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THE SOUTH AFRICAN COUNCIL FOR THE QUANTITY SURVEYING PROFESSION

PROGRAMMES FOR CONTINUOUS PROFESSIONAL DEVELOPMENT: (CPD)

INVESTIGATING THE CAUSES AND EFFECTS OF CONTRACTOR'S NON-COMPLIANCE WITH THE HEALTH AND SAFETY REGULATIONS IN SOUTH AFRICA

by

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MODULE OUTLINE

	MODULE ID 12/02		**SACQSP CPD PROGRAMME**		
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TITLE	**INVESTIGATING THE CAUSES AND EFFECTS OF CONTRACTOR'S NON-COMPLIANCE WITH THE HEALTH AND SAFETY REGULATIONS IN SOUTH AFRICA** **(This paper was delivered at 2nd Annual Conference of the SACQSP: (endorsed by ICEC): The future: What next? held on 16th October 2009. Durban, South Africa)**				
SHORT SYNOPSIS:	The paper is important because the compliance with "Health and Safety" regulations in South Africa is very important and professionals should be aware of the causes and effects of non-compliance				
GOALS	**After completion of modules learners should be able to:** ▪ To assess a contractor's ability to comply with regulations ▪ Inform clients and contractor about the courses but specifically the effect of non-compliance				
OUTCOMES	**After reading the modules learners should** be informed about the effects of non-compliance on the workers, professionals and contractors and introduce corrective action				
PREREQUISITES/ SKILL LEVEL:	Learners should have had exposure through experience or prior learning to the built environment and contract practice				
MATERIAL OR EQUIPMENT NEEDED:	The attached module material				

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LEARNER WORKLOAD:		
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	1. Theoretical review of learning material	1 hours
	2. Work through learning material and do own self-assessment	1 hours
	3. Study	½ hour
	4. Evaluation (Tests at back of this module)	½ hour
	Total duration	**3 hours**
ASSIGNMENTS	Learners must work through the module and develop some self-assessment questions and do them for own reference and knowledge	
	Evaluation: See Addendum A at back of this module	
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Investigating the Causes and Effects of Contractor's Non-Compliance with the Health and Safety Regulations in South Africa

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ABSTRACT

Purpose of this paper

This paper aims to investigate the causes and effects of non-compliance with the health and safety procedures by contractors in the South African Construction Industry.

Methodology

Literature review is used to investigate the Health and Safety Act (H&S), policies used to promote and ensure compliance within sites, hazard and prevention methods and management systems for safe construction. A survey questionnaire is used to define the causes and effects of noncompliance with H&S procedures and determine practices on site. Interviews are conducted with two H&S officers to assess the practicality of their plans and with three H&S representatives to investigate their view towards eliminating contractor's non-compliance with H&S procedures.

Findings

The study found that contractors were indeed non compliant with the H&S regulations. It is found most apparent with the labourers as they failed to use personal protective equipment provided. A point to note, however, was that mainly small construction companies did not consider H&S procedures on their sites as it was deemed unnecessary due to the size and nature of projects undertaken. Furthermore, risk assessments were not performed by a considerable number of respondents as found in the questionnaire analysis.

Research implications
This research shows that compliance with the H&S regulations by South African contractors needs to be improved. It is evident that the high H&S accident statistics is owing to the negligence of those parties directly involved in the project.

Practical implications
The adoption of the action plan developed by this research will increase the compliance of contractor with the H&S procedures in construction sites, thus reducing sites incidents and their effects.

Value
This research adds valuable contribution the original body of knowledge through the development of an action plan to enforce the compliance with H&S regulations by contractors and to overcome their limitations.

Keywords: Health and Safety Act, Contractors, Construction regulations, Non-compliance, incidents.

1 RESEARCH BACKGROUND AND RATIONALE

Construction is a very accident prone industry where the resulting injuries can have dire consequences. Common incidents that occur on site include falling from heights, cutting off of limbs due to mishandling of heavy equipment, objects falling from heights, electric shocks from cables, personnel being affected by demolition works, caving in of excavations, and those related to cranage and heavy-lifting machinery (Hughes & Ferrett, 2005). On one hand, workers are considered to be the cause of site accidents due to their fatigue, lack of discipline, carelessness and distractions. On the other hand, some accidents are attributed to senior management because of its ignorance, lack of training and poor communication (Laney, 1982).

