear that prevention programs are needed. Along with this, the clear evidence indicating negative health impacts as a result of bullying, whether it is cardiovascular disease or depression, indicates the strong need for a prevention program. In addition to this, it is apparent that by preventing the psychological issue of bullying through a written policy will not lead to an employee/ employers productivity level to increase or lead to a reduction in negative health effects (from mental to general health). As identified through research, a more hands on approach, in the form of training workshops and zero tolerance bullying scenarios results in a greater change within a company, from increasing productivity to also reducing negative health impacts in the form of depression and cardiovascular disease.

Conclusions

When the psychological hazard of bullying occurs on a regular basis, the effects can be detrimental and result in chronic illnesses. Through bullying, an employee can develop mental health illnesses such as depression or anxiety and can even result in the employee developing cardiovascular disease. It is precisely for this reason that a thorough and effective management plan, in the form of prevention programs (training sessions) should be introduced to each company and be put in place for every new employee. It is the responsibility of the employer to provide both the training and also ensure that the workplace is free from any hazards, whilst also following all safety guidelines and safety regulations. By ensuring a safe workplace and preventing workplace bullying, productivity levels will increase and negative health effects will decrease.

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Solid Waste Management in Lebanon

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Abstract

Lebanon has been facing a "garbage crisis" for the past few months and nobody seems to be shouting "Cholera! Cancer! Typhoid! Diarrhea! Skin diseases! Stomach Pain! Etc.". The garbage crisis, unfortunately, is not merely a political crisis, but a much more dangerous problem, a health crisis. Further, corruption is particularly an issue within waste management.

Introduction

Garbage is a big problem at the moment for Lebanon - and for governments all over the world, which can lead to major environmental problems. But, there are solutions, if the authorities are ready to take them on.

In Lebanon, tons of garbage has continued to pile up on the streets of the capital Beirut, as the government struggles to deal with a situation that is quickly turning into an environmental crisis for the country.

In a country well-known for its natural beauty and scenery, mountains of garbage, and landfills could be regarded as somewhat of a downer. With an estimated 4.5 million population, the size of waste in Lebanon, including domestic, industrial and medical waste, is estimated to be almost 4,000 tons daily, or around 1.5 million tons annually. However, in the absence of a waste treatment plan, long-awaited solutions have yet to arrive.

It is estimated that the solid waste generation per capita varies from around 0.7 Kg/p/d in rural areas to around 0.85 to 1.1 Kg/p/d in urban areas, with a national weighted average of about 0.95 Kg/p/d. The foreseen increase in waste generation in Lebanon as a whole is estimated to be about 1.65%.

Almost all of the solid waste generated in Lebanon is collected by public or private haulers (99% in rural areas, 100% in urban areas). However, waste management varies from one area to another: 8% is recycled, 9% is composted, 53% is landfilled, and 30% is disposed of in open landfills.

Some Statistics

Available statistics on solid waste in Lebanon are shown at right:

General

Population :	4.5 million (2009)
 Municipal solid waste (MSW) 	1.57 million
generation:	tons (2009)
 Per capita MSW generation: 	
urban areas	- 0.85 - 1.1 Kg/day
rural areas	- 0.7 Kg/day
MSW generation annual growth:	1.65%
 Medical waste generation: 	- 25,040 T/year
 Industrial waste generation: 	188,380 T/year
 Hazardous industrial waste 	
generation:	3,380 T/year
 Agricultural waste generation: 	



Technical Performance

•	M	unicipal waste	
	•	MSW collection coverage :	
		in rural areas	99%
		in urban areas	100%
	•	MSW final destination:	
		- Composted:	9%
		- Recycled:	8%
		- Landfilled :	53%
		- Open-dumped:	30%
7	•	Number of sanitary landfills	
		- Under study:	1.
		- Under construction:	0
		- Built:	3
		- Operational:	3

Hazardous and industrial waste

	Number of treatment units/centers of				
	industrial wastes (physical chemical treatment)				
	- Under construction:	0			
	- Built:	0			
	- Operational:	0			
-	Types of treatment	60% of the waste is			
	of medical waste:	treated by autoclaving			
		and shredding			

Institutional Framework

Policy and planning

- Numerous government institutions: Ministry of Environment (MoE), Ministry of Interior and Municipalities (MoIM), Council for Development and Reconstruction (CDR).
- Overlapping responsibilities and unclear lines of authority.

