AN ANALYSIS OF SAFETY INTERVENTIONS EMPLOYED BY ZIMPLATS IN REDUCING INJURIES AMONG CONTRACTORS.

BY

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DEDICATION

I dedicate this dissertation to my family, my parents Mrs and Mr Musara, my father Mr Chigumbu, my aunt and husband Mr and Mrs Mutsakanyi without whose patience; understanding, support, and most of all love and sacrifice, the completion of this work would not have been possible.
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ABSTRACT

This study sought to analyse the safety strategies employed in managing injuries at Zimplats in managing injuries among contractors. A descriptive research design was employed. Qualitative data was gathered using self-administered questionnaires and key informant interviews. The study population constituted 300 participants of which 90 were sampled. Also, stratified sampling was used to sample workers from different mines. The Statistical Package for Social Sciences was used to analyse data. Additionally, frequency tables and charts, bar graphs, pie charts for interpretation were used in data presentation. The results of the study revealed that production pressure accounted 28% of the major cause of accidents among contractors. Notably, 62% of the contractors had general knowledge on the existence of the safety strategies. Furthermore the study unearthed that existent interventions were not effective in managing contractor occupational injuries as evidenced by inadequate communication on unsafe acts. The research recommends safety strategy assessment through contractor survey and training of contractors. The study concludes that safety interventions at Zimplats contracted companies are currently available only in paper and there is an urgent need to translate them into practical form so as to safeguard workers’ health.

Key words: safety intervention, contractor, occupational injury
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<tr>
<td>BBI</td>
<td>BEHAVIOUR BASED INTERVENTION</td>
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<td>BBS</td>
<td>BEHAVIOUR BASED SAFETY</td>
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<td>OHS</td>
<td>OCCUPATIONAL HEALTH AND SAFETY</td>
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<td>ILO</td>
<td>INTERNATIONAL LABOUR ORGANISATION</td>
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<td>BMS</td>
<td>BUSSINESS MANAGEMNT SYSTEM</td>
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<td>NSSA</td>
<td>NATIONAL SOCIAL SECURITY AUTHORITY</td>
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<td>S.I</td>
<td>STATUTORY INSTRUMENT</td>
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<td>HSE</td>
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<td>PPE</td>
<td>PERSONAL PROTECTIVE EQUIPMENT</td>
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<td>LTIFR</td>
<td>LOST TIME INJURY FREQUENCY RATE</td>
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<td>SWOT</td>
<td>STRENGTH, WEAKNESS, OPPORTUNITIES, THREATS</td>
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<tr>
<td>SHEQ</td>
<td>SAFETY HEALTH ENVIRONMENT AND QUALITY</td>
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<td>OHSMS</td>
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CHAPTER 1: INTRODUCTION

This chapter introduces the purpose of this study to determine the relationship between client and contractors in a drive to prevent occupational injuries at Zimplats. The chapter encompassed the background, objectives, research questions, limitations and delimitation, justification and ethical consideration of the study.

1.1 Background to the study
It is widely recognised that there are obligations placed on employers to do all that is reasonable and practicable to provide their employees with a safe working environment (Jansen and Brent, 2005). The health and safety obligations of employers in relation to contractors is unfortunately not widely understood or recognised. The trend towards outsourcing non-core business functions in the 1990s has considerably increased the use of contractors in industry and the need for effective safety management strategies because years ago safety consideration were a low priority for many contractors, (Crittall and De Plevitz, 1997).

Recent developments such as increasing contractors working on mines with contracting companies on site pose new challenges for health and safety regulation and practice therefore occupational health and safety is more complex (Hermanus, 2007). Contractors perform a wide range of functions on mines from shaft sinking to development work, mining and general work but specific guidelines on contractor safety have not yet been considered despite the vulnerability of contractor workers, (Simon and Piquard, 1991). If the need for contractors to quote competitively for work, tensions between health and safety goals and production outputs are heightened.

The law, for instance accidents prevention and workers compensation scheme SI 68 of 1990, requires that no person is exposed to a risk to their health and safety from the way the business operates because any breach result in a criminal prosecution or claims of damages, thus the involvement of contractors will not remove the duty but will make compliance more difficulty. The development and implementation of effective health and safety management strategies in relation to contractor is an important.
Furthermore, it is clear that contractors are an important part of the mining industry workforce. They have always been used for highly specialised activities and also high risk operations. There appears to be a general recognition amongst stakeholders that the growing use of contractors in the mining industry has implications for Occupational Safety and Health (OSH) that require attention, (Zeng, 2005). This view is supported by a growing body of international research on the Occupational Safety and Health (OHS) effects of contract labour, whether they are self-employed, contractor employees or hired workers. ILO (2012) revealed that contract workers are a vulnerable group and hence exposed to health and safety risks because they have low bargaining power, ignorance of legislation and high unemployment.

According to Yemenu (2011) global industry trends indicate increased outsourcing of non-core business activities such as construction, maintenance and engineering to mention a few. He also highlighted that contractor face 1.5 to 3 times higher incident rates than employees of the outsourcing company. Indeed, it is acknowledged that the use of contractors can be associated with an increase in the adverse occupational health and safety outcomes, (Quinlan and Mayhew 2002).

Moreover, upstream and downstream oil industry in London and Brussels is a good example which shows that contract workers are likely to face fatal accidents than principal employees because of fatal rates which were high in the past ten years. According to these fatal accidents rate Burton (2011) predicted that contract workers are twice likely to face accidents at work.

