

**SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA**

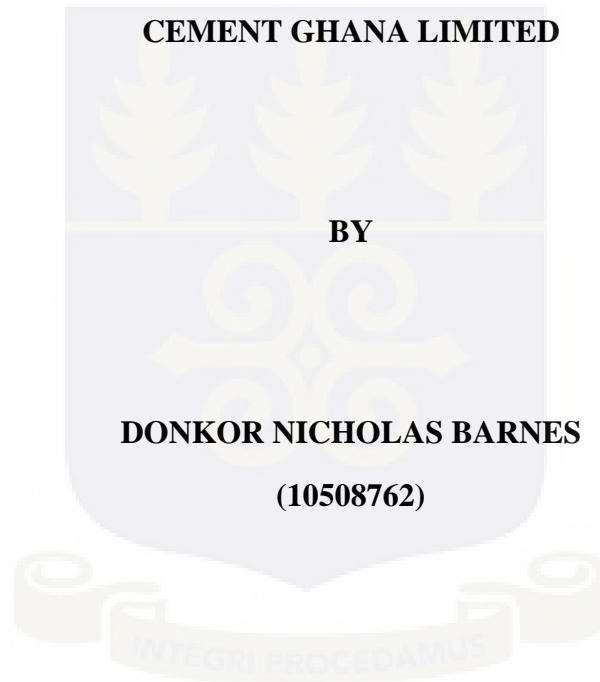
**KNOWLEDGE ON OCCUPATIONAL HAZARDS AND OCCUPATIONAL
HEALTH PRACTICES AMONG CEMENT WORKERS AT DANGOTE**

CEMENT GHANA LIMITED

BY

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(10508762)



**THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA,
LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE
AWARD OF THE MASTER OF SCIENCE (MSc.) OCCUPATIONAL HYGIENE
DEGREE.**

JULY, 2015

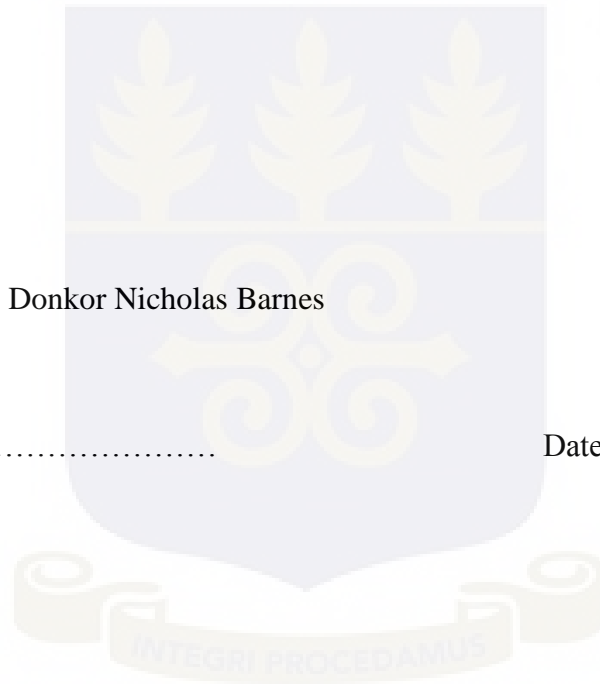
DECLARATION

This work is the result of an independent research under the supervision of Dr. (Mrs.) Elizabeth Oloruntoba. I have made due acknowledgement, where my work is indebted to the works of others and hereby declare, that this dissertation has not been previously published by another person, nor been presented and accepted elsewhere, either in part or in whole for the award another degree.

Name of Student: Donkor Nicholas Barnes

Signature.....

Date.....



Name of Supervisor: Dr. Mrs. Elizabeth O. Oloruntoba.

Signature.....

Date.....

DEDICATION

I dedicate this work to my Uncle Mr. Jacob Bright Donkor who inspired, encouraged me throughout the course of my study; also to the management and staff of God Bless Child Development Centre headed by Pastor Abraham Cudjoe, and my brother for their financial commitment in undertaking this research work.



ACKNOWLEDGEMENTS

I thank the ALMIGHTY GOD for making this research work and my study a very successful one.

Many are the people who have contributed greatly to the completion of this dissertation.

My earnest appreciation goes to my supervisor, Dr. Mrs. Elizabeth Oloruntoba for giving me the opportunity to explore and explain on my own what I can do and for her exceptional supervision. Dr. Oloruntoba was always available to advice, and her ideas, patience and support helped me finish this dissertation.

I am also grateful to the management of Dangote Cement Ghana Limited (Tema) especially Mrs. Mary Nyarko (Head of Human Resource and Administration) and Dr. Moses Yao Duphey (Environmental Consultant to Dangote) for their tremendous assistance. I would like to acknowledge Alex Nsiah Kwarteng and Iris Annang who were my research assistants.

I would also take this opportunity to thank all my lecturers who in one way or the other helped made my study as well as this project a success. To all my friends and loved ones whose support and care helped me overcome setbacks in the course of this work as well as my entire graduate study, I say, a big thank you to you all. Finally I would like to acknowledge George Mensah and Mr. Edward Essuman (statisticians) who painstakingly helped me with the analysis of the data.

ABSTRACT

Introduction: The use of cement in Ghana was increased steadily over the years due to the increase in construction activities. Much of the cement used for construction is being produced in the country, presenting a lot of concerns for the health of cement workers in the country.

Dangote group is the first foreign entrant into the Ghanaian cement market, coming in, to compete with the existing two Ghanaian indigenous cement industries, Ghana Cement (GHACEM) and West African Cement Company (WACEM), producers of GHACEM and Diamond Cement respectively. Though most cement factory workers are exposed to significant occupational hazards, majority of workers tend to have low knowledge on hazards of their work.

Objectives: The study was conducted to assess the knowledge of cement workers towards occupational hazards, assess safety practices among workers and determine factors that affect the knowledge and safe practices of workers.

Methods: A total of 146 participants were sampled from cement workers in the production unit who gave information about their socio-demographic characteristics, knowledge and practices of occupational hazards and safety respectively. Descriptive statistics such as frequencies, percentages were used to summarize baseline characteristics.

Results: The study included 146 participants and from the data obtained, 95.9% knew their work was hazardous; and all (100%) knew cement dust was the most common hazard while smoke (1.4%) was the least known hazard. The study showed that variables such as educational level, safety drills and trainings organized by management and

attended by workers had no significant associations with workers' knowledge towards occupational hazards. Years of work of respondents however had a negative association with their knowledge towards occupational hazards.

Conclusion: The study showed that, years of service, educational levels, safety drills and trainings has positive associations with safety practices among workers.

Keywords: Occupational hazards, personal protective equipment, Dangote.



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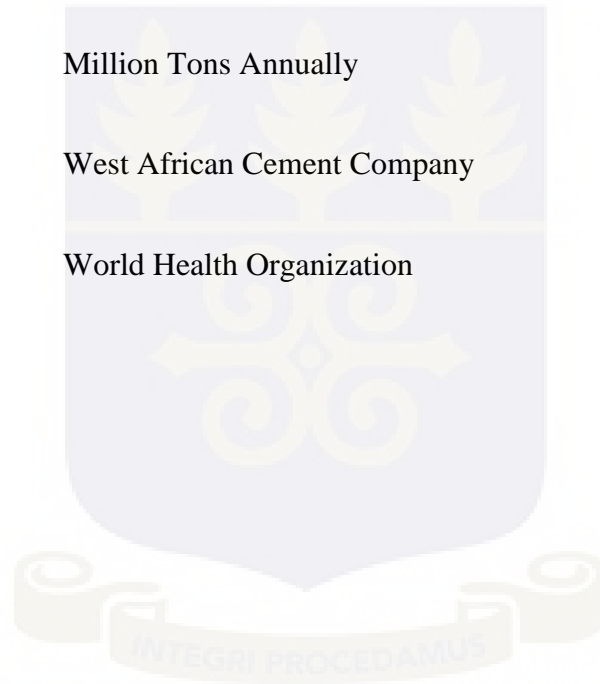
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LIST OF ACRONYMS

GDP	-	Gross Domestic Product
GHACEM	-	Ghana Cement Company
GHS	-	Ghana Health Service
ILO	-	International Labour Organization
MOH	-	Ministry of Health
Mta	-	Million Tons Annually
WACEM	-	West African Cement Company
WHO	-	World Health Organization



DEFINITION OF TERMS

Occupational hazards: Anything that can cause or has the potential to cause harm within one's occupation or area of work.

Knowledge: An information and/or understanding acquired through learning, experience and self-reflection and used in everyday life.

