

H EALTH AND SAFETY ON CONSTRUCTION SITES IN LOKOJA, KOGI STATE

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ABSTRACT

The study investigated the health and safety practice on some selected construction sites in Lokoja Nigeria, the study identified the health and safety deficiencies and compromises on the construction sites. Recommendations are made on ways to avoid the continuous failures and compromises on health and safety on construction sites.

Keywords: *Construction, Health, Sites,, Safety, Lokoja.*

body or even death (Esan, Ogwu & Kanbai, 2014). Esan, et al (2014) further states that common causes of accidents on construction site include but not limited to carelessness of the victim or workmate in handling tools, plants, equipments and materials that contains hazardous substances/components such as paints and asbestos.

Smith (1999) states that safety in construction is the process or way of protecting the health

Introduction:

Every human activity has one potential hazard or the other, the rate and magnitude of hazards is far greater on the construction sites. The construction industry has long been regarded as one of the most dangerous industries and that the industry has a history of poor safety performance (Huang, 2003). Construction activity is full of potential risks and hazards, which can probably lead to or result to accidents, depending on the way the potential hazards are managed. This can result in injuries of various magnitudes ranging from minor to fatal. In some occasions, it can cause permanent damage/disability to the

and life of those who build, operate, maintain and demolish engineering works and others affected by those works. Takala (2005) stated that the number of accidents in the construction site globally is unquantifiable and that the construction work is more hazardous than any other economic sector activities. In case of accident occurrence on sites the resultant loss which could be enormous include: loss of lives, time, money, and company reputations. In some instance, physical barriers to protect workers can adequately guard against accidents. However, on any site, the machine and process involved requires the workers to learn a comprehensive set of procedural steps for their safe operations. This implies that construction site safety must be geared towards identification of causes of accident, and ways of removing them.

Whatever the sophistication of the tools, plants, equipments and the quality of materials provided for work, very little can be achieved when workers workplace is unsafe and unhealthy. Bratton and Gold (1999) supported this by stating that employees are the most valuable asset of an organisation. Tella, Ayeni, & Popoola (2007) observed that the most valuable factor of production is the manpower In view of the above, it becomes very clear that health and safety of workers are of paramount importance and must be enforced on construction site. In recognition of this importance of health and safety at workplace the Section 2.32 (C) National Building Code –

Contract Documents: (*shall mean and include the following: (c) Construction programme, project quality management plan, project health and safety plan prepared by a registered builder*) makes Health and Safety Plan part of the mandatory building production document required to be prepared for all building construction work, it also mandates the employment of a Health and Safety Officer who is to ensure that adequate facilities and regulations provisions necessary for accident free and healthy workplace are put in place, and at the same time enforcing the use and compliance of workman with these health and safety provision and regulations to ensure an accident free and healthy workplace. Therefore, the employer must make provisions to ensure safe and healthy working condition exists in the place of work. Healthy and Safe working habit must also be exhibited by the workforce.

According to Bratton and Gold (1999) it is necessary for the management to provide for the development and promotion of health and safety policy to protect the organization's employees who are the most valued assets – its employees. In fact, the enforcement of compliance with this policy is of utmost importance.

Though cost is involved in providing health and safety measures for the protection of workers, but effective health and safety policies can improve the productivity level of an organisation by reducing costs associated with accidents, absenteeism and illness. Health and safety is directly connected with the selection, appraisal, rewards and training. For instance, staff training promotes health and safety awareness while safe work behaviour is encouraged by a reward system that ties appraisal for promotion bonus payments to safety records (e.g. drivers that has accident free driving for a specified period can be giving safety award).

Construction

Construction is site activities that lead to the realisation of a specific building. In this regard construction is viewed as a specific stage in the comprehensive cycle of a building project, covering key stages such as feasibility, design, build, operation, decommissioning, demolition and disposal (CSIR, 2002).