Implementation and operation

- In Beirut, Mount Lebanon and Tripoli: CDR, and to a lesser extent, the MoE and the MoIM.
- · In the rest of Lebanon: the municipalities.

The institutional structure under the draft Law on integrated SWM

- A single independent SWM board regrouping many stakeholders: responsible for planning and decision-making at the national level, as well as waste treatment.
- Local authorities (municipalities, unions of municipalities): responsible for the waste collection.

Legislation and Planning Issues

Solid waste management in Lebanon is bogged down by deficiencies in waste management legislation and poor planning. Insufficient funds, absence of strategic waste management plans, lack of coordination among stakeholders, shortage of skilled manpower, and deficiencies in technical and operational decision-making are some of the hurdles experienced in implementing an integrated waste management strategy in Lebanon.

The general perception towards waste in Lebanon is that of indifference and apathy; waste is treated as 'waste' and not as a 'resource'. Public participation in community-level waste management initiatives is lacking mainly due to a low level of environmental awareness and public education. Besides, Lebanon does not have an effective source-segregation mechanism.

Most of the waste in Lebanon ends up in landfills, with poor management that is doomed to pollute the surroundings for years to come.

So, What is the Problem?

Sukleen, which was founded in 1994, is the ubiquitous cleaning company that kept the streets of Beirut so relatively clean. The issue, however, is the contract with Sukleen that has recently expired.

The renewal of Sukleen's contract with the Lebanese government has been at the core of a cabinet row over how much the Lebanese state should pay for its services.

Currently, the terms of the deal between Sukleen and the government are secret, as are the fees the company charges, despite the fact that it is paid from public money. Both opposition ministers and NGO workers who advocate for transparency find the situation unacceptable.

Rumor has it that Sukleen's services are some of the most expensive in the world, but few people in Lebanon know for sure how much it costs to clean Beirut's streets.

Health and Consequences

With garbage accumulating across Beirut, in particular, residents have taken to burning the stinking mounds, raising alarm over toxic fumes. Although citizens are angered by the uncollected garbage, they have also blocked plans to open new landfills in new areas.

As a result of the garbage crisis, some health consequences with respect to open burning of garbage and open landfills follow:

A.. Open Burning of Garbage:

Open burning of garbage poses health risks to those exposed directly to the smoke. It especially affects people with sensitive respiratory systems, as well as children and the elderly.

In the short term, exposure to smoke can cause headaches, nausea, and rashes. Over time, it can increase the risk of developing heart disease. Some of the pollutants contained in the smoke from open burning of garbage can include:

- Dioxins
- Furans
- Arsenic
- Mercury

- PCBs
- Lead
- Carbon monoxide
- Nitrogen oxides
- Sulphur oxides
- Hydrochloric acid

Some of these pollutants can also end up in the ash that is left behind from open burning of garbage.

Dioxins, Furans, and our Health

One of the greatest concerns with open burning of garbage is the health risks posed by the release of dioxins and furans into the environment. Exposure to dioxins and furans has been linked to:

- Certain types of cancers
- Liver problems
- Impairment of the immune system, the endocrine system, and reproductive functions
- Effects on the developing nervous system and other developmental events

It should be noted that the open burning of garbage produces more dioxins and furans than all industrial activities combined.

Dioxins, Furans, and our Environment

Since open burning of garbage is more common in rural and agricultural areas, there is particular concern for high levels of dioxins and furans settling on crops, in our streams, and in our lakes. Dioxins and furans produced by the open burning of garbage are deposited on plants, which are eaten by animals. The dioxins and furans are absorbed by these animals and stay in the food chain until they ultimately end up in our meat and dairy products. In fact, over 90 percent of our intake of dioxins and furans is from our diet.

B. Open Landfills

Landfill Gas

Landfill gas contains many different gases. Methane and carbon dioxide make up 90 to 98% of landfill gas. The remaining 2 to 10% includes nitrogen, oxygen, ammonia, sulfides, hydrogen and various other gases. Landfill gases are produced when bacteria break down organic waste. The amount of these gases depends on the type of waste present in the landfill, the age of the landfill, oxygen content, the amount of moisture, and temperature. For example, gas production will increase if the temperature or moisture content increases. Though production of these gases generally reaches a peak in five to seven years, a landfill can continue to produce gases for more than 50 years.