Practice: Thoughts and actions that are over emphasized or repeated so as to achieve a goal.

Cement: A powdery substance made by the calcination of limestone and clay, mixed with water to form mortar or mixed with sand, gravel, and water to make concrete.

Gravitational injuries: Injuries due to slips and falls at the workplace

Occupational health: The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations by preventing departures from health, controlling risk and the adaptation of work to people.

Employee: Any person who has entered into or worked under a contract of service, apprenticeship or learnership with an employer; whether the contract is expressed or implied, oral or in writing and whether the remuneration is calculated by time or by work done.

Employer: Any person state, or organization who employs or gives up a job opportunity to an employee and thus, controls the business of an employee.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Ghana is rapidly developing from a low income country to a middle income country and the rate of industrialization and construction activities has increased significantly over the past decades in the light of economic growth, coupled with the increase in population and urbanization.

The use of cement remains the chief and preferred building material for the construction of buildings, roads, dams, factories etc., and this has continuously increased its demand in Ghana. The Global Cement Report (2011) showed that the use of cement in Ghana had increased steadily and continues to increase over the years due to the increase in construction activities and the expansion of infrastructure for development. It further stated that, due to this increase in demand, it was important that cement producing companies not only increase the number of employees but also improve their production technologies and processes so as to meet the increased demand.

The economic growth of many rapidly developing countries around the world like Ghana is mostly associated with some drastic modifications in the lives of these countries. These economic growths are mostly in line with the development of the industrial sectors of the countries. Therefore if industries are not well designed and the appropriate health and safety measures adopted, there will be high risk of serious adverse health consequences to the working populace in such industrial sectors (Ahmed, Hafiz, & Newson-Smith, 2010).

Over the course of time, some industries have exerted awkward effects on the health of man. However, the working capacity of the workforce sustains the economic and material base of society. Thus, occupational health and well-being of working people are crucial pre-requisites for productivity and are of utmost importance for all socio-economic and sustainable development (WHO, 2007).

According to the International Labour Organization (I.L.O) (1999), occupational health should promote and maintain to the highest degree, the physical, mental and social well-being of workers in any occupation they find themselves. It also seeks to prevent health risks among workers caused by the working conditions and environment of their work stations, and place them in an occupational environment, adaptable to their physiological and psychological capabilities. Though work related diseases can be prevented through effective occupational health and safety practices such as identification, recognition, evaluation and control of the hazards in most ideal world, in the developing countries like Ghana, they are yet to be fully adopted and implemented.

Some of the main reasons for non-implementation of safety and occupational health policies by developing countries include; lack of effective enforcement system, lack of information and accurate records of occupational diseases and accidents, and lack of basic professional training in occupational health and safety (Baloyi, 2002).

In most cases, the relevant authorities are concerned with the occupational health hazards of such industrial technology and the need to implement effective safety measures for the prevention of possible adverse health conditions or effects.

In the absence of a national occupational safety and health policy in Ghana, the Factories, Offices and Shops Act of 1970, Workmen's Compensation Law Act 187 (1987), and Labour Act 651 (2003) are the main legislative documents on occupational safety and health. Despite this legal framework, related accidents, injuries and diseases cost Ghana about seven percent of GDP (Ghana News Agency, 2003). The Factories, Offices and Shops Act, 1970, is responsible for monitoring, and accessing the adherence of cement producing companies to the occupational health and safety practices. However, the level of implementation and enforcement has not been effective.

The Dangote group is a diversified conglomerate with headquarters in Lagos, Nigeria. It has interest across a range of Africa countries. Their current interest includes cements, sugar, flour, salt, pasta, beverages and real estate, with new project development in Oil and Natural Gas, Telecommunication and Fertilizer. The group focuses on provision of Local Value Added products and services that meet the need of African population. Dangote cement, the largest cement production Company in Africa with a market capitalization of almost \$14 Billion on the Nigeria market exchange has subsidiaries in Benin, Cameroun, Ghana, Zambia and South Africa. The Global Cement Report of 2012, stated that, Dangote is among the first eighteen (18) leading cement producing companies in the world with a production capacity of 19Mta (million tons annually).

Dangote group is the first foreign entrant in the Ghanaian cement market, coming in, to compete with the existing two Ghanaian indigenous cement industries, Ghana Cement (GHACEM) and West African Cement Company (WACEM), producers of GHACEM

and Diamond Cement respectively. Dangote cement has been operating in Ghana for more than three years under the trade name, Dangote Cement Ghana Limited, with its terminals at the Tema harbour in the Greater Accra region and Takoradi in the Western region of Ghana. Dangote group intends to be the first company in Ghana to begin full production of cement by using indigenous raw materials in order to reduce the cost of cement production so as to make the product affordable (Osagie et al., 2010).

Cement is produced through a series of processes including quarrying, crushing, milling, blending, and kiln burning to form clinker, cement milling and packaging. Dust is produced and emitted during these processes and the exposure to dust produced during the cement manufacturing process is known to cause chronic respiratory conditions in the form of cough, sputum, wheezing, dyspnea, chronic bronchitis which can adversely alter the pulmonary function indices (Mwaiselage, Bratveit, Moenet al., 2005).

Cement factory workers are considered to be highly exposed to pollutants in terms of particulate emission; and exposure to such environments could have acute or chronic health implications. They have also been found to be susceptible to a lot of life threatening debilities or health problems, which can be attributed to their working environment as these factories are characterized by dusty environment and the use of heavy machinery (Pournourmohammadi et al., 2008).

A study by Mwaiselage et al., (2005) among cement factory workers in Pakistan found out that, majority of the workers had low levels of education and training. They were also found to be mostly exposed to significant occupational health hazards and consequently,

were at high risk of work- related diseases which vary from minor irritations to major injuries.

1.2 Problem statement:

According to the I.L.O (1999), Occupational health should promote and maintain the physical, mental and social well-being of workers in any occupation they tend to find themselves. Cement workers have been shown to be susceptible to a lot of life threatening debilities or health problems, which can be attributed to their work environment as these factories are characterized by dusty environment and the use of heavy machinery (Pournourmohammadi et al., 2008).

Though most workers in cement producing companies are mostly exposed to significant occupational hazards and are consequently at high risk of work- related diseases, the majority of workers tend to have low levels of knowledge, education and training on occupational hazards (Mwaiselage et al., 2005).

Records at the Department of Factories Inspectorate from 1987- 1998 indicate that about 50 percent of the fatal accidents in the industrial sector came from the production units of such sectors in Ghana (Boating et al., 2000; MOH/GHS, 2002). Various studies have also shown that workers' knowledge on occupational hazards relating to their work, for which they are exposed, is either minimal or insignificant. (Awoyemi, 2003).

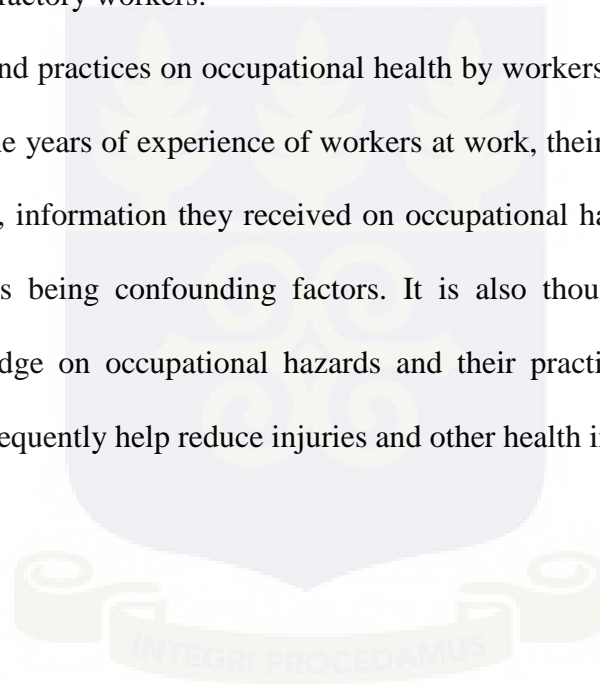
There is a limited amount of information on the knowledge and practice of cement factory workers on occupational hazards in Ghana. It is therefore important that a study

of this nature be carried out to determine the occupational hazards knowledge and safety practices by workers in the cement industry with a view to making necessary recommendations to achieve worker safety.

1.3 Conceptual Framework

Figure 1 below is a conceptual framework showing the different factors that tend to affect the knowledge of workers on occupational hazards as well as the occupational health practices cement factory workers.