Health and Safety

Safety is a situation where potential hazards, that is, all factors that can cause injury, loss, or death have been taken care of, Safety is very important and paramount to the comfortable continuous existence of lives and property. The need to take precautions to ensure safe and healthy workplace becomes inevitable. Safety should be an integral and important part of building operation, safe practices and behaviours must be inculcated into construction operations to avert injuries or losses (Ronald and Caserand, 1978). Safety means preservation of health, being secured, protected, un-injured, out of danger, and protection from risk (Esan, 2012; Hornby, 2001; Microsoft, 2009). Safety refers to the cultivation of those knowledge, skills and attitudes that make for safety (Horne, 1972) while. The World Health Organization according to Edet, Ofi & Essienmoh, (2005) defines health as a state of complete physical, mental and social well-being, not merely an absence of disease and infirmity. The contractors have the challenge to design, enforce implementation and maintain a workplace that will achieve the organisation objectives and is also healthy and safe for its employees. The absence of safety will reduce the productivity and efficiency of human efforts (Esan, 2012). Safety preserves both the site plant and personnel. For measures put in place by any organisation to achieve healthy and save workplace to be effective, every individual that is engaged on a site and the

management has to be aware of what constitute danger, and carry out their work safely by exercising all necessary precautions in way to avoid accident despite presence of potential hazard.

Accident

Thygerson (1972) defines accident as an unplanned event which frequently leads to undesirable effects, and is preceded by preventable act(s) and/or unsafe condition(s). Accidents are undesired and unintended events that have taken place, causing damage to person or to property (Brownfain, 1972). In some instances, accident leads to injury or death and loss of properties (Esan, Ebenehi, Akor & Katun, 2012). Accidents are caused, it can therefore be controlled when their causes are identified, understood and handled appropriately/correctly. The health and safety plan helps a great deal to achieve this. Among accidents identified by the National Safety Council (1970), Motor Vehicle Accident, Fall, Poisoning, Poisoning by Gases and Vapours, Machinery accidents, Electric Shocks, and Blow are accidents possible on construction site.

Health and Safety Hazards in Construction Environment

There are many health and safety hazards associated with working on construction site. Some of these hazards are usually self-inflicted, while others occur as a result of any or combination of faulty machines, equipment or the negligence of some other person(s). The areas of construction work on site that has possibility of accident include but not limited to Scaffolding, Powered Access Equipment, Excavations, Roof Work, Confined Spaces, Ladders/Stepladders, Manual Handling, Tools, Plant and Machinery, Traffic And Vehicles, Fire and Emergencies, Hazardous Substances, Electricity and Noise, therefore, First Aid, Welfare, Personal Protective Equipment, Protecting other Persons, Keeping plants, equipments and tools when Work Has Stopped For The Day, Working Practices and other issues should be given utmost attention to make the work place safe and healthy.

Approaches to Prevention of Accidents

Gangwar and Goodrum (2005) mention that control of accidents on any construction sites is not the responsibility of just one person, but of everyone that participate in the production of such projects on site on the other hand, Mwombeki (2005). The Health, Safety and Welfare Regulations (1996) sets goals

for the wellbeing of the site personnel, with objectives emphasizing assessment of risk, provision and maintenance of safety signs where there is risk to health and safety, training of staff to comprehend safety signs. It also include employer's obligation. Liska (1993) recommended a concept of zero accident techniques as to include Safety planning including goals, personnel, policies and procedure, site protection programme and safety budget, safety trainings and orientation, safety incentives, proper record keeping and follow up, regular safety meeting and Personnel protection.

Safety Plans: According to Mwombeki (2005) management of any construction firm has the responsibility of developing a comprehensive and written safety programme that is performance oriented. The information should include the basics of personal protective equipment, the proper use of tools and power equipment, safe work practice.

Company policy on safety, policy committed to safety at workplace is very essential to the prevention of accidents. Safety responsibilities and emergency procedure documents must be made available to every worker on site and enforced without compromise. The responsibility of the safety personnel shall be to draw up a safety plan, setting out rules applicable to the construction site, and shall make any adjustment to the plan. CORBON (2006) state that the accident trend in the construction can only be influenced positive by providing adequate training and management in order to control the works, the plant/equipment and the working environment.

Safety Training And Meeting, According to Hassanein and Hanna (2007) safety training emphasis the projects safety requirement, review past causes of accidents on site, plan ahead for new operations and learning ways of preventing future occurrence is an essential part of any safety and health programme. Safety personnel and site workers should be trained in hazard identification, control and method of encouraging safe practices. This training should be provided in the language well understood by the workers.