Smallwood (1997) stated that occupational diseases; fatalities and injuries do not only affect the person directly involved, but also affect the project risk which is manifested in increased cost of construction, damage to the environment, non-conformance to quality standards and scheduled overruns.

Each member of the client, design and construction teams influences and contributes o the occupational H&S on site. They are uniquely positioned to integrate H&S into all aspects of the design and construction process (Smallwood, 1997). However, contractors predominate in terms of the perceived extent to which stakeholders can contribute to H&S (Smallwood & Haupt, 2005).

Because of the importance to improve the performance of the H&S practice in the South African construction industry; this paper aims to investigate the causes and effects of non-compliance with the H&S regulations by contractors in South Africa. It adds a valuable contribution to the original body of knowledge through developing an action plan that will help enable contractors to comply with H&S regulations in the South African construction industry.

2 CONTRIBUTION TO THE ORIGINAL BODY OF KNOWLEDGE

This research provides a valuable contribution to the original body of knowledge by studying the obstacles South African contractors are faced with in eliminating the high record of site accidents.

The research later on proposes an action plan to help reduce the high statistics associated with negative H&S performance in this country. Costs of accidents are often overlooked by industry stakeholders and this study aims to emphasize the significant impact accidents have, not only on the project itself as direct costs but also to the economy at large through excessive claims for the Workmen's Compensation Fund. This will create awareness to industry professionals who will thereafter improve on the H&S culture and the policies and practices adopted by them.

3 RESEARCH ORIGINALITY

- This research enables contractors to pinpoint the flaws within site management and identify the shortcomings of their relevant health and safety plans.
- The research led to the development of An action plan to counteract the ineffectiveness of existing health and safety plans.
- Previous research has not focused on the areas of concern described in this report, i.e. contractor based.
- Clauses contained in the construction regulations discussed in this research have not been highlighted in construction literature previously.

4 RESEARCH METHODOLOGY AND SAMPLING

In order to achieve the abovementioned aim a research methodology is developed to accomplish four objectives.

(1) Investigating the H&S Act, policies used to promote and ensure compliance within sites, hazard and prevention methods and management systems for safe construction. This objective is achieved through literature review.

(2) Defining the causes and effects of non-compliance with H&S procedures and determining practices on construction site. Survey questionnaires are used to accomplish this objective.
(3) Assessing the practicality of the H&S plans and investigating their view towards eliminating contractor's non-compliance with H&S procedures. Interviews conducted with relevant professionals are used to accomplish this objective.
(4) Developing an action plan for enhancing the effectiveness of contractors' H&S plans in South Africa.

Due to the nature of this research and the fact that it deals with contractors, H&S officers on construction sites, purposive sampling was employed to select the questionnaire and interview samples. The survey questionnaire sample was selected from the list of contractors who are registered as members of the Master Builders Association (MBA, 2009) at the KwaZulu-Natal chapter. The list identified 120 contractors. The researchers made use of the sample calculator (The Survey System, 2009) to determine the size of the sample to be used. Contact details of these companies have been collected and the survey questionnaire was sent to them. Structured interviews were conducted with two H&S officers and three representatives for the H&S legislation**.**

5. LITERATURE REVIEW

5.1 General overview of the H&S Act 85 of 1993

The Occupational H&S Act 85 of 1993 summarises the Act as "to provide for the H&S of persons at work and for the H&S of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to H&S arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational H&S; and to provide for matters connected therewith." (Occupational H&S Act and Regulations, 2006).

This document encapsulates all the H&S regulations for good practice in the workplace as (Davies & Tomasin, 1990) reckon that an ideal project constitutes a hundred percent performance on time, cost and quality with zero injuries or disease to employees.

The H&S outlines the standards which companies and factories are required to maintain and be monitored against. This act provides the companies and stakeholders with fundamental principles which must be achieved on sites by contractors and thus H&S Plan becomes key to the protection of workers against hazards and potential risk of accidents and injuries even though the law has been the subject of debate (Smallwood et al., 2009).