The knowledge and practices on occupational health by workers is thought to be affected or impacted by the years of experience of workers at work, their training on occupational health and safety, information they received on occupational hazards with their age and educational levels being confounding factors. It is also thought that a high level of workers' knowledge on occupational hazards and their practice towards occupational hazards will consequently help reduce injuries and other health impacts among workers.



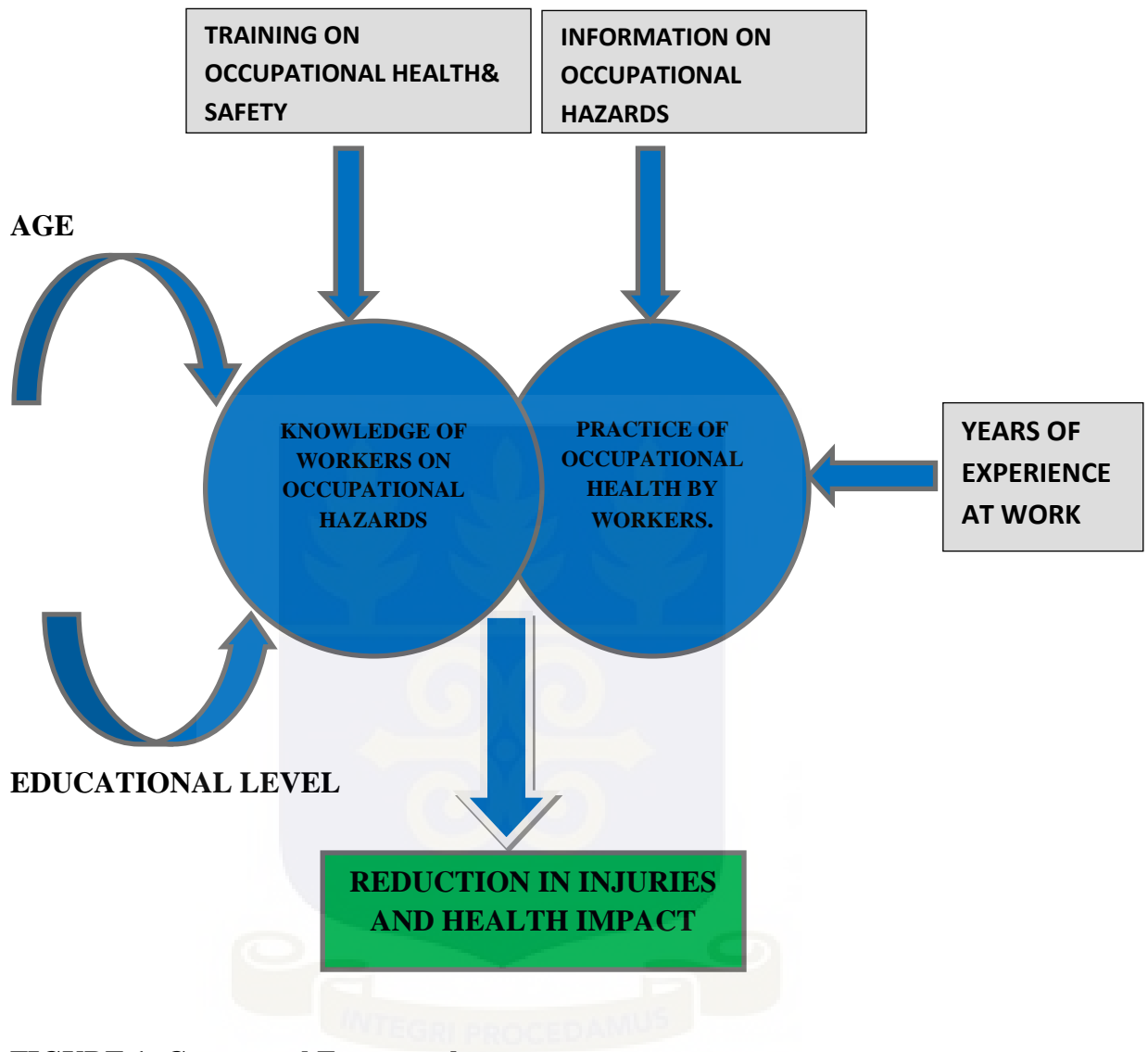


FIGURE 1: Conceptual Framework

1.4 Justification

There are limited records with respect to workers' knowledge on occupational hazards related to their work, as well as their compliance with safety practices on hazards control. Human resources are considered the most valuable asset of any organization and it is only imperative to protect the human resource base of an organization.

Also, considering the vast importance of cement towards national infrastructural development, the knowledge of cement factory workers towards hazards of their work, as well as the compliance with the safety practices of workers towards hazards control measures will ensure continual safety, minimize and avert occupational health related diseases among workers and also ensure the continual existence of cement producing companies.

This study assessed the level of knowledge of workers on Occupational hazards and safety practices among workers.

The research therefore was to contribute to the planning and organization of safety measures and the implementation of policies that would improve the health status of workers.

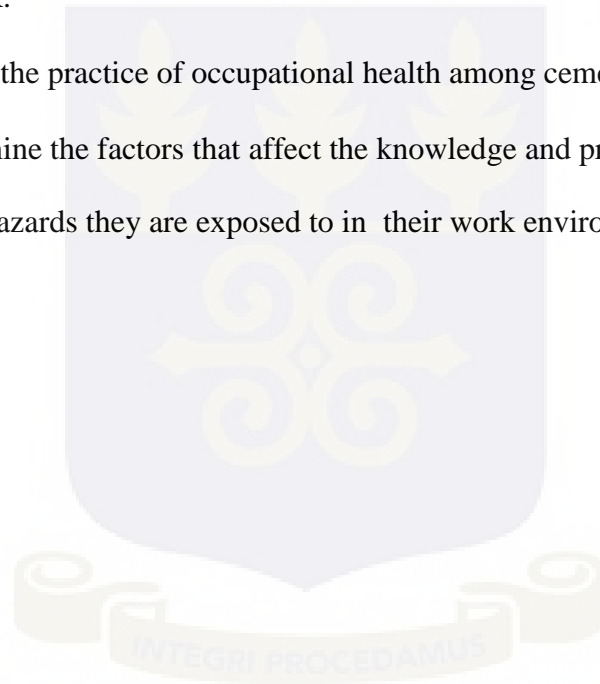
1.5.0 Objectives

1.5.1 General Objective

To assess the knowledge on occupational hazards and occupational health practices among cement factory workers.

1.5.2 Specific Objectives

- To assess the knowledge of cement workers on occupational hazards related to their work.
- To assess the practice of occupational health among cement workers
- To determine the factors that affect the knowledge and practice of cement workers towards hazards they are exposed to in their work environment



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CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature on the following subthemes: Global View on Occupational Safety and Health, Brief History of Cement Production, Health hazards associated with cement factory works, Knowledge of Cement workers on hazards of their work.

2.2 Global View on Occupational Safety and Health

Occupational Health is the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations by preventing departures from health, controlling risks and the adaptation of work to people, and people to their jobs (ILO / WHO 1950).

Approximately 45% of the world's population and 58% of the population over 10 years of age belong to the global workforce. This global workforce sustains the economic and material basis of society, which is critically dependent on their working capacity (Chorister& Bodhi, 2000).

The working capacity of the workforce sustains the economic and material base of the society. Thus occupational health and well-being of working people are crucial pre-requisites for productivity and are of utmost importance for all socio-economic and sustainable development (WHO, 1995).

Occupational health seeks to prevent health risks amongst workers caused by the working conditions and environment of their work stations, protect them in their employment, from adverse health risk factors and place them in an occupational environment, adaptable to their physiological and psychological capabilities.

Making working conditions safe and healthy is in the interest of workers, employers and governments, as well as the public at large. Although it seems simple and obvious, this idea has not yet gained meaningful universal recognition. Hundreds of millions of people throughout the world are employed today in conditions that breed ill health or are unsafe (WHO, 1999).

Only 5-10% of workers in developing countries and 20-50% of workers in industrialized countries (with a few exceptions) are estimated to have access to adequate occupational health services. Even in advanced economies, a large proportion of work sites are not regularly inspected for occupational health and safety and the situation is worse when it comes to the developing countries. The health status of the workforce in every country has an immediate and direct impact on national and world economies. Total economic losses due to occupational illnesses and injuries are enormous. In the year 2000, an estimated 2 million work-related deaths occurred worldwide (WHO, 1999).