First Aid and Medical Arrangement, According to Hassanein and Hanna (2007) first aid facilities must be provided on site regardless of the size of the project and the number of workers on site. In case of any injury such as cuts, trips; prompt treatment with first aid facility can help prevent further aggregation of such injury.

The employer should be responsible for the provision of first and facility and personnel at all time on site.

Safety Consideration for Access to Height

Scaffolding: In order to work safely with scaffolds, it is important that Scaffolds should be safe, the user must use the appropriate protective equipment and safety work practice should be followed properly. OSHA (2005), reports that accidents occur due to improper execution of scaffold. According to occupational safety and health (OSHA, 2005) Health and Safety Executive (2004) McCann and Paine (2002) the following are the ways of controlling scaffold accidents on site.

1. Scaffold must not be erected, moved, dismantled or altered except under the supervision of a competent person.
2. Unstable objects such as boxes, loose bricks or concrete blocks must not be used to support scaffold or plants on scaffold.
3. Scaffold must be checked to be sound, rigid and sufficient enough to carry its own weight plus four times the maximum intended load without setting or swaying.
4. Scaffold should be used with safety net and belt especially when use for works at height.
5. Scaffold accessories such as braces, brackets, trusses or screw legs that are damaged or weakened from any cause must be immediately repaired or replaced.
6. A competent person must inspect the scaffold and re-inspect at designated intervals.
7. Scaffold must be at least 10 feet (3.0 meters) away from the electric power lines at all time to avoid any forms of electrocution or contact with live cable.

Safety on Crane: According to OSHA (2005) significant and serious injuries of fatality may occur if cranes are not inspected before use and if they are not used properly. It therefore implies that crane accidents are associated with erection or assembling, usage, dismantling and supervision or inspection and are major treat to life of workers on any building site. According to Neitzer(2001) the following are the ways of curbing/control crane accidents on construction sites.

1. Checking of all crane control to ensure proper operation before use
2. Inspection of wire, rope, chains and hooks for any danger.
3. Fully check of all rigging prior to use
4. Ensure that the load does not exceed the crane rate or carrying capacity.
5. The load must be raised few inches to verify balance and effectiveness of the brake system.

6. Never move a load over a worker.

Safety on Ladder: According to Mitra (2007) a fall from height more than one metre, is the most common mechanism of injury occurring from ladder accidents, Mitra (2007) states further that, despite the knowledge of the dangers of falls from ladder, there has been a significant increase in the number of casualties from ladder falls which result into broken limb, fracture and bruises on construction sites.

The control measures of accident on ladder according to OSHA (2005) include;

1. The use of correct ladder for the task or job
2. Avoidance of the use of ladder, especially metallic, near electrical work and overhead lines.
3. Ensuring ladders are long enough to safely reach the work area without unnecessary stretching.
4. Loading ladders within the manufacturer's rated the maximum load capacity.
5. Marking/tagging damaged or defective ladders for repair or replacement to prevent their usage.

Safety on Electrocutation and Electrical, McCann and Paine (2002); Taylor (2002) posit that electrical work involving the use of electricity on site is very risky and most people affected by electrocution or electrical injuries are electrical workers (i.e. electricians, electrical power installer and prepares their apprentices and their supervisors). To avoid electrical accident, Cawley and Honce (2001), McCann and Paine (2002) and Taylor (2002) suggest that all electrical workers must wear a non-con-conductive hand glove at work, all cables be in proper conditions before switching on the machine, adequate provision of personal protective equipments on site and de-energizing of electrical lines in proximity to construction sites.

STATEMENT OF PROBLEM

Davies and Tomasin (1996)state that construction industry is very hazardous, it has earned this reputation because of high rate of occurrence of accident and the fatality involved in its operations as Workers on the building construction sites have to face constant changes in the nature of work, location of work as well as work with new workers. According to Lubega (2001) cost, duration, quality and safety are very important characteristics of every construction project. He

further states that there has been a greater emphasis on other aspects, at the expense of safety. A lot of people have been exposed to risk situation on construction sites, resulting in a high chance of accidents as a result of lack of safety provisions. This implies that, a lot of contractors in the construction industry are much more concerned about the Cost, Time and Quality of projects, but are less concerned about the safety of the workers. Accident frequencies and property losses create negative impact to the industry; it's been a source of concern and has given rise to question on the state of Health and Safety practices on the construction sites in Nigeria. Therefore, the assessment of the present site health and safety practices on the construction sites is necessary so as to identify the areas of failure and safety compromises. This will help in proffering remedies to the deficiencies that may have been identified.