Movement of Landfill Gases into Buildings

Landfill gases can move from a landfill through soil into outdoor air as well as the indoor air of nearby buildings. Landfill gases in outdoor air can enter a building through windows, doors, and ventilation systems. In soil, landfill gases can migrate and enter a building through cracks in the basement floors and walls, utility entry points (e.g., where underground water or electrical lines enter a building), sump pump holes or floor drains. This is called soil vapor intrusion. Once they enter a building, landfill gases may collect in areas of poor ventilation, such as basements, crawlspaces, and utility tunnels.

Odors from Landfill Gas

Odors in landfill gas are caused primarily by hydrogen sulfide and ammonia, which are produced during breakdown of waste material. For example, if construction and demolition debris contain large quantities of wallboard (also called drywall or gypsum board), large amounts of hydrogen sulfide can be formed. Hydrogen sulfide has the foul smell of rotten eggs, while ammonia has a strong pungent odor. Humans can detect hydrogen sulfide and ammonia odors at very low levels in air, generally below levels that would cause health effects.

Health Effects of Ammonia and Hydrogen Sulfide

Short-term exposures (typically up to about two weeks) to elevated levels of ammonia and hydrogen sulfide in air can cause coughing, irritation of the eyes, nose, and throat, headache, nausea, and breathing difficulties. These effects usually go away once the exposure is stopped. Studies have been conducted in communities near landfills and waste lagoons to evaluate health effects associated with exposure to landfill gases. These studies lasted for several months and reported health complaints which coincided with periods of elevated levels of hydrogen sulfide and landfill odors. The reported health complaints included eye, throat and lung irritation, nausea, headache, nasal blockage, sleeping difficulties, weight loss, chest pain, and aggravation of asthma. Although other chemicals may have been present in the air, many of these effects are consistent with exposure to hydrogen sulfide.

Methane Safety Hazards

Methane is the major component of natural gas. It is highly flammable and can form explosive mixtures with air if it concentrates in an enclosed space with poor ventilation. The range of air concentrations at which methane levels are considered to be an explosion hazard is 5 to 15% of the total air volume. Landfill gas explosions are not common occurrences.

Health Effects Associated with Methane and Carbon Dioxide

Methane and carbon dioxide are colorless, odorless gases that can displace oxygen in enclosed spaces. Health effects associated with both methane and carbon dioxide result from the lack of oxygen rather than direct exposure to these gases. Health effects caused by a reduced oxygen level include a faster heartbeat and having to take deeper breaths, similar to the effects felt after vigorous exercise. A greatly reduced oxygen level (that is, when the oxygen level is well below its usual level of 21% of the total air volume) can cause reduced coordination, fatigue, nausea, vomiting, and unconsciousness. These effects have rarely been reported from landfills.

Conclusion

Sustainable waste management is a big challenge for policymakers, urban planners and other stake-holders in Lebanon. Immediate steps are deemed necessary to tackle mountains of waste that are seen at a good number of locations throughout Lebanon.

By all means, a sustainable waste management system requires a high degree of public participation, a strong legislative and institutional framework, sufficient funds, and modern waste management practices/technologies.

Final Remark

The most effective solution is to implement an adequate strategic waste management plan and encourage recycling. It is in every municipality's interest to invest in recycling and promote environmentally-friendly solutions to save money, protect the environment and people. Furthermore, the garbage crisis calls for urgent actions to be taken in order to increase public awareness about environmental issues, waste management practices, and sustainable living.

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Establishing New Employees: A Review of Literature on Employee and Employer Factors Involved in New Employee Retention, Highlighting the Importance of "On-Boarding"

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Abstract

New Employee retention is becoming ever more important in the success of businesses. The costs associated with searching for and training new employees is rising and can represent significant financial expenditure and loss if an employee leaves a company. This article reviews published literature associated with new employees, retention of new employees and the process of on-boarding. This review discusses factors affecting new employees, the growing emphasis of employee retention and on-boarding's importance in the orientation process of new employees.

Keywords

New Employees, New Employee Retention, Human Resource Management, On-boarding

Introduction

Employment is now more competitive than ever in acquiring and retaining new employees for the sustainability of businesses and reducing annual turnover. Unwanted turnover costs are estimated at billions of dollars (Skynet, 2014). New employees are expecting more from their employers in orientation, training, socialization, introduction and benefits (Business/Features Editors, 2006)(Wallace, 2009). The estimated cost of firing and rehiring employees can be as much as 200% of the outgoing employees salary. The estimated time it takes to bring a new employee up to the level of productivity as the outgoing is 12 weeks (Gallager, 2004).