2.3 Brief History of Cement Production

Throughout history, cementing materials have played a vital role. They were used widely in the ancient world. The Egyptians used calcined gypsum as cement. The Greeks and Romans used lime made by heating limestone and added sand to make mortar, with stones for concrete. The Romans found that cement could be made by adding crushed volcanic ash to lime and was later called "pozzolanic" cement, which they named after the village of Pozzuoli near Vesuvius. In places where volcanic ash was scarce, such as Britain, crushed brick or tile was used instead. The Romans were therefore probably the first to manipulate systematically the properties of cementitious materials for specific applications and situations (Nicholas et al., 2012).

Joseph Aspdin produced cement in 1824 which he called "Portland Cement," by firing finely-ground clay and limestone until the limestone was calcined. He called it Portland cement because the concrete made from it looked like Portland stone, a widely-used building stone in England at the time. While history usually regards Aspdin as the inventor of Portland cement, Aspdin's cement was not produced at a high enough temperature to be the real forerunner of modern Portland cement. A few years later, in 1845, Isaac Johnson made the first modern Portland cement by firing a mixture of chalk and clay at much higher temperatures, similar to those used today. At these temperatures (1400°C-1500°C), clinkering occurs and minerals from which clinkering occur are very reactive and more strongly cementitious (Meo et al., 2008).

From the turn of the 20th century, rotary cement kilns gradually replaced the original vertical shaft kilns, used originally for making lime. Rotary kilns heat the clinker mainly by radiative heat transfer and this is more efficient at higher temperatures, enabling higher burning temperatures to be achieved. Also, because the clinker is constantly moving within the kiln, a fairly uniform clinkering temperature is achieved in the hottest part of the kiln, the burning zone. The two other principal technical developments, gypsum addition to control setting and the use of ball mills to grind the clinker, were also introduced at around the start of the 20th century (Nicholas et al., 2012).

2.4 Health hazards associated with cement factory works

According to Marlowe & Mansfield, (2002), in the manufacture of cement, there is the use of potentially hazardous materials and processes, which occur on a large scale as well as being labour intensive. They also attributed dust exposure, high temperatures and noise, contact with allergic substances, gravitational injuries as well as machinery hazards as some of the health hazards in cement manufacturing industries.

Cement is produced through a series of processes including quarrying, crushing, milling, blending, and kiln burning to form clinker, cement milling and packaging. Dust is produced and emitted during these processes and the exposure to dust produced during the cement manufacturing process is known to cause chronic respiratory ailments in the form of cough, sputum, wheezing, dyspnea, chronic bronchitis and adversely alter the pulmonary function indices (Mwaiselage et al.,2005).

According to studies by Meo(2003) in Pakistan, workers of cement factories were exposed to cement dust at various stages of the manufacturing. These stages include quarrying, handling and grinding of the raw materials into clinker, blending and addition of additives and finally packaging and shipping of the finished products. They further stated that long term exposure of workers to cement dust could affect lung function.

A study by Koh et al., (2013) also suggests that there is a potential association between exposure in the cement industry and an increased risk of stomach and rectal cancers.

Works which have been done in the United Arab Emirates by Ahmed & Abdullah (2012), related high prevalence of respiratory symptoms and health problems such as cough and phlegm among cement workers, to dust exposure and cumulative dust exposures.

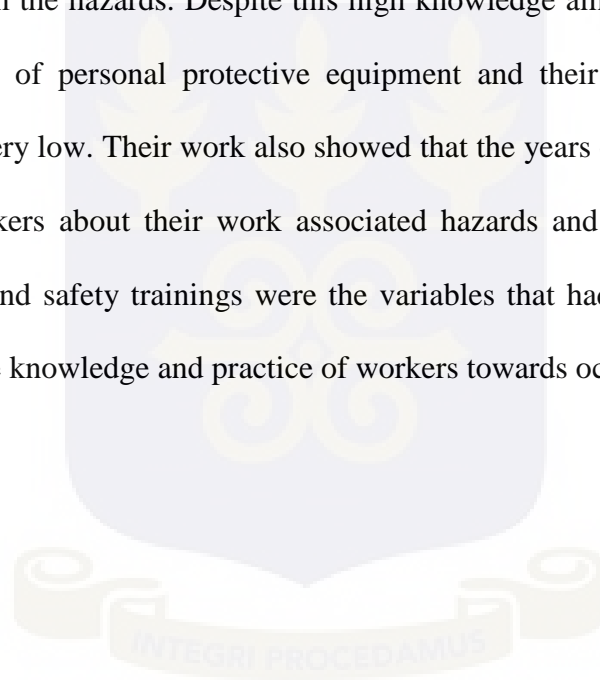
2.5 Knowledge of Cement workers on hazards of their work

A study by Ahmed et al., (2010) among cement factory workers in United Arab Emirates showed that, 52.9% knew the hazards that were associated with their work; the most commonly mentioned hazards being, cement dust, heat, machinery injuries, gravitational injuries, chemicals, fire and smoke. Also, 66.7% of workers knew that the exposures to such job- associated hazards were very serious to their health.

According to Ahmed et.al, (2010), majority (74.5%) of cement workers knew that exposure to cement dust in particular has serious health impacts such as respiratory symptoms (cough, sputum), allergy, and eyes problems. They confirmed that, 9.2% 26.8% and 46.5% of cement workers had low, moderate, and high levels of knowledge

about hazards related to their work. However, Bolaji (2005) in his study on carpenters in Nigeria concluded that only 15.4% of workers in Nigeria had high knowledge of the hazards associated with their work.

With regards to workers' knowledge about safety measures, the study by Ahmed et al., (2010) in UAE, showed that majority of the workers knew about the occupational health hazards associated with their work as well the safety measures that should be taken to protect them from the hazards. Despite this high knowledge amongst the cement factory workers, the use of personal protective equipment and their compliance with safety protocols were very low. Their work also showed that the years of education, information received by workers about their work associated hazards and whether or not workers attended health and safety trainings were the variables that had significant associations and effects on the knowledge and practice of workers towards occupational hazards.



CHAPTER THREE

3.0 METHODS

3.1 Study Design:

A descriptive cross-sectional study was carried out among cement workers in the production unit of Dangote Cement Ghana Limited (Tema Terminal) to assess their knowledge on occupational hazards related to their work. A semi-structured questionnaire was used to elicit information from study participants on their socio-demographic characteristics, knowledge of hazards of their work and occupational safety practices.

Permission to conduct the study was obtained from the management of the cement factory and informed consent was sought from study participants before the questionnaire were administered.

3.2 Study Location:

This study was carried out at Dangote Cement Ghana Limited (Tema Terminal). The company is located within Tema Port, specifically at Berth 7 along the west-road as shown in the Fig. 2 below. Tema is the most industrialized city in Ghana and is found east of the Accra, the capital of the country. A Map of the factory premises is shown in Fig. 3.



Fig.2:Map of Tema Port showing the exact location of Dangote Cement Ghana Limited.



Fig 3. Picture of factory premises of Dangote Cement Ghana Limited. –Tema Terminal

3.3 Variables:

Outcome Variables: The outcome variables which were assessed included the knowledge of workers on occupational hazards and the practice of occupational health by workers.

Explanatory Variables: The explanatory variables included the socio-demographic characteristics of participants (age, educational level), information about occupational hazards associated with job of workers, training courses about occupational health and safety attended by workers, years of experience as cement factory worker.

3.4 Study population:

The study population comprised of all cement factory workers in the production unit of the Tema terminal of Dangote Cement Ghana Limited at the time of study. The consent of each study participant was sought before been interviewed.

3.4.1. Inclusion Criteria

Any person working in the production unit of the company was eligible for the study.

3.4.2 Exclusion Criteria

Workers within the work environment but were not at the production unit, as well as workers who declined to partake in the study were excluded from the study.

3.5 Sampling:

A total sample size of 150 individuals was conveniently selected and used for the study. These were individuals that management of the Dangote cement factory granted permission to participate.

Workers who fit the inclusion criteria after purpose of study had been explained and consent received responded to questions in the questionnaire. In all 150 questionnaire were distributed but only 146 were completed, resulting in a response rate of 97.3%.

3.6 Data Collection Techniques & Tool

Only quantitative data were collected in this study. The data collection tool was a pre-tested semi-structured questionnaire which was divided into three sections; A, B and C. Section A contained information on Socio-demographic characteristics of respondents (their age, marital status, educational level, years of cement work), Section B contained information on respondents' knowledge on hazards at their workplace and Section C, contained information on Safety practices among respondents.

3.7 Data Processing and Analysis

The collected data were cleaned, coded and entered into Microsoft Excel and exported into Statistical Package for Social Sciences (SPSS) Windows version 16 for analysis.