According to NSSA records of 2011, accidents for mining industry from 2004 to 2009 was 1094, 959, 663, 550, 351 and 269 respectively. These are just the lost time injuries which indicate that if medical treatment cases, restricted work cases and fatalities this numbers will grow bitter than expected. According to NSSA (2008), the injury rate among mining workers in Zimbabwe was 131 per 1000 exposed workers per year. The rates do not show the actual number which is contributed by contractors so that if their contribution is known is will be easier to address their issues. So, this warrant a research to clearly spell out if contractors are contributing significantly to high rate of occupational injuries in mining industry.
There is an influx of contractors at Zimplats coming from diverse safety culture which has necessitated the need to have effective structure to manage them in order to achieve the target of zero harm. Also, the resuscitation of the contracted open pit operations changed the group’s risk profile. External audits conducted show a positive step change in terms of contractor compliance to business management system requirements. Besides that Zimplats has a robust OHS management system and it has reached its maturity stage, which require incorporation of organisation’s safety and health requirement to contractors. High rate of lagging and leading indicators points the failure of contractor safety as per system requirement.

The role of management is to formulate, communicate and enforce safety programs for the organization. The strategies are determined at policy level and pronounced as business objectives which are in turn translated to monthly targets and daily targets. The safety strategies which are in use at Zimplats are in the company’s safety policy document which is displayed in all departments at the plant. These include leadership and employee engagement in safety issues, putting in place safety management systems, which are a set of processes and procedures that ensure safety tasks are successfully completed, risk reduction and provision of first aid or medical treatment promptly to all workers, periodic surveys and audits to assess opportunities for improvement and to allow for corrective or preventative actions in issues that compromise contractor safety. Coming up with these strategies which reduce work related injuries is the responsibility of principal management, (Cameron and Duff, 2007).

1.2 Statement of the problem
There is a progressive increase of occupational injuries and lost time injury frequency rate (LTIFR) at Zimplats’ contracted companies. According to Zimplats integrated annual report (2015), in the financial year 14 work related injuries recorded resulted in LTIFR being 0, 41 following a fatal injury rate of 0,068 and LTIFR deteriorated to 0,59 with high injury severity. The contribution of contracted companies to occupational injuries increased to 60%.Consequently this study seeks to essentially assess the strategies employed by ZIMPLATS in contractor occupational injury reduction and suggest sound interventions towards safeguarding workers health in the contracted companies.
1.3 Aim
To determine the effectiveness of safety strategies employed by Zimplats in reducing occupational injuries among contractors.

1.4 Specific objectives
- To identify the risk factors contributing to occupational injuries at ZIMPLATS contracted companies
- To determine the safety strategies employed at Zimplats in contractor’s occupational injury reduction.
- To analyse the strengths, weaknesses, threats and opportunities (SWOT) on the existent interventions.

1.5 Research questions
- Which are the major risk factors causing occupational injuries to most contractors?
- How do the interventions allow achieving OHS objectives and targets?
- What are internal factors limitations in the implementation of existence interventions?
- What are external conditions favourable and unfavourable for the implementation of the interventions?

1.6 Justification
The beneficiaries of this study include Zimplats, contractors, NSSA and the researcher. The study is significant because the assessments may help in identifying implementation gap of safety strategies in tackling the occurrence of contractor occupational injury.

Through questionnaires and interviews, management and contractors at ZIMPLATS may have opportunity to give feedback on whether the system is working or hence serves as a voice to those who had not said out their minds on how safety approaches are being implemented towards contracted companies.

The SWOT analysis assist the Zimplats in coming up with a high quality contractor safety program. The findings of this study may be used to contribute to continual improvement of strategies employed at ZIMPLATS and assist the relationship or the synchronisation and adoption of standards between ZIMPLATS and its contracting companies.
The study findings assist NSSA in the incorporation of how to reduce accidents where contractors are included in mining operations to provide technical services. The study may help researchers to attain a thorough appreciation of the role played by safety strategies in reduction of occupational injury to contractor.
CHAPTER 2: LITERATURE REVIEW

This chapter is going to identify, evaluate and interpret different authors’ views relating to the objectives of the research. Journals from published articles and search engines such as PMC and PubMed were used to highlight similarities and differences views of different authors.

2.1 Contractor occupational injury
Several authors have looked at the impacts of temporary work on safety (François and Lievin, 1995 and Morris, 1999). They observed higher risk of accidents for workers on fixed term contracts and temporary work. Whatever form the new contractual relationships take, the expert group agreed that the determinant element having an impact on safety is the precarious character of the employment. The observed increase of accidents rates in contractor firms in Netherlands led to the introduction of the VCA (certificate for contractors), (European Agency, Marketing and Procurement, 2000).

From the Scandinavian study from 1995-96, Huuhtanen and Kandolin (1999) revealed that there is 10–15 % higher rate of accidents for temporary workers in industry than for workers in permanent jobs. Report of federation of accident insurance institutions of 1999 review that threes no differences in accident rates between contractors/temporary jobs, (cited by Huuhtanen and Kandolin 1999). New structures of enterprises can have a negative effect on health and safety at work because pressure is experienced by informal management structures of very small firms, (Clifton 2000).

According to Luxford (1998), experience in managing as the client’s representative or observing most of the main contractors in metalliferous and coal sectors show that they reflect the general standards in the industry. Many contractors have very impressive safety documentation in their tenders that is not matched in the field. However, most major contractors Luxford dealt with have a professional approach to manage safety that flows all the way from the principal. Not only do these have a strong commitment to safety, they commit the resources to make it happen.

Furthermore, Luxford (1998) study stated that when it comes to medium sized contractors, the experience is mixed. He observed that the drilling contractors are now fairly professional
because they work in many mines and have developed systems and high standards in response to client demands. The smaller contracting small in engineering and construction contractors who have little or no mining industry experience often lack a professional approach to safety. When there is no close supervision, these contractors may tend to have a poor safety record. Casual and labour hire contracts likewise require close supervision if acceptable safety outcome are to be achieved.

In 1997 in west Australia a disastrous pattern of 8 fatalities whereby a special inquiry by stable mines occupational safety health advisory board (MOSHAB) found out that the deterioration of the safety and health performance in the underground sector has coincided with the transition to contractor management. The onus to overcome these problems remains with the principal employer. The solution depends on the involvement of every contractor at the workplace. There has been a tendency in some quarters to blame the contractors for the problem but MOSHAB inquiry has linked the contractors to the problem and has categorically concluded that the final responsibility lies with the mine owners. Contractors ultimately work to whatever standards the principal sets.