5.2 Clauses pertinent to the study

The focus clauses of the study are:

- *Supervision:* Clause 6(6)
- *Risk assessment:* Clause (7.1) and;
- *Fall protection plan*: Clause 8

5.3 The roles of contractor, sub-contractor and health and safety Officer

Construction Regulations put into place by the Minister of Labour governs the actions and responsibilities of all those working on construction sites in South Africa. Contractors and safety officers are needed to address issues of H&S according to this schedule in the execution of their duties and management is legally required to enforce H&S regulations to ensure safety for their workers (Geminiani and Smallwood, 2008).

5.3.1 Main contractors are responsible for the following in the execution of their duties (Occupational H&S Act and Regulations, 2006).

- Provide all contractors appointed with relevant sections of the H&S specifications and appropriate resources when changes are made to design or construction.
- Ensure that each contract implements and maintains the H&S plan and that periodic audits are done at least once a month.
- Stop any work by contractor which is not in accordance with the H&S plan.
- Ensure that every contractor is registered with a compensation fund or a licensed insurer.
- Ensure that provision has been made by all contractors in their tenders for the cost of H&S.
- Discuss and negotiate contents of the H&S plan with the contractor and have a copy readily available.
- Ensure that an H&S file is opened and kept on site and is readily available and shall hand over a consolidated H&S file to client upon completion of the work.
- Ensure that the contractor to be appointed has the necessary competencies and resources.

Even though the duties and responsibilities of safety officers are not specified in the H&S Act Levitt & Samelson (1994) describes them as being encouraging management to adopt effective ways to keep the workforce safe and healthy in the execution of work on sites. Therefore safety officers merely advise, guide, monitor and support the decisions made by top management with regard to site safety.

5.3.2 Activities executed by safety professionals toward achieving the abovementioned goal include (Levitt & Samelson, 1994):

- Introduction of H&S considerations into planning at all stages of the project construction cycle.
- Working with all levels from top management to labourers to ensure that everyone is in promotion of H&S plan.
- Development of orientation and training programs and encouraging people at all levels to participate in appropriate training courses.
- Advising on record-keeping systems for use by management to monitor site supervisors for H&S matters as arise.
- Monitor themselves or help those responsible monitor the insurance claims and reserves.
- Assist in monitoring of H&S performance through job inspections, work procedure analysis, near-miss, accident and injury record analyses, safe behaviour observation and other methods adopted on that specific site.

5.4 Falls and fall protection

The construction industry generates a disproportionate number of fatalities, injuries and disease relative to any other industry in South Africa. These occur as a result of accidents due to the ever present hazards on construction sites (Smallwood, 2004). This is because construction work involves numerous occupational risks, such as working at heights, on excavations, work lifting of materials and so on, which are specific to this type of industry (López-Valcárcel, 2001). Davies and Tomasin (1990) identifies the following as leading accidents on sites; falls, stepping or striking against objects, lifting and carrying, machinery, electricity, transport and fires and explosions.

5.4.1 Types of fall accidents

Many authors agree that falls is by far the main cause of incidents which includes people falling from heights; people falling on the same level and plant and material falling and striking them; as well as people falling into open trenches and shafts (Occupational Safety and Health Series, 1979; Davies & Tomasin, 1990; Holt, 2001; Sa, 2005; Ghule, 2008). Ghule (2008) indicated that the majority of the falls in the construction industry occur from roofs, with ladders ranking 2nd and scaffolds 3rd.

5.4.2 Fall-related deaths and injuries

According to the ILO, as stated in Construction H&S in South Africa-Status and Recommendations (2009), *'one in every six work-related fatal accidents occurs on a construction site'.* Davies & Tomasin (1990) comment that each year 70-80% of all fatalities and 35-40% of all injuries on construction sites are attributable to falls. Federated Employers' Mutual

Assurance Company Limited (FEMA) (as cited in Construction H&S in South Africa-Status and Recommendations, 2009), stated that
the 2nd highest number off claims were for injuries caused by fall onto different levels.
Furthermore, the FEMA recognised falls on to different levels as the third highest cause of fatalities in the construction industry which clearly indicates the significant contribution falls to these appalling statistics in the South African industry.