The knowledge of workers on occupational hazards and safety practices amongst workers were graded with a scoring system where a positive response (Yes) answered question earned a mark of one (1) and a negative response (No) was assigned a mark of zero (0). There were eighteen (18) questions on knowledge and four (4) on safety practices. Knowledge was then graded in percentage as $\leq 70\%$ being excellent; 60-69%, very good; 50-59%, good; 40-49%, fair; and 0-39% as poor.

Descriptive statistics such as frequencies, percentages were used to summarize baseline characteristics appropriately. Bivariate cross tabulation analysis using Chi Square was used to establish associations between the knowledge of workers on occupational hazards as well as safety practices of workers; their socio-demographic characteristics, safety trainings and safety information known by workers. Results were presented in tables.

3.8 Ethical Consideration/Issues

Ethical clearance was sought from the Ethics and Research Committee of the Ghana Health Service. Approval was also sought from the School of Public Health (College of Health Sciences, University of Ghana, and Legon) and from management of Dangote Cement Ghana Limited. Participants were fully informed about the purpose, procedures, risks, and benefits of participating in the study and their consents thereof sought, before selection.

Information provided by the participants were handled with strict confidentiality and used purely for the research purposes. Participants' responses were not shared with anybody. Data analysis was done at the aggregate level to ensure anonymity.

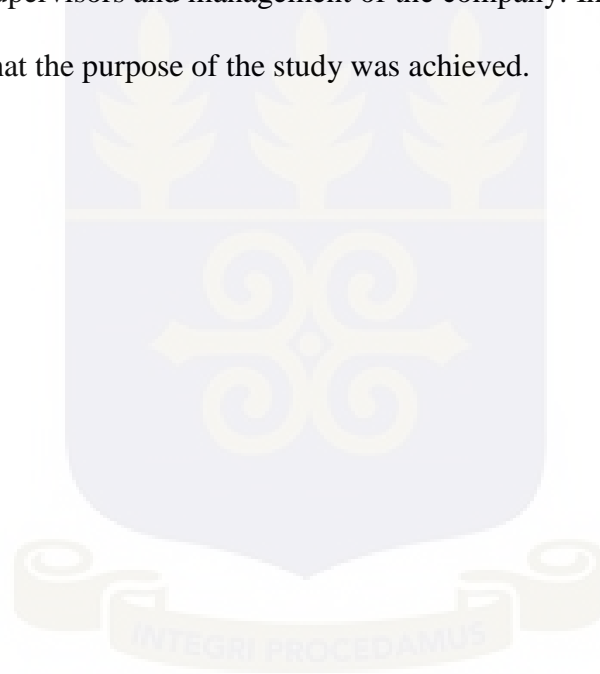
Participation in this study was voluntary and only individuals who chose to participate after the purpose of the study had been verbally explained to them were included in the study. Participants were also at liberty to withdraw from the study at any point in time, in the course of the study.

3.9 Pretest or Pilot Study

The semi-structured questionnaire were pre-tested at Berock Ventures Constructions Site which shares similar characteristics with the production unit of Dangote cement factory, as they make extensive contacts and use of cement. This helped correct, modify and fine-tune the questionnaire before the start of the actual research work.

3.10 Limitations

The limitations of the study were that, the principal investigator (PI) had limited contact with the study participants because there was no Health and Safety Department in the company, the Human Resource management restricted access to study participants. Thus, there were time constraints on the part of both the principal investigator (PI) and the study participants as there was inadequate time for maximum filling of the questionnaire. Participants' responses to questions in questionnaire were also seen to be influenced largely by their supervisors and management of the company. In spite of these limitations faced, I believe that the purpose of the study was achieved.



CHAPTER FOUR

4.0 RESULTS

4.1 Introduction

This chapter presents the result obtained from field survey. In all 150 questionnaires were distributed but only 146 were rightly completed returned, resulting in a response rate of 97.3%.

4.2. Socio-demographic Characteristics of Study Respondents

Out of the 146 rightly completed and returned questionnaire by respondents, 72.6% were Ghanaians and 27.4% were Nigerians. Majority, 96(65.8%) of the respondents were between ages 25-34years, with 19.2% and 15.0% being between ages 20-24years and 35-39years respectively. (Table 1).

A little over half 82(56.2%) of the workers were single with 64(43.8%) being married. High proportion 128(87.7%) of the respondents had post secondary education while 14(9.6%) had secondary education and 4(2.7%) had no formal education. Only 1.4% of respondents were African traditionalists with 75.3% and 23.3% being Christians and Islamists respectively. (Table 1)

The different categories of workers in the production unit included, instrumentation/lab technicians 12(8.2%), discharge point supervisors 10(6.9%), factory hands (basically loaders) 34(23.3%), janitors and recyclers 14(9.6%), refrigeration and air conditioners 22(15.1%), electrical technicians 30(20.5%) and mechanics and welders 24(16.4%) (Table 2)

Majority, 78(53.4%) of the respondents had worked in the facility for more than two years (53.4%) with 11%, 8.2% and 27.4% having worked for two years, one year and less than one year respectively. (Table2)

Table 1. Socio demographic characteristic of respondents

	Frequency (%) n=146
Age (yrs)	
20-24	28(19.2)
25-29	48(32.9)
30-34	48(32.9)
35-39	22(15.0)
Marital Status	
Single	82(56.2)
Married	64(43.8)
Educational level	
No formal education	4(2.7)
Secondary	14(9.6)
Vocational/Tech.training	62(42.5)
Tertiary	66(45.2)
Nationality	
Ghanaian	106(72.6)
Nigerian	40(27.4)
Religion	
Christianity	110(75.3)
Islam	34(23.3)
Traditional	2(1.4)

Table 2. Respondents' Employment details

	Frequency (%) n=146
Category of work	
Instrumentation/LabTechnicians	12(8.2)
Discharge Point Supervisors	10(6.9)
Factory hands(Loaders)	34(23.3)
Janitors/Recyclers	14(9.6)
Refrigeration/Air Conditioners	22(15.1)
Electrical Technicians	30(20.5)
Mechanics/Welders	24(16.4)
Length of service(yrs)	
> 1yr	40(27.4)
1 yr	12(8.2)
2 yrs	16(11.0)
< 2yrs	78(53.4)

One hundred and forty (95.9%) of the study participants knew and accepted the fact that their works were hazardous, with 1.4% and 2.7% not knowing and not responding respectively.

All the respondents (100%) knew of cement dust being hazardous. Knowledge of other hazards by respondents at the workplace included, falling materials 34(23.3%), smoke 2(1.4%), fire 10(6.8%), heat 26(17.8%), machinery injuries 20(13.7%), wet floors 17(11.6%), falls from heights 15(10.3%), electrocution 12(8.2%) and noise 10(6.8%). One hundred and twenty-two (83.6%) of the respondents said, they got to know of these

hazards through trainings on health and safety (H&S) at work, with 25.3% and 1.4% knowing from colleagues at work and from books respectively. (Table 3).

Ninety-six (65.8%) of the respondents knew of hazards control programs 40 (27.4%) did not know and 10(6.8%) did not respond at all. Out of the 96(65.8%) who knew of hazards control programs, 56(58.3%) could further tell the importance of such programs and the remaining 40(41.7%), did not respond. Importance of hazards control programs given by respondents included, prevention of accidents, 36(37.5%), identification of hazards, 10(10.4%) and ensuring workers' safety, 10(10.4%). (Table 4).