The Australian workplace industrial relations survey (1995), ACIRRT (1999) confirms that the views that casual employees were less likely to receive job-related training than non-casuals and only 24% of casual employees had received OHS training compared to 36% of non-casuals. The exclusion of contractors is seen as inherent to current safety interventions was seen an issue of real concern in consultations in the process of identifying hazards and participating in OHS committees.

2.2 Growth of contractors
The growth of non-permanent employment is liable to undermine the effectiveness of existing regulatory apparatus, making it more difficult to manage OHS in their workplace and inhibit employee and union involvement in OHS, (Vogel 1999). This usually erodes the basis for developing more system approaches to OHS management, including the most elaborate expression of the OHSMS, (Quinlain and Mayhew 2000). When more contractors are employed prevention becomes less priority. Also, they have less knowledge about safety saves and are more constrained from refusing work environment deficiencies and find it more difficult to be heard in relation to poor work environment issues, (Aronsson 1999). Fixed and
short term employees have also identified as having significantly higher levels of workplace injuries than permanent employees, (Francois 1995, Isaksson et al 2000).

2.3 View on contractor-client relationship
Gray (1991) revealed different safety management practices which existed pertaining to the use of contractors. No consensus existed on what constituted best – practise safety management of contractors. Many activities considered necessary in the safety-conscious firm may not take place in other firms that do not structure their safety in a responsible manner. Contractor client relationship during the contractual period shows that they are linked through formal administrative communication activities that exist as input and outputs to the contractor and client system during the most active phase of contracting, (Ward et al 1991). According to American study done by Gray (1991) mentioned that in the model of contractor client relationship very important functions considered necessary are not carried out which include labour management committee seems to function poorly quite often. Contract employee representatives rarely participated in the host’s labour management committee, ACIRRT (1999). These groups were rated as effective in improving safety conditions. Contractors reported they were more likely to provide data on their safety programs in plants where committee existed. Safe operations committee is composed of vertical slice of managers, supervisors, hourly employees and contract employee representative took on broader rate including review of training programs and safety and health programs of contract firms in bidding process, (Levitt and Samelson 1987, Simon and Piquard 1991). It is evident that the relationship can be strained as well as improved through several formal activities. If strict goals for safety performance are set by the client, an extra reported accident may possibly lower the reference of contractor receives from the client at the end of the project, (Levitt and Samelson 1987). Strict safety goals by clients may therefore promote no reporting of accident by contractors. Managers on each side may run risks in the contractor industry which influence project risk and risk of accidents shared between contractor and client, (Ward et al 1991). This behaviour influence safety climate and culture during the contracting period.

2.4 Safety intervention
Safety intervention is the change proposed to ensure better and safer working conditions? Once measured the conditions before the intervention it is then necessary to measure the
same parameters after the intervention, the changes to the workplace, (Lund et al 2004). There is still a considerable burden of occupational diseases and injuries in the world. It is not well known which interventions can effectively reduce the exposures at work that cause this burden.

### 2.4.1 Prevention interventions

Prevention intervention includes various kinds of prevention interventions that might be applied for example ergonomic, educational, and legislative, (Lund and Aarø 2004). The mechanism behind primary preventive occupational health intervention is that they cut the casual chain between exposure at work and the resulting occupational disease or injury. These interventions are usually related to some desired out comes such as changes in attitude and behaviours and compensation claims rates.

### 2.4.2 Primary prevention intervention

The primary prevention intervention aims to reduce risk of injury before the event occurs while the person is still healthy, (Spangenberg, 2010). This is generally accomplished by modifying factors known to increase risk by directly controlling a specific hazard or set of hazards, Reason, 2004. The primary outcome measures includes occurrence of work accidents causing harm to people, number of lost working days, cases of work disability, and disability retirement. Other outcomes related to the occurrence of work accidents measured as, for example, time-to-event data (e.g., periods without work injuries followed by a work injury), or proxy outcome measures representing the occurrence of work accidents. All sources of work injury data, including self-report, will be eligible.

### 2.4.3 Secondary prevention

This type of intervention occurs after injury or illness has already occurred and aims to reduce long term disability as well as its associated personal, social and economic costs, (Lund and Aarø 2004). It is becoming increasingly addressing both before and after injury initiatives may be more effective than continuing to segregate prevention resources, (Gaustello 1993; DeJoy, 2005). The secondary outcomes include changes in behaviour and workplace risks (risk factors) and changes in attitudes, norms, climate, and culture (process factors). All sources of data for risks and process variables will be included.
2.5 Safety intervention and accidents reduction

Estimates of accidents at work show that such accidents result in over 300,000 annual worker deaths worldwide and cause even more cases of disability (Concha-Barrientos et al 2005). In the European Union these fatalities amount to nearly 5000 cases alone annually, with a much higher number of disability cases each year (Eurostat 2004b). In addition to human costs these deaths and injuries also constitute an economic burden to society (Eurostat 2004a). Although the risks of an accident at work have been reduced over the last 20-30 years, the number of accidents remains unacceptably high, and therefore they receive much attention from a wide spectrum of policy and decision-makers. Nonetheless, we still lack knowledge as to which interventions and programs are the most efficient in reducing accidents in the workplace.

Over the last 10-15 years the safety science literature has emphasized the multidimensional characteristics of risks to workers, and the understanding of how to prevent accidents at the workplace (Reason (2004) and Lund and Aarø (2004)). This development is referred to as the “third age of safety” (Hale and Hovden 1998). Whereas accidents previously were seen from a technical, legal or human factors perspective, in recent years cultural and organisational factors have become important additional perspectives included in safety intervention programs in the workplace (Spangenberg 2010 and Grote 2007).

Safety interventions for the prevention of accidents at work are thus characterised as a complex process, which usually integrates a number of components (e.g., safety campaigns, safety training, legislation or machines guarding). Research has emphasised the importance of integrating these various components in order to achieve a high level of safety at work (Gaustello 1993 and DeJoy, 2005). A review of safety intervention programs by (Lund and Aarø 2004) concludes that the largest effect is obtained by a combination of attitudinal, behavioural and structural approaches (multi-faceted interventions).