The process of hiring a new employee and the effort involved often ends after recruitment. The hiring process can be stressful experience for both the new employees and employers (Wallace, 2009). However research shows that new employees need more in depth orientation and introduction to the workplace to make them feel welcomed, this in turn can lead to great benefits in increased productivity, employee involvement and in turn retention. (McLellan, 2006). Entering a new workplace is always daunting for the new employee and there are always things that supervisors and human resource (HR) staff can do to ensure that the transition into the current workforce is relatively stress free, enjoyable and stimulating (Ramsay, 1998).

As the issue of employee replacement has become a more costly process (Watters, 2003) with regards to factors such as hiring, relocation and training, the business community has become more focused on the process of on-boarding. This is a term that has replaced the concept of "good orientation" (McLellan, 2006, p. 1). On-boarding is a holistic approach to orientation that looks to reduce employee turnover and increase retention. Turnover is a measure of an individual's willingness to maintain their affiliation with an organisation (Hellman, 2000).

Methods

A review of literature on the subjects of New Employees and New Employee Retention in relation to on-boarding was conducted using basic search functions of the databases ProQuest, Science Direct and Google Scholar. The search for literature was limited to English language and literature published up to August 2015. Utilising the keywords New Employees, and New Employee retention results of >300 000 for ProQuest, >200 000 for Science Direct and >250 000 for Google Scholar. Initial searches with Science Direct and Google scholar yielded very little relevant literature. Refining the search on ProQuest to the dates 2000-2015 yielded 79 148 results with greater relevance to topic keywords. The use of functions on ProQuest linking similar articles resulted 8 articles relevant to the subject matter, 4 of these articles were utilized. Included in this review of published literature are 8 peer reviewed articles, 2 research reports and 4 publications available through the internet.

Discussion

New Employee Factors

Challenges for new employees are not only located in the workplace. Often outside of work new employees are faced with problems related to integrating into a new community (for example new schools, new town), fear or experience social isolation from fellow employees and family. Workplace challenges include but are not limited to; first day jitters, overwhelming amounts of information, unlearning bad habits as well as potential for hazing or harassment from fellow workers. New employees need a comprehensive introduction to the workplace as they face challenges in knowing how a workplace usually functions. Small things that other employees and supervisors take for granted, such as the routines, locations and operation of equipment, company culture and history are issues that can be easily remedied by the employer through a thorough onboarding process (Ramsay, 1998). Employees often cite an unsatisfying relationship with a superior as a reason for leaving a job (Studor, 2004). This can be changed by more effective communication, understanding of the goals, values and attitudes of the supervisor or manager (Ramsay, 1998). Edwards (2011) found that a majority of participants agreed that informal education in the form of on the job interaction with coworkers and management was "most influential to the way they developed their understanding of organisational diversity and the boundaries of acceptable behaviour in the workplace" (p. ix).

On-Boarding and Orientation

The process of on-boarding involves a new employee being immersed in the culture of the employer. This is used as method to help new employees adapt, become familiar and at home with the company's culture, procedures and policies (Hellman, 2000). The values and attitudes that a company has, the engagement of the new employee and buy-in that they have serves as an indicator of the fit they will have with the workplace. (McLellan, 2006).

Some employers welcome their new employees with great ceremony and complete this with a formal orientation process. This method is often successful in providing information that new hires require to be successful on the job but does not hold up in the long term for all as it is not a continuous process. One of the keys to on-boarding is the clear outlining of the importance that a new employee will bring to an organisation (what they will actually contribute to the function of the business), research suggests that this can be one of the most successful methods of orientation (Freidman, 2006).

Orientation shouldn't end after the first day; the most important time for a new employee is the first few weeks in the workplace. This is where the employee forms a lasting impression of the organisation they have joined. (Ray, 1998, p. 34) A very common method of continued orientation is the buddying system whereby the new employee is given a buddy (co-worker) to learn from and immerse them in the company culture. This buddy will mentor them on company procedures as well as being a point to establish positive relationships in the new workplace (McLellan, 2006). Ensuring that the new employee is part of the team is crucial to that employee's success; they need to be welcomed and involved in the organisation. Failure to do so frequently leads to isolation of the worker and thus contributes to a lower retention rate (Friedman, 2006). Successful onboarding requires "support, collaboration and preparation" (Friedman, 2006, p. 25). Successful integration of the employee should start at the recruitment process in interviewing to determine that there is an alignment of values and attributes between employer and employee before hiring.