Almost all respondents 142(97.3%) knew of hazards preventive measures with only 4(2.7%) not knowing, and out of this number, 118(83.1%), 11(7.7%) and 13(9.2%) knew of the use of personal protective equipment, elimination of hazardous agents and personal hygiene respectively as hazards preventive measures. (Table 4)

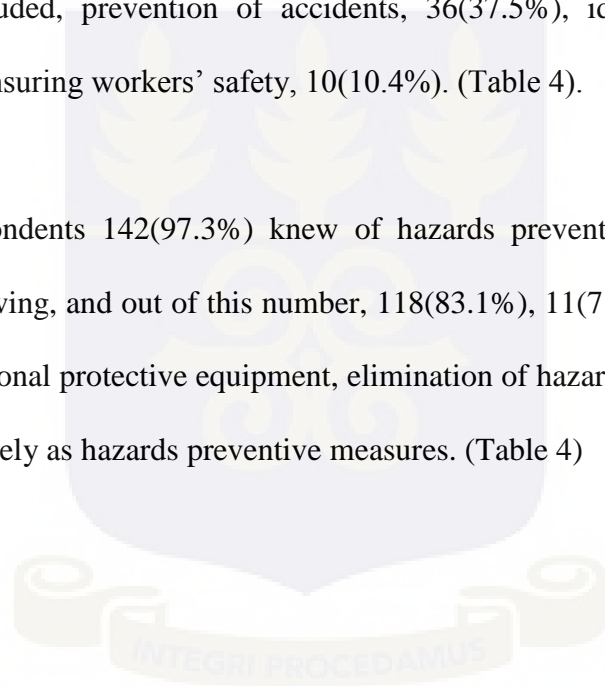


Table 3. Respondents' knowledge of occupational hazards in the work place and means of acquiring knowledge

	Correct Response Frequency (%) n=146
Respondents know work is hazardous	
Yes	140(95.9)
No	2(1.4)
No response	4(2.7)
Hazards at the workplace	
Cement Dust	146(100)
Falling materials	34(23.3)
Smoke	2(1.4)
Fire	10(6.8)
Heat	26(17.8)
Machinery Injuries	20(13.7)
Wet Floors	17(11.6)
Falls from heights	15(10.3)
Electrocution	12(8.2)
Noise	10(6.8)
Means of knowledge	
Trainings on H&S at work	107(83.6)
Colleagues at work	37(25.3)
Books	2(1.4)

Table 4. Respondents' knowledge on hazards control programs and hazards preventive measures at the workplace

Variables	Frequency (%)
Respondents know of hazards control programs	
(n=146)	
Yes	96(65.8)
No	40(27.4)
No response	10(6.8)
Importance of hazards control programs	
(n=96)	
Prevents accidents	36(37.5)
Help identify hazards	10(10.4)
Ensures workers' safety	10(10.4)
No response	40(41.7)
Respondents know hazard preventive measures	
Yes	142(97.3)
No	4(2.7)
Type of preventive measures known (n=142)	
Use of personal protective equipment	118(83.1)
Elimination of hazardous agents	11(7.7)
Personal hygiene	13(9.2)

The overall response to knowledge towards occupational hazards questions by respondents showed that majority (65.1%) had poor knowledge, with 15.8%, 12.3%, and 6.8% having fair, good and very good knowledge respectively.(Table 5).

Table 5. Overall Respondents' Knowledge on Occupational hazards

Variable	Frequency (%) n=146
Excellent	0(0.0)
Very good	10(6.8)
Good	18(12.3)
Fair	23(15.8)
Poor	95(65.1)
Total	146(100)

4.4 Occupational health practices among cement workers

Almost all 144(98.6%) of respondents said safety drills were important and organized for them. Of this majority number, 88(61.1%) were further able to state why safety drills were important. Twenty- two (15.3%) said, safety drills help them to know safety tips, with 25% and 20.8% saying, they help them to be careful and practice safety respectively. (Table 6)

Also, a high proportion 120 (82.2%) of respondents comply with safety measures at the workplace and 26(17.8%) do not. One hundred and six (88.3%) of respondents who complied with safety measures said they did so for their own personal safety and 11.7% of them complied because it was compulsory at the workplace. Out of the 26(17.8%) who did not comply with safety measures, 8(30.8%) and 18(69.2%) gave reasons for non-compliance as cumbersome and not effective respectively. (Table 6)

One hundred and thirty-eight (94. %) of respondents said, personal protective equipment were available for use but only 112(76.7%) of them had been trained in the use of the personal protective equipment. One hundred and forty (96.9%) of respondents, however, use personal protective equipment. Seventy-seven(52.7%), respondents use face protection(mask), with 16.4%, 20.5%, 13.7%, 36.9% and 34.9% using safety gloves, goggles, protective overall, safety boots and safety helmets respectively. (Table 6)

Table 6. Safety Practices among Respondents

Variables	Frequency (%)
Are safety drills organized and important (n=146)	
Yes	144(98.6)
No	2(1.4)
Why Safety drills are important (n=144)	
To know safety tips	22(15.3)
To be careful	36(25.0)
To practice safety	30(20.8)
No response	56(38.9)
Comply with safety measures (n=146)	
Yes	120(82.2)
No	26(17.8)
Reason for compliance and practice (n =120)	
Its compulsory	14(11.7)
for personal safety	106(88.3)
Reason for non- compliance and practice (n =26)	
Its cumbersome	8(30.8)
Not effective	18(69.2)

Personal Protective Equipment available

(n=146)

Yes	138(94.5)
No	8(5.5)

Trained in the use of PPE (n =146)

Yes	112(76.7)
No	34(23.3)

Use of Personal Protective Equipment (146)

Yes	140(95.9)
No	6(4.1)

Regularity of use of PPE (n =140)

Always	126(90.0)
When necessary	14(10.0)

Available Personal Protective Equipment

(n=146)

Face Protection (Mask)	77(52.7)
Safety Gloves	24(16.4)
Goggles	30(20.5)
Protective Overall	20(13.7)
Safety Boots	54(36.9)
Helmets	51(34.9)

Report Unsafe Conditions and acts (n =146)

Yes	112(76.7)
No	34(23.3)

Reasons for not reporting (n = 34)

Am afraid	6(17.6)
Will not be taken serious	4(11.8)
Nothing will be done about it	24(70.6)

Guided by Standard Operating Procedures

(n = 146)

Yes	126(86.3)
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No	12(8.2)
No response	8(5.5)
Follow Standard Operating Procedures	
(n = 146)	
Yes	124(84.9)
No	14((9.6)
No response	8(5.5)

4.5 Factors that affect workers' knowledge towards exposed hazards

A cross tabulation of the total percentage of correctly answered questions on knowledge were run against factors such as age of respondents, educational level, years of service and whether or not safety drills were organized and test for associations were done using Pearson Chi square test.

The data from this study showed that there was no association between variables such as educational level, safety drills and trainings organized by management for workers and their knowledge towards occupational hazards. There was however a negative association between years of work and knowledge of respondents' towards occupational hazards. Thus, an increase in the years of working was linked to a decrease in the knowledge level of respondents. (Table 7).

Also variables such as educational levels, safety drills and trainings as well as length of service at work had significant association with the safety practices among workers. Age

was however seen not to have any significant association with the safety practices of workers. (Table 8)

Table 7: Cross tabulation of % accuracy of knowledge question against other factors

Variables	Characteristic	% Accuracy of knowledge questions				P-value
		poor	fair	Good	Very good	
Age of respondent	20-24	15 (53.6%)	5 (17.9%)	6 (21.4%)	2 (7.1%)	0.589
	25-29	38 (79.2%)	6 (12.5%)	2 (4.2%)	2(4.2%)	
	30-34	28 (58.3%)	10 (20.8%)	8 (16.7%)	2 (4.2%)	
	35-39	14 (63.6%)	2 (9.1%)	2 (9.1%)	4 (18.2%)	
Educational level	No formal education	2 (50%)	2 (50%)	0 (0%)	0 (0%)	0.647
	SSS	10 (71.4%)	2 (14.3%)	2 (14.3%)	0 (0%)	
	Vocational/Technical training	42 (67.7%)	8 (12.9%)	4 (6.5%)	8 (12.9%)	
	Tertiary	41 (62.1%)	11 (16.7%)	12 (18.2%)	2 (3.0%)	
How many years of work	Less than 1 year	10 (25%)	8 (20%)	12(30%)	10 (25%)	0.00
	1 year	6 (50%)	4 (33.3%)	2 (16.7)	0 (0.7%)	
	2 years	14 (87.5%)	0 (0%)	2 (12.5%)	0 (0%)	
	More than 2 years	65 (83.3%)	11 (14.1%)	2 (2.6%)	0 (0%)	
Are safety training and drills organized for you	Yes	75 (68.2%)	20 (18.2%)	7 (6.4%)	8 (7.3%)	0.067
	No	20 (56.6%)	3 (8.3%)	11 (30.6%)	2 (5.6%)	

(95% C.I)

Table 8: Cross tabulation of % accuracy of practices questions against other factors

Variables	Characteristic	% practice				P-value
		0%	50%	75%	100%	
Age of respondent	20-24	0 (0%)	8 (28.6%)	8 (28.6%)	12 (42.9)	0.135
	25-29	0 (0%)	6 (12.5)	13 (27.1%)	29 (60.4%)	
	30-34	2 (4.2%)	6 (12.5)	7 (14.6%)	33 (68.8%)	
	35-39	0 (0%)	2 (9.1%)	6 (27.3%)	14 (63.6%)	
Educational level	No formal education	0 (0%)	4 (100%)	0 (0%)	0 (0%)	0.00
	SSS	0 (0%)	6 (42.9%)	4 (28.6%)	4 (28.6%)	
	Vocational/Technical training	2 (3.2%)	4 (6.5%)	21 (33.9%)	35 (56.5%)	
	Tertiary	0 (0%)	8 (12.1%)	9 (13.6%)	49 (74.2%)	
How many years of work	Less than 1 year	0 (0%)	18 (45.0%)	8 (20%)	14 (35.0%)	0.00
	1 year	2 (16.7%)	2 (16.7%)	4 (33.3%)	4 (33.3%)	
	2 years	0 (0%)	0 (0%)	3 (18.8%)	13 (81.2%)	
	More than 2 years	0 (0%)	2 (2.6%)	19 (24.4%)	57 (73.1%)	
Are safety training and drills organized for you	Yes	0 (0%)	2 (1.8%)	26 (23.6%)	82 (74.5%)	0.00
	No	2 (5.6%)	20 (55.6%)	8 (22.2%)	6 (16.7%)	

(95% C.I)

CHAPTER FIVE

5.0 DISCUSSION

The work environment of Dangote Cement Ghana limited like any other cement work environment had hazards and cement dust was one of them. There is a lot of dust generation at each stage of production. This study assessed the knowledge of workers in the production unit of Dangote cement factory on occupational hazards as well as the safety practices among workers.