Systematic reviews of safety interventions in the workplace are, however, limited in number, not up to date, not comprehensive, and in particular reviews include interventions covering different levels and components are lacking (Lund et al., 2004; Cooper, 2007). The effectiveness of preventing accidents at work remains unclear (Lipscomb 2003), despite earlier attempts to summarize the effectiveness of safety interventions. Previous reviews looked at one type of injury, for example, eye injuries (Bonnie & Leslie, 2000; Lipscomb,
2.6 Communication of safety strategies/interventions
Sinickas (2006) highlights that the results of a dozen of communication audits show that understanding of organisation safety strategies are generally weak. This may be so because in many organisations strategies are usually created by a small group in isolation. While some secrecy in strategy formation is required for competitive reasons, it is vital that the fundamentals be well communicated to the employees so that they can do their part. According to Whiting (2003), organisations should clearly describe what people are expected to do for safety. Every level of employee from the most senior executive to the newly hired worker must understand what is expected of them and this can be achieved by communication. The safety strategy must be clearly communicated to everyone and the ideas should be made part of everyday such that they are not forgotten.

The communication must be simple in content so that everyone clearly understands it but it also must be detailed in terms of implementation and process (Anderson, 2007). The organization should create opportunities for dialogue as a fundamental component of communication. It should solicit employee input about content and process before implementation of the safety strategy. Dick (2010) says that improving execution of strategy involves communication of strategy through posters, emails, intranets, newsletters and magazines these can be reinforced with face to face communication between management and the employees in seminars and training. Schachter (2010) suggests that organisations need to develop formal plans that outline who needed to know what, when and how they should be told. This is done through policy documents, programmes and procedures.

2.7 The Safe Environment
Development of a safe, injury free workplace requires focus on three aspects of interest: the environment, the person and behaviour. The environment includes the physical space, instruments, tools and equipment as well as the safety climate within the setting. Behaviour
includes the practices of all employees as each individual contributes to the overall safety of all others. Lastly, attitudes, beliefs, and personality of employees play a critical role. All three aspects interact and are dynamic and reciprocal, (Geller 1984).

2.7.1 Safety culture
Every organization has some common and internal characteristics which often become invisible to those inside but may be startling to outsiders coming from different culture. Rousseau defined culture as the ways of thinking, behaving and believing that members of a social unit have in common. Safety culture is a special case of such a culture, one in which safety has a special place in the concerns of those who work for the organization. Safety always has a place in an organization’s culture, which therefore is referred to as safety culture. This is a way in which safety is managed in the workplace, and often reflects the attitudes, beliefs, perceptions and values that employees share in relation to safety (Cox, 2007). In other words, the safety culture of an organization acts as a guide as to how employees will behave in the workplace. Of course their behaviour will be influenced or determined by what behaviours are rewarded and acceptable within the workplace. Safety culture is essential for sustenance of a good safety performance which is the ultimatum of a BBS initiative. The organisation which is fully embedded safety culture incident or accident reduction is feasible, (Tony 2006). According DuPont Solutions zero (2013), in a mature safety culture, safety is truly sustainable, with injury rates approaching. The incoming of contractors has brought in a different safety culture. Another point to note is contractors came with a reputation for flaunting safety and also for being under-equipped. The expansion of Zimplats was punctuated by contract labour and contracting companies whose safety philosophy is unknown and cannot be fused with the parent company.

2.8 Domino theory of accident causation
According to Heinrich Domino theory (1931) the study reports of 75 000 workplace accidents, concluded that 88% of accidents are caused by unsafe acts committed by fellow workers, 10% are caused by unsafe conditions and 2% of accidents are unavoidable. Domino axioms postulated that the reason why people commit unsafe acts can serve as helpful guides in selecting corrective actions. The supervisor is the key person in the prevention of workplace accidents. This model of accidents causation postulated that undesirable or expected event usually the root cause initiates a sequence of subsequent events leading to an
accident, (Taylor, Easter and Hegnery 2004). This implies that the accident is the result of a single cause and if that single cause can be identified and removed the accident will not be repeated. The reality is that accidents always have more than one contributing factor. The five risk factors are arranged in a domino fashion such that the fall of the first domino results in the fall of the entire row. It illustrates that each factor leads to the next with the end result being the injury. Heinrich believed that removal any one sequence would stop the domino effect but eliminating the unsafe acts is paramount to preventing injury (Taylor et al, 2004).

2.9 Unsafe acts
It is important that accident prevention programs seek to identify the reasons for the unsafe behaviour and to redesign tasks for the work environment for instance tools equipments and physical surroundings in order to remove employees from sources of harm and to prevent situations from arising that would prompt then to perform unsafe acts (Lawrence, 2009 and Cooper 1999). Unfortunately, in the mining industry the work environment is often innately hazardous, rapidly changing and difficult to predict, making it very difficult, perhaps impossible, to fully protect the employee by environmental manipulations (Levitt and Samelson, 1987). It is important that effective strategies identified for influencing mine contractors to work safely. Various strategies have been used to convince contractors to avoid unsafe acts and adopt self-protective behaviours influencing contractors to work safely for example contractor surveys, incentives, fear communications and disciplinary actions (Lipscomb, 2005).

2.10 Contractor surveys
There is virtually unanimous agreement among safety exports that employees should be frequently consulted for ideas about improving their safety and that they should be given a say in establishing new safety procedures and policies (Lund and Aaro, 2004). Because they are the ones most familiar with their working environment, miners are in a good position to understand what types of situations arise that make it tempting to disregard safety rules. This could be accomplished through interviews, questionnaire and group discussions. Contractor surveys often help to reveal aspects of equipment, work procedures or policies that maybe inadvertently encouraging contractor to violate safety rules and them often identifies some simple and effective ways to change (McAfee and Winn, 1989). Good safety performance is
more often found where an open and two way of communication system between contractor and principal.