5.4.3 Causes of fall incidents

Labourers are prompted to make the right decision to the use of their personal protective equipment (PPE) at all times but this is not heeded. They view PPE as uncomfortable and unnecessary due to the expected short exposure time. Furthermore, they hold that it decreases their productivity as the equipment is sometimes restrictive which proves detrimental if they slip, trip and fall from heights (Holt, 2001; Sa, 2005).

In a study of the causes of accidents on construction sites by Abdul Hamid, et al. (2008), it was found that the following were the dominating cause of accidents:

- Workers' negligence and failure to obey work procedures as well as incorrect work procedures.
- Nature of work being performed (work at heights) and equipment without safety devices.
    - Poor site management and lack of workers' knowledge and skills.
    - Negative attitude of workers coupled with failure to use their PPE.

5.4.4 Fall protection

Propositions in the ILO Occupational H&S Series (1979) suggest safety harnesses, catch nets, scaffolding and opening and edges techniques amongst others, which if followed correctly serve as prevention mechanisms to injuries.

5.5 Methods used to promote and ensure compliance

Although it cannot be quantified, it can be inferred that the Construction regulations have had a positive impact on reducing H&S accidents (Smallwood et al., 2009). Contractors and safety officers should adopt and implement the provisions stated in the regulations to effectively eradicate the occurrences of fatalities and injuries on their sites. The following methods are some of the ways in which contractors and safety officers can use to further enhance their control procedures (IRCA, 2003):

- Risk Assessments for activity – Site specific.
- Method statement.
- Safe working Procedure.

- H&S inductions before proceeding to site and toolbox talks
- Encourage participation of safety strategies

5.6 Management systems for safe construction

5.6.1 Risk Management

Quality management is a vital component of risk management and all four components become an important business management tool. This is commonly known as SHEQ/QESH management (IRCA, 2003). At most large enterprises the following Management systems are in place: ISO 9001 [Quality Management Systems], ISO 1400 [Environmental Management Systems] and Regulations. Together these form a formidable trio that is used to prevent incidents from happening.

5.7 H&S Training

H&S training is a very important aspect of the H&S programme and it is also a legal requirement according to Act 85 of the 1993 H&S regulations for employers to provide such training. Training is required for employees at various levels during different stages of their careers or the project life cycle depending on the nature of the job that they will be undertaking. Training is required on recruitment, at induction or on being exposed to new or increased risks on site. Additional training may be required following a single or series of near misses, the introduction of new legislation, the issuing of an enforcement notice or as a result of a risk assessment or safety audit (Hughes & Ferrett, 2005).

There are several different types of training, these include induction training, job specific training, supervisory and management training and specialist training. Risk assessment, fall protection plan training and supervision training are all legal requirements and fall within the scope of the aforementioned types of training. From the above, it is apparent that training is a vital aspect of any H&S programme. It is important to note that such programmes need to be constantly reviewed, updated and the methods to deliver training monitored in order to ensure that they are effective.

6 CAUSES OF NON-COMPLIANCE WITH THE H&S REGULATIONS BY CONTRACTORS

Literature review identified the causes of non-compliance with H&S regulations by contractor as follows, see Table (1).

Table (1) Causes of non-compliance with the H&S regulations by contractors

No.	Cause		Reference
1	Loss of concentration of worker		Holt (2001
2	Refusal to wear PPE by worker		
3	Workers' belief that PPE is unnecessary		
4	Incorrect use of PPE		
5	Old equipment & PPE		Sa (2005)
6	Failure to obey work procedures		Abdul Hamid et al (2008)
7	Nature of the work(work at high elevation)		
8	Equipment without safety devices		
9	Poor site management		
10	Harsh work environment		
11	Low level of workers knowledge and skills		
12	Attitude of labour		
13	Excessive noise		
14	Poor illumination		
15	Lack of proper training		Ghule (2008)
16	Deficient enforcement of safety		
17	Unsafe methods or sequencing of activities		
18	Lack of use of standardised safety devices		Sa et al. (2009)
19	Work situation		Kitumbo and Kirenga (2001)
	19.1	Human error	
	19.2	Technical failure	
	19.3	Inadequate information	
	19.4	Personal deviation from safe practices	
	19.5	Disturbance in material flow	
20	**Environment**		
	20.1	Intercepting of parallel activities	
	20.2	Bad housekeeping	
	20.3	Disturbance from the environment	
21	**Safety system includes:**		
	21.1	Failure of active/passive safety system	
	22.2	Inadequate guarding	
	22.3	Insufficient PPE	