PURPOSE OF THE STUDY

The purpose of the study is to assess the present site health and safety practices on the construction sites in Lokoja to identify level of performance and safety compromises. This will help in proffering remedies to the deficiencies that may have been identified.

RESEARCH METHODOLOGY

This study involved survey technique using random sampling, questionnaires were administered on operatives on construction sites located at Federal University, Ministry of Health, Honey Gold Estate, and PSG Petroleum Building Zango Daji, all in Lokoja, Kogi state. The questionnaire consisted of questions that bother on respondent's identities, factors on the health and safety. Types of accidents on site and their control measure and accident prevention methodologies were identified from literature. The questionnaire was a checklist, where respondents are to rank the questions as follows: (1) Rarely (2) Sometimes (3) Mostly (4) Always (5) Mandatory in which the respondents marked or ticked as appropriate. Options on the list as it applies to the safety practice obtain on the site where the respondents work.

RESULT

Table 1: Respondents' Age, academic qualification and profession

Age	Age	20-30	31-40	41-50	51 and
	years	years	years	years	above
	Freq	4	6	5	5

		%	20	30	25	25	
Qualification	Var	SSCE	NTC	ND	HND	BSc	MSc
	Freq	0	2	4	7	5	
	%	0	10	20	35	25	
Profession	Var	Arc.	Bldr.	Civil Engr.	Qty. Surv.	Mech. Engr.	
	Freq	6	8	1	3	2	
	%	30	40	5	15	10	

Table 2 Safety factor on Training and Supervising

(A) SAFETY FACTOR			
1	Training and supervising	<i>RII</i>	<i>Mean RII</i>
	Workers get inducted and trained in safe work procedures	<i>0.22</i>	<i>0.18</i>
	Manager/supervisor make sure workers can do work safely	<i>0.14</i>	
2	Safe Work Procedure	<i>RII</i>	<i>Mean RII</i>
	Every worker always follow safe work procedures	<i>0.36</i>	<i>0.40</i>
	Workers always do a risk assessment when starting a new process	<i>0.43</i>	
3	Consultation	<i>RII</i>	<i>Mean RII</i>
	Manager/supervisor communicate with workers and listen to complaints	<i>0.32</i>	<i>0.40</i>

	Workers always get feedback updates on their complaints	<i>0.48</i>	
4	Reporting Safety	<i>RII</i>	<i>Mean RII</i>
	Company have safety reporting procedures for incidents and safety issues	<i>0.44</i>	<i>0.42</i>
	Safe work procedures are reviewed and updated if there is an incident report	<i>0.39</i>	
(B) HEALTH FACTOR			
1	Workplace Inspection	<i>RII</i>	<i>Mean RII</i>
	Routine inspection to ensure the cleanness of workplace	<i>0.4</i>	<i>0.24</i>
	Special inspection on introduction of new methods, tools or materials	<i>0.2</i>	
	First aid always ready for use	<i>0.11</i>	
2	Environment	<i>RII</i>	<i>Mean RII</i>
	Health facilities and cleaning tools are properly provided	<i>0.29</i>	<i>0.28</i>
	Prohibition to smoke in workplace is enforced	<i>0.34</i>	
	Eat and drink while working is prohibited to prevent hazardous	<i>0.21</i>	
3	Working Time	<i>RII</i>	<i>RII</i>

	Working hours arrangement are provided by all workers	0.55	0.39
	Rest time appropriate to avoid sleepiness and fatigue	0.15	
	Enough rest time is given	0.48	
4	Hazardous Substance	<i>RII</i>	<i>RII</i>
	Correct tools and PPE are used when having contact with hazardous materials	0.12	0.15
	Flammable materials and poisons materials are placed in the right place	0.17	
	All the hazardous materials are labeled and provides (MSDS) material safety data	0.17	