Pasmore and Friedlander (1982) report on the results of an attempt to improve safety through increased contractor involvement at a large plant where consumer electronic products were manufactured. The intervention included a survey of workforce and the formation of employee problem solving groups. During the year prior to the intervention 75 injuries had been reported. The number of injuries declined dramatically during the 2 year intervention and remained at fewer than 20 injuries per year during the two years following the end of the intervention.

2.11 SWOT analysis
It is the strategic and assessment technique to evaluate strengths, weaknesses, opportunities and threats (SWOT) of an organisation or project, (Lawrence 2009). SWOT analysis is an efficient tool to identify the internal strengths and weakness along with external opportunities and threats to organization for decision making (Dyson, 2004; Houben et al, 1999; Yuksel & Dagdeviren, 2007; John, 2006). This technique is used in research report to analyze the possibilities of implementing safety strategies. It is specified to help to exploit strengths, overcome weakness, grasp your opportunities and defend against threats. Yuksel & Dagdeviren (2007) have also expressed the same idea that organization can build strategies upon its strengths, eliminate its weaknesses, and exploit its opportunities or use them to counter the threats.
CHAPTER 3: METHODOLOGY

This chapter seeks to bring out the methods, techniques as well as data collecting instruments that were needed to conduct the research. It includes the research instruments that were used for data collection, data presentation and the research methodology.

3.1 Background of the study area

Zimplats’ Ngezi Mine is located in Kadoma District in the Mashonaland West province of Zimbabwe, approximately 150km South West of Harare. According to the Zimplats Intranet (2015), mining operations in the area are conducted on the Great Dyke with the largest Platinum Group Metal deposits. The outstanding feature of the climate is the rainfall that can last from four to six months in the hot season between September/October and March/April. Three high points exist in the area are Bumbe trigonometrical beacon (1413 meters above sea level) to the north-east, Murota (1377 meters above sea level) to the north and Uzugwe (1322 meters above sea level) to the west of the open cast. The main vegetation type in the Ngezi area is the Brachystegia –Julbernardia Woodland (Miombo Woodland) and the area is dominated by vertisols and fersiallitic soils. In terms of drainage, the Ngezi and Gwazana Rivers are the major forms of surface flow and the groundwater at Ngezi is hard in its nature.
The hard water with a high Calcium and Magnesium Carbonate content is an indication that recharge at least is from runoff water off the Great Dyke, especially in the lower Gwazana valley.

3.2 Research methodology
The study adopted a triangulation approach whereby both qualitative and quantitative approaches were used. Methods such as questionnaires, direct field observation and structured interviews were used in the process assessing the competency of contractor employees.

3.3 Research Design
The study adopted descriptive research design, it helps to provide answers to the questions of who, what, when and how associated with a particular research problem. It was used to obtain information concerning the current status of the safety interventions and describe what exists with respect to Zimplats and the contractors in contractor occupational reduction. Descriptive research design describes and explains the present status of safety interventions through use of a survey.

3.4 Target population
The research was limited to contracted companies employees who recorded accidents during the period 2013 to 2015 and the total population of 300 workers including both men and women. A sampling ratio of 30% was used amounting to 90 contractors as a representative sample.

Table 3.1: Target population and sample size

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Number of employees in stratum</th>
<th>Number of employees randomly sampled</th>
<th>Percentage of employees sampled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ngwarati</td>
<td>60</td>
<td>18</td>
<td>20%</td>
</tr>
<tr>
<td>Rukodzi</td>
<td>84</td>
<td>25</td>
<td>28%</td>
</tr>
<tr>
<td>Mupfuti</td>
<td>120</td>
<td>36</td>
<td>40%</td>
</tr>
<tr>
<td>Bimha</td>
<td>36</td>
<td>11</td>
<td>12%</td>
</tr>
</tbody>
</table>
3.5 Research instruments
The researcher collected primary data using questionnaires, interviews, direct field observations and secondary data through documents and records.

The researcher designed the questionnaires in such a way that the questions were based on the specific objectives; both open ended and structured questions. The questionnaires were self administered to the contractors using stratified random sampling. In this study, the researcher used formal and informal face to face sessions directed by an interview guide to key informants. The SSD department were the key informant interviewed since they are the custodian of the contractors’ safety strategies whilst the SHEQ practitioner spearheads the system through driving and compiling leading indicators statistics and injury trends for contractors. Purposive sampling was done to choose key informants which include contractor management, SHEQ Officer, SHEQ representatives and engineer. The Zimplats intranet and “Chengeta” software was useful in providing vital statistics on quality and quantity of observations as well as injury statistic and their causes. The researcher made use of the ZIMPLATS Financial Year (FY) which runs from July to June instead of the calendar year in order for the information to be similar and to avoid confusion.

3.6 Pilot study
This was a pre-test, which only involved a small sample in order to clarify the questions, test the theory and determine any possible flaws in the questionnaire and interview and identify areas that needed improvement. This was supported by Churchill and Lacobucci (2002) that the pre-test was the most inexpensive insurance the researcher could buy to assure the success of the questionnaire, interview and the research project. Basing on the comments by the interviewees and experts the researcher effected some adjustments such as re-arrangement of questions, avoidance of vagueness, ambiguity, bias, illogical sequence and deleting some questions which respondents felt they were a repetition. 12 respondents were chosen in the pilot study judging the time taken to fill questionnaire and interview guide, noting difficult words used.

3.7 DATA ANALYSIS AND PRESENTATION
The researcher examined the administered questionnaires to check for completeness, accuracy and consistency of responses in order to detect and eliminate errors. The Statistical
Package for Social Sciences V.20.0 (2010) was used to process the descriptive qualitative data. The data was processed into frequency tables and charts, bar graphs, pie charts for interpretation and discussion by both SPSS and Microsoft excel.
CHAPTER 4: RESULTS

In this chapter data which was collected from the sample using questionnaires and interviews is going to be presented and analysed. The researcher used crosstabs, frequency tables bar graphs and pie charts to present the information because tables. The chapter first presents the demographic data and then questionnaire and interview responds were presented.