Figure (1) shows the results of the survey questionnaires completed by contractors and H&S officers with regard to the causes of non-compliance with the H&S construction regulations in KwaZulu-Natal:

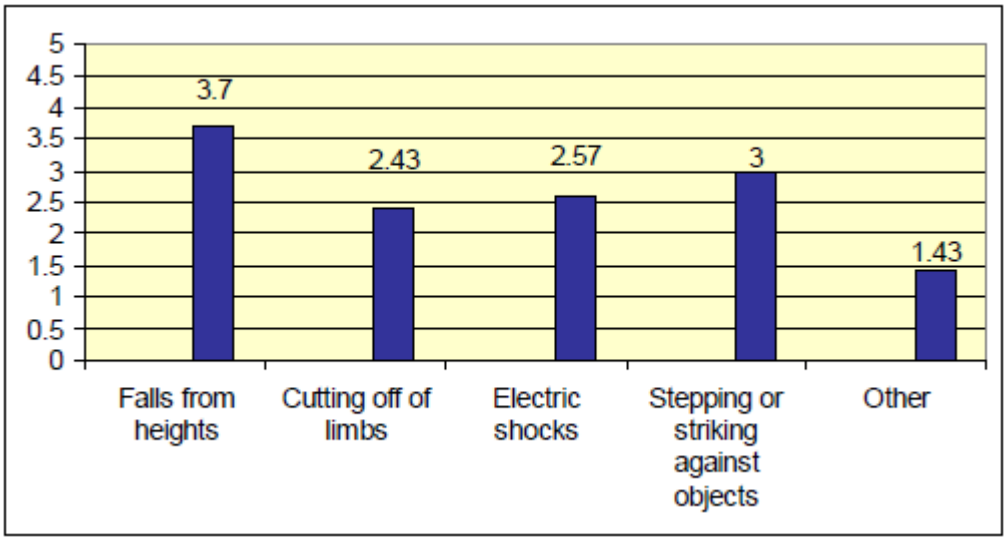

Figure (1) Responses of the causes of non-compliance with the H&S regulations

Analysis of the interview carried out with H&S officer revealed that he disagreed with these findings. The interviewee stated that the problem lies with top management. It is due to their double standards that management disregards safety aspects. Deadlines and productivity take priority over implementation of proper safety procedures at all times and supervisors fail to train their employees and make sure they fully understand the risks present on site.

7 EFFECTS OF NON-COMPLIANCE WITH THE H&S REGULATIONS BY CONTRACTORS

The literature review revealed the following as the effects of non-compliance with H&S regulations by contractor, see table (2).

Table (2) Effects of non-compliance with the H&S regulations by contractors

No	Effects		Reference
1	**Direct Costs**		Abdul Hamid et al. (2008)
	1.1	Physical injury/fatality to persons	
	1.2	Damage to property	Smallwood (2002, Levitt & Samelson, (1993)
	1.3	Workmen's' compensation	
	1.4	Liability insurance premiums	
	1.5	The lowered moral of supervisors & workers	
	1.6	Attractiveness to client as a result of perceived holistic quality	
	1.7	Socio-economic loss to families of the deceased/ injured.	
	1.8	Money paid annually to victims of work related accidents	Geminiani and Smallwood (2008)
	1.9	Public liability insurances	
2	**Indirect Costs borne by contractors**		Smallwood and

	2.1	reduced productivity by the returned worker/(s) & the workforce	Haupt (2006 cited Hinze, 1997)
	2.2	Clean up costs	
	2.3	Replacement costs lost worker	
	2.4	Costs of Delays	
	2.5	Costs of supervision	
	2.6	Time lost	
	2.7	Costs related to rescheduling	
	2.8	Costs of transportation for injured party	
	2.9	Wages paid for unproductive injured party	
	2.10	Damage to and loss of materials, plant and equipment	Smallwood, J.J.(1995)
	2.11	Damage to the environment	
	2.12	Human suffering by the injured and his/her family	
	2.13	Uninsured cost which are invariably included in the contractors' cost structure	