Albarado (2010) indicates that the on-boarding process of development should continue beyond 90 days as part of her "Five Steps" for retention. The first three steps look at integration of the new employee into the workplace; what duties they will perform and the roles of those around them in the development of the worker. It highlights the need, as mentioned by Hellman (2000), to inform the new employee of the organisation's values, policies, history; in other words the culture of the organisation. The last two steps highlight the need for the manager in lieu of a "buddy" (as referred to by McLellan (2006)) to make effort to ensure positive relationships form with co-workers, clients and managers.

An informal part of the on-boarding process and a measure that can be used to reduce turnover is conducting "stay interviews". These are informal conversations between the employee and the superior focused on career development. It focuses on asking employee's views on their style, key skills and the most enjoyable part of their work. It allows comment on the growing base of knowledge that the employee has acquired about the factors crucial to the businesses success, as well as giving opportunity to comment and express developing interests and core values (Watters, 2003).

On-Boarding is a process that needs to happen to ensure that staff are retained. It can mean the difference between making a positive impression on the employee for long term employment and convincing the employee to look for opportunities elsewhere (Losey, 2008). Losey (2008) goes on to say that new employees decide if they are going to stay with an employer within the first six months.

Importance of Retention

The retention of new employees is a key to service and operational excellence (Struder, 2004). Nearly half of all turnover is found among first year employees (Farrel & Petersen, 2000). By retaining more staff organisations can decrease operational costs by reducing the need for temporary staff and costs associated with training. Service to customers will improve and productivity will increase due to seasoned employees working more effectively and efficiently due to the knowledge of systems of work (Studer, 2004). For example when staff in a workplace are more familiar with the locations of equipment and how to carry out procedures to work safely and productively with other employees, the work process can become more streamlined. Less mistakes or holdups will occur as they learn other worker's strengths and weaknesses and have increased familiarity and group cohesion. Good implementation of employee retention programs that focus on the improving of socialisation between employees while increasing the individual job satisfaction are proven to have knock-on effects for the organisation's performance (CPP, 2005).

Factors in Retention

A factor in retention that has been identified is employee training. A survey conducted by the Gallup Organisation Survey Research Division revealed that there was a "very strong and clear relationship between the availability of training and job satisfaction" (Business/Features Editors, 1998). Evidence has been presented of a link between retention and job satisfaction. The aforementioned survey uncovered that around "80%" would say that it was important to keeping them as employee; if there was more training available and of a better standard (Business/Features Editors, 1998).

The opportunity for career development is also a significant factor in retaining employees. When new employees see a clear career path ahead of them and a natural progression of skills that they can acquire from growing within an organisation they are more likely to stay "on board" (Albardo, 2010 & Watters, 2003).

Conclusions

The implementation of on-boarding as a process approach to combating problems that new employees face identifies some key areas that organisations can use to ensure that employees find their company appealing as a long term career prospect. Literature on the subject examines the effect simple methods such as mentoring or buddy systems (McLellan, 2006) can have on new employee's experiences in the workplace and the benefits that can accrue, including greater knowledge of systems, personnel, policy and procedure. Edwards (2011) shows that there is evidence to support the assumption that organisations need to include the views and experiences of all employees in the assessment of training and orientation of new employees to create an on-boarding orientation process that creates a more cohesive workforce that enjoys working together and will remain with an organisation for the long term employment (p.ix). The thoroughness of the on-boarding approach allows greater communication between new employees and organisations. New employee's knowledge of their career path and alignment with company values creates an organisational environment where there is greater chance of retaining employees.

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Members of the WSO, by virtue of their acceptance of membership into the WSO, are bound to the following Code of Ethics regarding their activities associated with the WSO:

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Members must be responsible for professional competence in performance of all their professional activities.

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Members must be responsible for the protection of professional interest, reputation, and good name of any deserving WSO member or member of other professional organization involved in safety or associate disciplines.

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Members must be dedicated to professional development of new members in the safety profession and associated disciplines.

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Members must be responsible for their complete sincerity in professional service to the world.

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Members must be responsible for continuing improvement and development of professional competencies in safety and associated disciplines.

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"Making Safety a Way of Life...Worldwide."

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