4.1 Demographic data

4.1.1 Gender distribution

![Gender Distribution Chart]

**Fig 4.1: Gender distribution**

It was determined that the sample population was constituted by 79 males and 11 females which translates to 88% and 12 % respectively. There is an uneven gender balance because it’s a mining industry and the nature of the contracting operations is gender biased.

4.1.2 Age distribution

From the graphs below shows that the majority of the participants (44%) are between 31-40yrs of age and those in +50yrs were 6% is people above age 50. The statistics shows that younger people are employed by contracting companies.
4.1.3 Level of education

![Education Level Chart]

**Fig 4.3: Education level**

The determination of educational level of the sample population revealed most of the respondents achieved O ‘level’ whilst less than 10% employees did not go to school and have at least diploma among contractors. The range of educational capability of the sample population concluded that the majority of participants employed by the organisation at least
O’ level certificate because from the last three years they employee only with 3 O ‘level’ passes.

4.1.4 Length of service contracted at Zimplats

![Graph showing length of service](image)

**Fig 4.4:** Length of service contracted at Zimplats

The graphs shows that there are more contractors who have worked at Zimplats for less than a year because contractors are not permanent and also they are given maximum duration of contractors of 5 years.

4.1.5 Job description

![Job description chart](image)

**Fig 4.5:** job description
The pie chart shows the percentage of the job description among contractors and it shows that most contractors are general hands followed by machine operators and their assistants and team leaders with least percent.

4.2 causes of accident

4.2.1 Risk factors contributing to accidents occurrence

![Risk factors causing contractor occupational injuries](image-url)  

**Fig 4.6: risk factors causing contractor occupational injuries**

Fig 4.6 shows that the majority of accidents are caused by production pressure with 28 %, unsafe conditions with 15%, inadequate training with 14%, at risk behaviour with 10%, complacency with 8%, inadequate supervision with 7%, unsafe acts and inexperienced labour force with 6%, inadequate hazard identification with 5% and stress with 1%.
4.3 Determination of safety interventions

4.3.1 Level of knowledge on existing safety interventions

The research through the data obtained from the respondents has shown that contractors have an idea of the existence of the safety interventions. Risk management and accident/incident investigation have 88% and 84% respectively showing that they know the strategies whilst BBI and audit/inspections strategies most of contractors were not sure about their existence with percentage of 22% and 25% respectively (Fig 4.7).
4.4 SWOT analysis of safety interventions

4.4.1 Determine communication level and forms of communication

Table 4.1 showing level of communication forms knowledge

<table>
<thead>
<tr>
<th>Communication issues</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Strongly disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicating strategies</td>
<td>17%</td>
<td>45%</td>
<td>14%</td>
<td>24%</td>
</tr>
<tr>
<td>Meetings</td>
<td>8%</td>
<td>35%</td>
<td>18%</td>
<td>39%</td>
</tr>
<tr>
<td>Refresher course</td>
<td>5%</td>
<td>26%</td>
<td>35%</td>
<td>34%</td>
</tr>
<tr>
<td>Notice boards</td>
<td>19%</td>
<td>33%</td>
<td>38%</td>
<td>10%</td>
</tr>
<tr>
<td>Intranet</td>
<td>8%</td>
<td>20%</td>
<td>41%</td>
<td>31%</td>
</tr>
<tr>
<td>SHEQ talks and stand downs</td>
<td>31%</td>
<td>41%</td>
<td>12%</td>
<td>15%</td>
</tr>
</tbody>
</table>

The table 4.1 shows the level of communication of safety interventions, 17% shows the study strongly agrees and 45% agree that interventions were being communicated whilst 14% strongly disagree and 24% disagree to the dissemination of the interventions.

4.4.3 Adequacies of safety interventions

Table 4.2 SWOT analysis of safety interventions

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>agree</th>
<th>Strongly disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMS compliance</td>
<td>23%</td>
<td>27%</td>
<td>22%</td>
<td>28%</td>
</tr>
<tr>
<td>Continual improvement</td>
<td>10%</td>
<td>30%</td>
<td>21%</td>
<td>39%</td>
</tr>
<tr>
<td>Flexibility of strategies</td>
<td>20%</td>
<td>20%</td>
<td>25%</td>
<td>35%</td>
</tr>
<tr>
<td>Compliance with regulation</td>
<td>17%</td>
<td>34%</td>
<td>15%</td>
<td>34%</td>
</tr>
<tr>
<td>Understanding on work practises</td>
<td>24%</td>
<td>40%</td>
<td>18%</td>
<td>18%</td>
</tr>
<tr>
<td>Encourage safe acts</td>
<td>24%</td>
<td>36%</td>
<td>17%</td>
<td>23%</td>
</tr>
<tr>
<td>Contractor involvement</td>
<td>6%</td>
<td>20%</td>
<td>44%</td>
<td>30%</td>
</tr>
</tbody>
</table>
The table 4.2 above shows the respondents of the study sample shows the strength, weakness, opportunities and threats of the safe interventions and the response are either strongly agree, disagree, agree or strongly disagree shown in percentages.

4.5 Suggestions of sound interventions

4.5.1 Effectiveness of safety interventions

![Fig 4.8 effectiveness of safety strategies](image)

Fig 4.8 shows that 39.1% of the study sample is not sure whether the safety strategies are effective, 34.8% are sure that the strategies are effective and 26.1% indicates that the safety strategies are not effective.

4.6 Summary of interview results from the client SHEQ department, contractor management and SHEQ representative.

Causes of accidents

During interviews with the Contractor Management and Zimplats Engineers and SHEQ Officers, the issue of experience came out and failure to identify risk associated with their work and how to control them. The young skilled personnel and semi-skilled workers take short cuts to achieve a desired goal and some are still new to the harsh mining environment. Marrying with results from the questionnaire it shows that most contractors have one year and below of experience on the current job. Most of critical staff left the country because of
serious economic hardship which resulted in young inexperienced workers manning production. The young and inexperienced labour force coupled with production pressure and inadequate OSH training impacts negatively on OSH management system of contractors.