Smallwood and Haupt (2006 cited Davies and Tomasin, 1996) agreed that accidents can marginalize the project team's efforts at achieve the project deliverables on time and within budget due to the direct and indirect costs associated with accidents. It can also lead to substantial bad publicity, which may tarnish the name of the client and strain relations among project stakeholders. Figure (2) shows the results of the survey questionnaires completed by contractors and H&S officers with regard to the effects of noncompliance to the H&S construction regulations in KwaZulu-Natal:

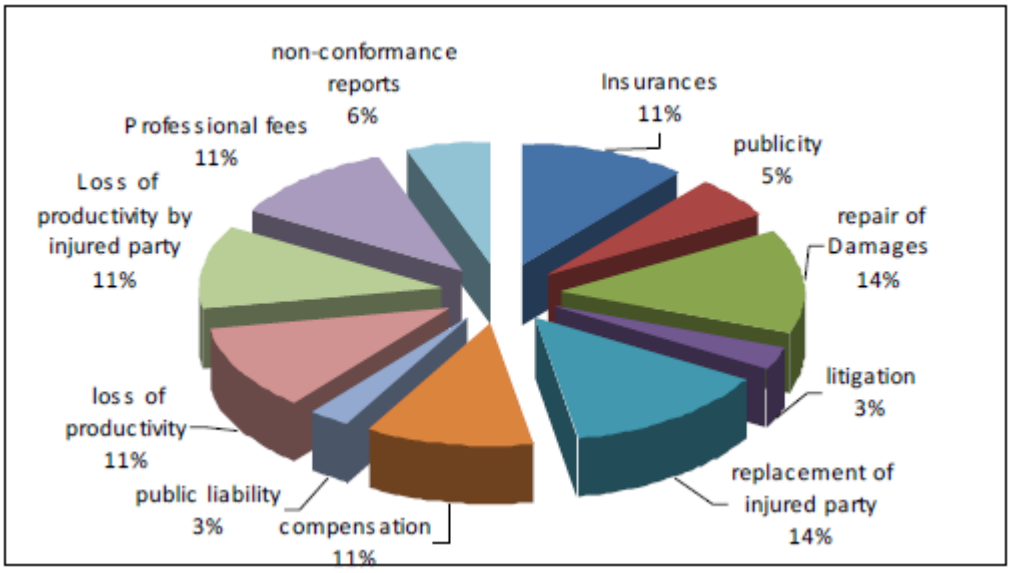

Figure (2) Responses of the effects of non-compliance with the H&S regulations

On interview basis with the relevant professionals, it is found that some irrecoverable costs exist. These may not be a proven cost or be quantifiable; however time may reveal that these unaccounted costs could prove significant. On analysis of the interview, it has been noted that the Department of labour (DoL) are at times complacent with regard to the carrying out of thorough site inspections.

8. ACTION PLAN FOR COMPLYING TO H&S REGULATIONS (APCHSR)

8.1 Definition

The action plan for complying to H&S regulations (hereinafter referred to as "the action plan" or the "APCHSR") developed by the authors is an innovative tool to escalate the contractors' awareness and increase their compliance with the H&S regulations in the South African construction industry.

8.2 The Need of the action plan

The need for the action plan stems from the necessity to set the rules and establish the grounds that enable contractors to comply with the H&S regulations in the South African construction industry. The action plan is an essential tool for reducing current accident and fatality statistics on construction sites. In addition, it will increase the awareness of the overall impact of accidents and incidents on the project and the economy at large. Furthermore, it will help ensuring the adoption and application by top management and employees towards improving the H&S status in construction sites.

8.3 Description of the action plan

The action plan consists of 5 ongoing processes, namely, problem definition, objectives establishment, action development, action implementation and evaluation and feedback, see figure (3).

8.3.1 Problem Definition
This activity aims to define the problems that hinder construction companies from adhering to H&S regulations. A team to identify these problems has to be formed. Brainstorming technique could be used for achieving the aim of this activity. Top management support is essential for approving the timeframe and resources required for completing this activity.