5.1 Socio-demographic Characteristics of Study Respondents

A total of one hundred and forty-six workers at the production unit took part in the study. The study showed that 72.6% of the respondents were Ghanaians and 27.4% were Nigerians even though it's a Nigerian company. This could be due a national policy which ensures that foreign companies employ available and competent Ghanaian nationals as most of their workforce. This pattern is similar to that reported by Ahmed & Abdullah in a similar work done in the United Arab Emirates. More than half 82(56.2%) of respondents were single and the rest married. This finding is contrary to the similar work done by Omotosh et al., (2012) where majority 137(63.8%) of cement factory workers in Obajana, and Kogi states were married. This study however found out that all (100%) of workers was male which is in line with findings by Omotosh et al., (2012).

It also showed that all respondents were below the age of 40 years and this could be due to the fact that cement work or production is stressful and demands much more energy and thus requires the strength of energetic youth or young age group.

A high proportion of the respondents (87.7%) had post secondary education which may be due to the company's employment policy on minimum educational level at the point of entry. This is in line with a study by Joseph (2014), who reported 95% of workers in the Pipeline Products and Marketing Company in Lagos, Nigeria. The level of education has been shown by similar study done by Gyekye&Salminen (2005) to be one appropriate factor needed to achieve high levels of knowledge towards occupational hazards. This study on the contrary, showed that there was no significant association between the level of education of respondents and their levels of knowledge. This could be due to the fact that, study participants' responses to questions were slightly influenced by the management of the company.

5.2 Knowledge of occupational hazards by respondents

This study showed that majority (95.9%) of respondent knew that their work was hazardous. This finding corroborates with report by Mwaiselage et.al, (2005) who carried out a similar study in Tanzania. This is a good development and its continuity and enhancement is likely to minimize workplace injuries. Cement dust was the most commonly known occupational hazards by respondents (100%) followed by falling materials (23.3%) and then by heat (17.8%).

The study also showed no significant associations between the levels of education and the levels of knowledge towards occupational hazards of respondents; however, safety practices among workers had positive associations with the levels of education. Majority (83.6%) of these respondents get their knowledge on occupational hazards during trainings on health safety at work. One hundred and forty-two (97%) of respondents knew of hazards preventive measures and they learn this during safety drills that are

periodically organized for them. The use of personal protective equipment (PPE) was found to be the most common hazard preventive measure as majority of respondents, 83.1% stated the use of personal protective equipment as their ways of preventing hazards. This could mean that, the company places much emphasis on the use of personal protective equipment which happens to be the last option when it comes to hazard control and prevention.

This study showed that majority of workers (65.1%) have poor knowledge towards occupational hazards with only a few (6.5%) having very good knowledge. This finding is also in contrast with similar works done by Ahmed et.al (2005) where only 9.2% of the cement workers had low knowledge 26.8% had moderate knowledge and 46.5% had high level of knowledge. The finding is also quite surprising, considering the fact that, majority of workers have post secondary education and also the fact that safety trainings and drills were organized as said by 98.6% of respondents. This could be due to the influence of management of the company in the response given by study participants.

5.3 Occupational health practices among cement workers

Although 23.3% of workers claimed, training in the use of personal protective equipment are not done for them, 95.9% of the workers use personal protective equipment. The study also showed that a majority of 52.7% of respondents make use of face protection (mask) followed by the use of safety boots (36.9%) and then by safety helmets (34.9%)

Majority (82.2%) of respondents abide by the safety measures at the workplace with a total of 106(72.6%) of them abiding or complying for their own personal safety and 11(7.5%) saying they comply simply because it was compulsory to abide by them.

This is indicative of the high value workers place on personal safety; and this is likely to reduce the incidence of work-related injuries and diseases.

The study indicates that training drills on health and safety, age of respondents, and educational levels of respondents did not have any significant association with the knowledge of respondents. This contrasts, similar work done in the by Ahmed et al., (2010) where these variables were seen to be the most important predictors of workers' knowledge towards occupational hazards. Also, the years of service of respondents have a negative association with the knowledge of workers on occupational hazards. This could be due to the fact that newly appointed workers were in most cases taken through pre- employment training and that the knowledge acquired during such trainings is fresher in their head as compared to older workers.

It is also seen that variables such as educational levels, safety drills and trainings as well as length of service at work had significant association with the safety practices among workers. Age was however seen not to have any significance with the safety practices of workers.

Workers may know about safety but will not practice them, so I think much emphasis should be placed on predictors that affect safe practices of workers towards occupational hazards.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The majority of the cement workers knew that exposure to the dust was a serious hazard to their health, but only few of the workers knew the other hazards that are associated with their work, other than dust. This explains that most cement factory workers tend to think of cement dust as the only hazardous agent which they need to protect themselves from; and this was seen in the use of face mask as the most common personal protective equipment that is being used by workers.

The variable which had significant association with both on the knowledge and practice of workers about occupational hazards was the years of service. This variable however had a negative association with the knowledge of workers towards occupational hazards but a positive association with the practices among workers. The fact that years of service is negatively associated with the knowledge of workers, it could be explained that, the company seems to place much emphasis on the pre-employment trainings on health and safety without updating the knowledge of old employees.

Other variables such as the educational levels, safety drills and trainings also had positive associations with the safety practices among workers although they did not have any significant association with the knowledge of workers towards occupational hazards. Age was seen not to have any significant association with both the knowledge of workers as well as the safe practices among them. Factors such as the educational level of workers

and safety trainings and drills should be taken into consideration in any program by the company to address occupational health and safety issues since they have positive associations with safe practices among workers.

6.2 Recommendations

Based upon the findings of this study, the following are recommended:

- The management of Dangote Cement Ghana Limited needs to have an occupational health and safety department to implement strict health and safety procedures and policies, regularly train and educate workers on occupational health and safety and ensure compliance to reduce injuries and diseases.
- Workers should not compromise on their safety and constantly make use of all personal protective equipment.
- Government agencies concerned with health and safety as well as labour work should routinely inspect cement factories to ensure conformance with international standards.

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8.0 APPENDICES

8.1 APPENDIX I

INFORMED CONSENT

Institutional Affiliation

Department of Biological and Environment and Occupational Health Sciences (BEOHS):
School of Public Health, College of Health Sciences, University of Ghana- Legon.

Background

Dear participants, I am Donkor Nicholas Barnes, a student of the school of Public Health, University of Ghana, Legon. I am conducting a study on “the knowledge on occupational hazards and occupational health practices among cement workers. The purpose of the study is to assess the knowledge level of cement workers on the occupational hazards related to their work, assess the whether or not occupational health practices are being done by workers and determine the factors that affect the knowledge and practices of workers towards occupational hazards.

Procedures

The study will involve answering questions from a structure questionnaire. At no point will any form of biological sample collected from respondents. This is a purely an academic research work, which will form part of my work for the award of a Master’s degree. I will surely appreciate your participation in this study.

Risks and Benefits

This study does not involve any biological sample collection from respondents and therefore will NOT employ any offensive procedures. Therefore will not cause any harm or discomfort to participants. It is hoped that the results obtained for this study will be useful for policy makers to either improve upon already existing occupational health and safety measures or to enforce existing ones with the objective of protecting workers better.

Right to refuse

Participation in this study is voluntary and respondents can choose not to answer any particular question or even all the questions if he so wishes. You are at liberty to withdraw from the study anytime. However, I would like to encourage you to participate since your opinion is important in the determination of the outcome of this study.