**Contractor involvement**

The interview shows that contractors are not involved in the in health and safety through campaigns, combined audits and inspections, meeting and celebration. Most of the information is disseminated through intranet and emails which is a limiting factor to most contractors because intranet only send emails to those connected to its LAN and contractors are not connected. This leads to demoralise to contractors because there are often skipped with most of the activities arranged by its client hence they are not always willing to participate even in dramas and poems. Fear communication from the top management often hinders them from participating and reporting near misses because they will be afraid of losing their jobs.
### 4.7 Swot analysis of safety interventions

#### Table 4.3 SWOT analysis

<table>
<thead>
<tr>
<th><strong>Strength</strong></th>
<th><strong>Weakness</strong></th>
</tr>
</thead>
</table>
| • Directs the company towards business management system compliance.  
• The interventions strongly emphasise on incident investigation and risk assessments.  
• Manages some of the key risk and thereby decreases the potential for incidents and injuries.  
• There is strong focus on plant and equipments  
Provides the process to manage change issues for example change management procedure entails the entire step taken when there is change | • They do not motivate employees among contractors through participation and involvement in occupational safety and health issues hence suppress sense of ownership.  
• There is less focus with regards for human factors among contractors rather more energy on systems.  
• Some of them are over-reliant on training and training courses are not done due to cost cutting  
Most of the safety interventions which are vibrate measure lagging indicators. |

<table>
<thead>
<tr>
<th><strong>Opportunities</strong></th>
<th><strong>Threats</strong></th>
</tr>
</thead>
</table>
| • Set continuous improvement in motion for contractors through recommendations from accident/incidents investigation and risk management strategy.  
• Strategies like behaviour based safety change the worker’s poor perception regards to safety investigation and more employees are actively involved.  
• It can enhance strong relationship between client and its contractors on compliance to legal and regulatory requirements.  
They contribute towards providing and maintaining safety culture acceptable by the BMS policy. | • Most of the documented safety interventions become mere paper exercise.  
• The client does not appreciate good suggestions and ideas from contractors’ observations.  
• Supervisors usually do not support change.  
The current low level of education of most contractor employees prevent them from participation and involvement hence they are not good observer in detecting injuries |
CHAPTER 5: DISCUSSION

5.1 Causes of workplace accidents
Production pressure is most contributing factor of accidents causation because they work competitively to reaching their targets and salaries are discounted if they fail to achieve their targets and some of them their salaries are based on the outcome of the production. These results reflect serious lack of a safety and health culture in almost all contractors. Unsafe conditions is also one of the major cause of the accidents which is caused by contractors management which is failing to support their contracts with resources that include adequate PPE, equipments, spares and new machine which are not defective. The results show that unsafe acts (production pressure, at risk behaviour and inadequate training on OHS) dominates in the causes of accidents, following unsafe conditions Domino theory (1931) concluded that 88% of accidents are caused by unsafe acts committed by fellow workers, 10% are caused by unsafe conditions and 2% of accidents are unavoidable. In Australian coal mines contractors work long hours and unstructured patterns which had led to fatigue and seriously adverse impacts to safety in order to meet production targets (Kathryn, 2002). This also supported by health, safety and environment (HSE) (2003) which postulated that in North America increased levels of production pressure at coal mines resulted in increased lost time injury rate.

5.2 Knowledge level on safety interventions
From the results of the study sample 88% and 84% are familiar with risk management and audit/inspections strategies respectively. The research indicates that there is a varied significant between safe interventions with communication except for incident/accident investigation strategy with communication. Good safety performance is more often found where an open and two way of communication system between contractor and principal, Pasmore and Friedlander (1982) report results supported that contractor involvement through communication reduces accidents by quarter every year. The problem with contractors are focused much on lagging indicators which is the accidents and their investigation rather than on leading indicators which include risk management, BBI and audit/inspections , this view supports highlights by Sinickas (2006) that the results of a dozen of communication audits
show that understanding of organisation safety strategies are generally weak. Tracking and communication of leading indicator through contractor survey would consequence in accident prevention than is the case now.

5.3 Adequacies of safety strategies
The results show that 39% of the study sample indicates that there were not sure on whether the existing safety intervention are effective in preventing injuries on work place. Lipscomb (2003) supported that the effectiveness of preventing accidents at work remains unclear despite earlier attempts to summarise the effectiveness of safety interventions. Also, (Bonnie & Leslie, (2000) and Lipscomb, (2000)) reviewed that previous reviews looked at one type of injury or one type of prevention measure (Tuncel, Lotlikar, Salem, and Daraiseh, (2006); Cameron & Duff, (2007)), or focused on the prevention of one type of event, for example, falling (Hsiao and Simeonov, (2001) and Rivara & Thompson, (2000)), or focused on one industry, for example agriculture or construction industry (Lisa & Risto, (2000); Marika et al, (2008); Rautiainen et al, (2008)) on effectiveness of safety interventions.
CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

The chapter focuses on summary findings from the evidence provided in the results section and draw conclusion. Practical and feasible suggestions on prevention of contractor occupational injury are going to be established.

6.1 Conclusions
The study concludes that safety strategies employed at Zimplats are failing to reduce problem of workplace accidents among contractors. Notably, safety interventions at Zimplats contracted companies are currently available only in paper and there is an urgent need to translate them into practical form so as to safeguard workers’ health.

6.2 Recommendation
Management should rationalize training and awareness on OSH for both contractors and its permanent workers so that it contributes to a positive safety culture. Since the principal company have got sound OSH management systems, the on-site training of safety and health practices must be harmonize to accommodate contractors through refresher course, campaigns and SHEQ downs and SHEQ talks. In house training should aim to ensure that both the contractor and the principal company have the same level of knowledge.