Summary of RII for safety and health factors

(A) SAFETY FACTOR		<i>RII</i>
1	Training and supervising	0.18
2	Safe Work Procedure	0.40
3	Consultation	0.40
4	Reporting Safety	0.42
Mean RII		0.35
(B) HEALTH FACTOR		<i>RII</i>
1	Workplace Inspection	0.24
2	Environment	0.28
3	Working Time	0.39
4	Hazardous Substance	0.15

Mean RII

0.27

Safety

- 1) Safety factor on training and supervising has the mean RII of 0.18, meaning that training on safety and supervising is being rarely provided.
- 2) Safety factor on safe work procedure has a mean RII of 0.40, meaning that safe work procedure is rarely available.
- 3) Safety factor on consultation has mean RII of 0.40, meaning that consultation is a rare practice.
- 4) Safety factor on reporting safety has mean RII of 0.42, meaning that reporting safety is being provided once in a while.

Health

- 1) Health factor on workplace inspection has a mean RII of 0.24, that is, that workplace inspection for safety is only carried out once in a while.
- 2) Health factor on environment has a mean RII of 0.28, meaning that healthy environment is obtainable on the sites once in a while.
- 3) Health factor on working time has a mean RII of 0.39, meaning a healthy working time is rarely provided.
- 4) Health factor on Hazardous has a mean RII of 0.15, this shows that health is rarely considered when working with hazardous material.

SUMMARY OF FINDINGS, RECOMMENDATION AND CONCLUSION

SUMMARY OF FINDINGS

The study was on health and safety practice on building construction site in Lokoja. It reveals health and safety practice in the areas of safety; training and supervision, safe work procedures, consultation, reporting, as well as health; workplace inspection, environment, working time, and hazardous materials. From the population studied 6 of the respondents representing 30% were within the age of 31-40years, 5 of the respondents representing 25% were within 41-50 years, 5 of the respondents representing 25% were 51 and above and 4 of the respondents representing 20% were within 20-30years. 2 of the respondents representing 10% were MSc holders, 7 respondents representing 35% were HND holders, 5 respondents representing 25% holds a BSc. 4 of them, representing 20% were ND holders. 8 of the respondents representing 40% studied Building

Technology, 6 representing 30% studied Architecture, 3 representing 15% studied Quantity Surveying, 2 representing 10% studied Mechanical Engineering and 1 representing 5% studies Civil Engineering. From the observation, training and supervision safety was rarely taken into consideration, safe work procedure safety was provided once in a while, consultation were held with workers once in a while, safety are reporting are done in a few cases, workplace inspection were seldom carried out, environment safety was once in a while, working time was mostly healthy, there hardly any consideration for healthy and safe handling of hazardous materials on building construction sites.

RECOMMENDATION

In view of the result of this study, the following recommendations were made:-

- New workers should be inducted on safety and when new method, material or tool is introduced
- Council Of Registered Builders Of Nigeria (CORBON) should set up Zonal and State committee on health and safety to enlighten and enforce the compliance with the Provision of the National Building Code in line with the CORBON Act.
- Accidents, no matter how trivial or small should be reported promptly and adequately even when such accident does not stop victim from continuous. Employers should produce and make available report forms on the site.
- Health & Safety officer should be engaged in-house or outsourced, the supervisor and the Health & Safety officer should be made to step up in the performance of their duties on site.
- The public health and other relevant regulatory agencies should put up efficient mechanism to ensure compliance of employers to provide healthy environment on construction site
- The health and safety plan as required by the National Building Code should be required from all contractors tendering for all projects before award of Contract.
- Flammable materials should be properly kept on site to avoid fire outbreak and the Health and Safety Officers are to mark all hazardous materials accordingly.
- Compliance to smoking policy on site should be made mandatory to both, management staff and workers
- Sufficient number of toilets should be provided in all construction sites.

- The workers should be mandated to attend safety training regularly and the training should always be provided for both old and new employees.

CONCLUSION

The result obtained from the analysis carried out on the building construction site safety shows that, the health and safety practice on the constitution sites was generally poor, since most of the health and safety factors were hardly taken into consideration.

Furthermore, from the observation it shows that; the level of compliance with health and safety regulations on the building construction sites is inadequate, and the training of the construction staff is almost not existent.

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