8.3.2 Objectives Establishment
Within this activity, the objectives for improving the H&S practice in South Africa through assisting contractors to overcome the identified problems have to be established. Input from study team is of prime importance. Top management support and consent will facilitate the adoption and implementation of the study results.

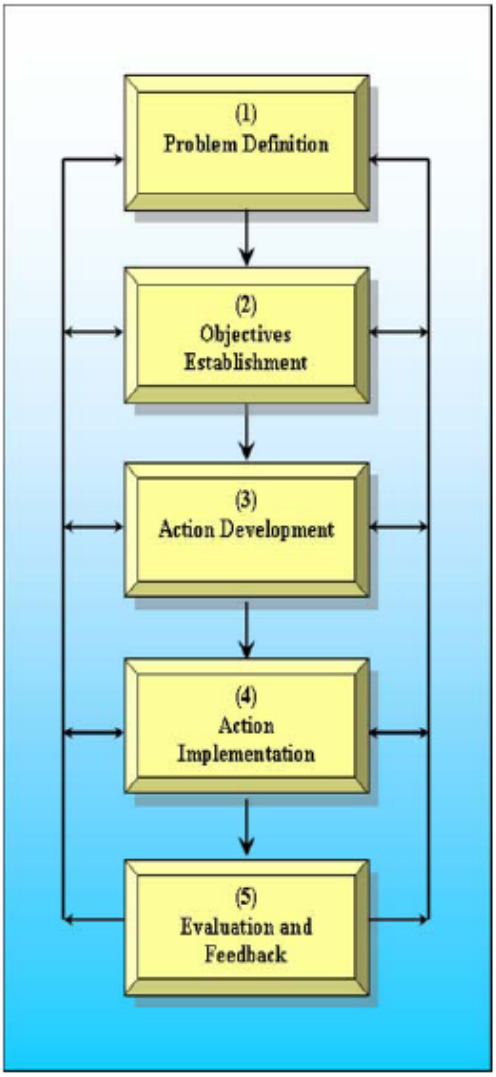

Figure (3) Action Plan

8.3.3 Action Development
After the problems are identified and the objectives are established, it is essential that study team develop the action plan required. Inputs from different study team members will help develop creative ideas that will achieve the established objectives. Brainstorming sessions and evaluation techniques such as (Simple Multi Attribute Rating Techniques) have to be used to achieve proper decision.

8.3.4 Action Implementation

When the team develops an action plan, plans for implementation have to be developed. This may include training employees; explain the strategies required to improve performance.

8.3.5 Evaluation and Feedback

It is imperative to evaluate the performance of action taken in order to take any corrective action required. Feeding back the study team and top management with the learned lesson will help improve the action plane in future studies for adhering to H&S regulations.

8.4 Benefits and Limitations of the action plan

Adoption and implementation of the developed action plan will help improving worker safety attitude and elimination of double standards of management. In addition, it will help in reducing overall site incidents and accidents. Furthermore the action plan will reduce the direct and indirect costs of incidents and accidents. On the other hand, the action plan will be ineffective if top management and employees are not willing to cooperate and adopt the developed tool.

9 CONCLUSIONS AND RECOMMENDATIONS

Health and Safety is one of the greatest challenges that face the South African Construction industry. Although a number of acts and regulations are in place, the number of site incidents increases over the years. Through literature review, survey questionnaire and interviews, the research identified the different causes and effects of non-compliance to the H&S regulation in construction sites. The research recommendations are directed to labour, management and Government.

- Construction companies are responsible for educating their labour force and increasing their awareness of the causes and effects of site incidents on themselves, families, the project and the community at large.
- Construction companies should take a more proactive approach towards implementing the H&S plans on site through integrating H&S procedures into overall project management plans.
- Construction companies should appoint safety officers to continuously find and evaluate the shortcomings of their safety plans and re-instate new working solutions.

- H&S plans should be thoroughly assessed at tender stage by all stakeholders as this could minimise accidents on site thereby reducing the costs significantly.
- Contractors must ensure that their labour force is properly trained for their specific tasks. This will empower them to teach their peers. Furthermore contractors should continuously brief their labour force to maintain proper safety procedures on sight and this can be achieved through repetitive teaching.
- Government should instate a system for checking the competence of DoL officers on a regular basis.

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