Incentives for good performance can be considered as recognition of exemplary individual or contracted companies’ health and safety behavior through appraisals which is more effective and greatly appreciated. The donation may be funded by the client and contractor to reflect the integrated focus on health and safety and accompanied by maximum publicity.

The study also recommends for safety strategy assessment which is used to test, monitor and evaluate the strategies to determine whether they are being implemented appropriately. Key performance indicators are recommended for performance measurement and monitoring of safety intervention using both lagging and leading indicators for the purpose reducing occurrence of accidents among contractor.
REFERENCES


John Gray Institute, (1991); Lamar University System Managing Workplace Safety and Health: The Case of Contract Labor in the U.S. Petrochemical Industry. USA.


Vogel, L. (1999) New turns in the debates on occupational health management systems,


APPENDICES

APPENDIX 1: QUESTIONNAIRE FOR CONTRACTOR MANAGEMENT

My name is Gamuchirai Chigumbu an undergraduate student at Bindura University of Science Education. I am currently conducting a study that seeks to assess the effectiveness of safety strategies employed in managing contractor occupational injury in your organisation. The purpose of the questionnaire is to suggest sound safety interventions towards safeguarding workers’ health in the contracted companies in achieving zero harm. Your honest and quick response will be confidential and mostly.

Instructions to respondents

♦ Please tick appropriate in the space provided
♦ Fill in the spaces where applicable
♦ About 15 minutes maybe needed to complete the questionnaire
♦ Do not write your name or address number.

SECTION A: RESPONDENT INFORMATION

Tick where appropriate on the box provided

<table>
<thead>
<tr>
<th>Gender</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FEMALE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MALE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age group in years</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>21-30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31-40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41-50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51+</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Level of education</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>primary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>secondary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tertiary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>post graduate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length of service with company</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-4YEARS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-8YEARS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-12YEARS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Position</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SECTION B: Risk factors contributing for occupational injuries

1. Of the following risk factors tick that contributes to injuries in Zimplats contracted companies?

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsafe acts</td>
<td>☐</td>
</tr>
<tr>
<td>Unsafe condition</td>
<td>☐</td>
</tr>
<tr>
<td>Inadequate hazard identification</td>
<td>☐</td>
</tr>
<tr>
<td>Inexperienced labour force</td>
<td>☐</td>
</tr>
<tr>
<td>Production pressure</td>
<td>☐</td>
</tr>
<tr>
<td>Inadequate supervision</td>
<td>☐</td>
</tr>
<tr>
<td>Inadequate training in Occupational safety and Health</td>
<td>☐</td>
</tr>
<tr>
<td>At risk behaviour</td>
<td>☐</td>
</tr>
<tr>
<td>Complacency</td>
<td>☐</td>
</tr>
<tr>
<td>Stress</td>
<td>☐</td>
</tr>
<tr>
<td>Other (specify)</td>
<td></td>
</tr>
<tr>
<td>........................................................................................................</td>
<td></td>
</tr>
</tbody>
</table>

2. In your view justify the answer you have given above, give examples if possible

..........................................................................................................................................
..........................................................................................................................................
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.................................
SECTION C: SAFETY STRATEGIES EMPLOYED AT ZIMPLATS IN CONTRACTOR’S OCCUPATIONAL INJURY REDUCTION.

1. Which of the following strategies do you know? Tick on every strategy

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Yes</th>
<th>No</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audits and inspection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaviour based intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incident/accident investigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>specify</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section D: To analyse the strengths, weaknesses, threats and opportunities (SWOT) on the existent interventions

Below questions tick the appropriate answer

1. Are safety strategies communicated to contractors?

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Strongly disagree</th>
<th>Disagree</th>
</tr>
</thead>
</table>

2. Which of the following communication are used?

<table>
<thead>
<tr>
<th>Form of communication</th>
<th>Strongly agree</th>
<th>agree</th>
<th>Strongly disagree</th>
<th>disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meetings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refresher courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notice boards</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intranet emails</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHEQ talks and stand downs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Does the strategies direct contractor towards BMS compliance.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Strongly disagree</th>
<th>Disagree</th>
</tr>
</thead>
</table>

37
4. Do they set continual improvement in motion?

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Strongly disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Are the strategies flexible or able to manage change?

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Strongly disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. Is there collaboration between contractors and the management for compliance with regulation?

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Strongly disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Do they provide contractors with clear understanding on unsafe/safe acts?

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Strongly disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Do the safety strategies encourage safe working conditions?

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Strongly disagree</th>
<th>Disagree</th>
</tr>
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9. Are contractors actively involved?

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Strongly disagree</th>
<th>Disagree</th>
</tr>
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SECTION E: TO SUGGEST SOUND INTERVENTIONS TOWARDS SAFEGUARDING WORKERS’ HEALTH IN THE CONTRACTED COMPANIES

1. Are the safety strategies employed by Zimplats effective and efficient in safeguarding health in the contracted companies?

<table>
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<tr>
<th>Yes</th>
<th>No</th>
<th>Not sure</th>
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2. Give justification to your answer above and other sound strategies as a solution of addressing issue of contractor occupational injury

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THANK YOU FOR YOUR COOPERATION

Appendix 2

Interview guide for contractor management

1) What is your safety record?
2) Do you have a SHEQ Officer
3) What do you think is causing accidents in most contractors
4) What are the means of communication used to communicate the safety strategies
5) Comment on your involvement in strategies implementation
6) Are contractors involved in decision making of the safety strategies
7) Do the principal revise and continually update these strategies
8) Comment on the implementation of strategies by the principal
9) What are limitations of the existing strategies in the line of your work?
10) What improvements or suggestions on safety strategies should be put in place?

Observation checklist

Do they have documented safety strategies?
Do they have obsolete documents of safety strategies?
Are they meetings conducted concerning safety strategies?

Are they documented minutes?

Are contractors able to recite the safety strategies?

Do they understand the objectives of the safety strategies?

Is there any visual aid to raise awareness of contractor management safety strategies?