Anonymity and Confidentiality

I would like to assure you that whatever information provided will be handled with strict confidentiality and will be used purely for the research purposes. Your responses will not be shared with anybody who is not part of the research team. Data analysis will be done at the aggregate level to ensure anonymity.

Dissemination of Results.

A copy of the results of this study will be mailed to you if you provide your address.

Please, do you have any question you wish to ask about the study before taking the consent?

Yes No

(If yes, questions to be noted below)

.....
.....
.....
.....

Please, in case you want to ask questions later, you may contact me, Donkor Nicholas Barnes on Tel. No. 0202250179 or 0249464224

For further clarification, please contact the GHS ERC administrator, Hannah Frimpong on Tel. No. 0243235225 or 0507041223.

Consent

I declare on this day the 2015, that the purpose of the study have been thoroughly explained to me and have fully understood it. I hereby agree to answer the questions per my signature/thumbprint below.

Signature..... Date.....

Thumbprint Date.....

Interviewer's Statement

I, the undersigned, have explained this consent form to the interviewee in a language he understands, the purpose of the study, procedures to be followed as well as risks and benefits involved. The interviewee has willingly agreed to participate in the study.

Interviewer's Signature..... Date.....

Address.....



8.2 APPENDIX II

QUESTIONNAIRE

Please indicate your answer with a tick (✓), where appropriate in all sections.

Section A: Socio-demographic characteristics of respondents.

1. Age (in years)
2. Marital Status
 - Single
 - Married
 - Divorced
 - Never married
 - Separated
3. Nationality
 - Ghanaian
 - Nigerian
 - Other (specify).....
4. Educational level
 - No formal Education
 - Primary
 - J.S.S
 - .S.S.S
 - Vocational/Technical training
 - Tertiary
5. How many years have you been working here

- Less than 1 year
- 1 year
- 2 years
- More than 2 years

6. Religious background

- Christianity
- Islam
- Traditional
- None
- Other (specify).....

Section B: Respondents' knowledge of hazards in their works.

7. What work do you actually do in this production unit?

.....

8. Do you think your job is hazardous?

- Yes
- No

9. Do know of any occupational hazards related to your work?

- Yes
- No

10. If yes, please tick where appropriate

- Dust

- Falling materials
- Smoke
- Fire
- Heat
- Machinery injuries
- Violence
- Wet floors
- Other (specify)

11. How did you get to know of the occupational hazards related to your work?

- Training on Health and Safety at work
- From colleagues at work
- Books
- Schools
- Television and Radio
- From friends
- Other (specify).....

12. What other types of hazards do you know of in this factory? **Please Tick where appropriate**

- Cement Dust
- Machine handling
- Heat
- Noise
- Fire

Electrocutation

Falls from height

Inhalation of gases, smoke or chemicals

Other (Specify)

13. Are safety trainings and drills organized for you?

Yes

No

14. Do you think safety trainings drills are important?

Yes

No

15. If yes, why do you think so?

.....

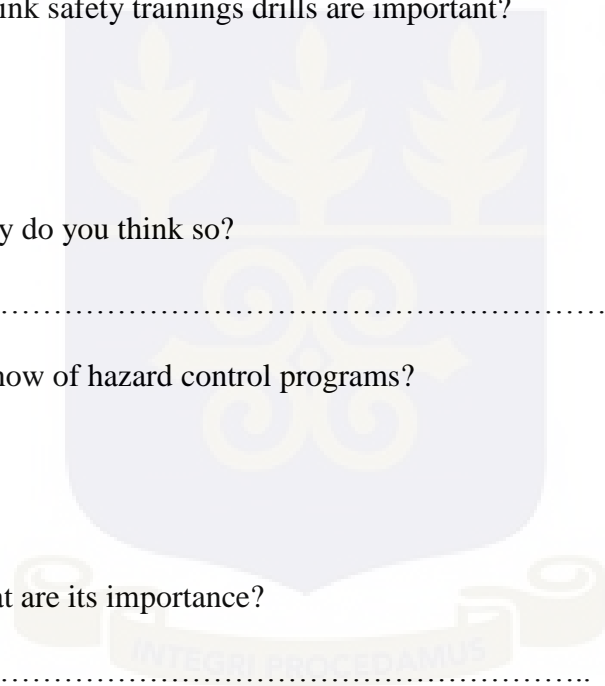
16. Do you know of hazard control programs?

Yes

No

17. If yes what are its importance?

.....



Section C: Safety Practices among Respondent

18. Do you know of hazard preventive measures in your line of duty in this factory?

Yes

No

19. What types of preventive measures do you know of in this factory? **Please Tick where appropriate**

Elimination of hazardous agents

Isolation of Hazardous agents or process

Periodic Medical Examination

Adequate ventilation

Sanitizing work place

Use of Personal Protective Equipment

Personal Hygiene

Other (specify)

20. What do you think hazards prevention will result in at the factory?

Avoid the occurrence of hazards

Reduce hazards to the minimum

Other (specify)

21. Do you comply with the safety measures of your work?

Yes

No

22. If Yes, why do you comply with the safety measures

It's Compulsory

- For personal safety
- Other (specify)

23. If No, why do you not comply with these safety measures

- It's cumbersome
- It's not compulsory
- Not Effective
- Other (specify).....

24. Do you know of any protective equipment used in your line of work?

- Yes
- No

25. Have you been trained in the use the personal protective equipment?

- Yes
- No

26. Are these personal protective equipment always available for use by you?

- Yes
- No

27. What personal protective equipment is always available for use by you? **Please**

Tick where appropriate.

- Protective Overall
- Face Protection (Mask)
- Goggles
- Safety Gloves
- Safety boots

Helmets]

28. Do you use these available protective equipments?

] Yes

] No

29. If yes, how often do you make use of the protective equipment

] Always

] Occasionally

] When Reminded

] When I feel it's necessary

] Other (specify)

30. If No, what is your reason for non-use of the protective equipment

.....

31. Do you report of unsafe acts and conditions to your supervisors

] Yes

] No.

32. If No why?

Because:

] Am afraid

] I will not be taken serious

] Nothing will be done about it

] I will be tagged a whistleblower by colleagues.

] Other (specify)

33. Is your guided by standard operating procures (SOPs)

Yes

No

34. Do you follow Standard Operating Procedures and operation manuals?

Yes

No

35. If no, why do you not follow them?

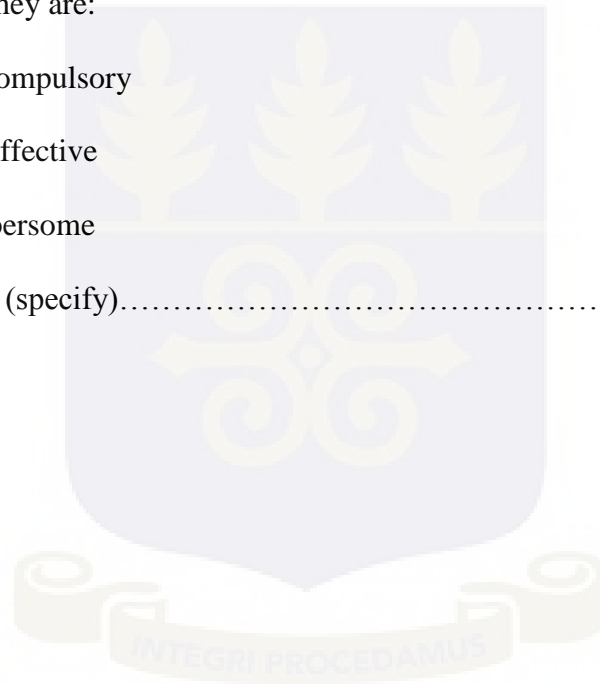
Because they are:

Not compulsory

Not Effective

Cumbersome

Other (specify).....



GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

*In case of reply the
number and date of this
Letter should be quoted.*



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My Ref. :GHS-ERC: 3
Your Ref. No.

13th July, 2015

Donkor Nicholas Barnes
School of Public Health
University of Ghana
Legon, Accra

ETHICS APPROVAL - ID NO: GHS-ERC: 100/02/15

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol titled:

“Knowledge on Occupational Hazards and Occupational Health Practices among Cement Workers at Dangote Cement Ghana Limited”

This approval requires that you inform the Ethics Review Committee (ERC) when the study begins and provide Mid-term reports of the study to the Ethics Review Committee (ERC) for continuous review. The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Please note that any modification without ERC approval is rendered invalid.

You are also required to report all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.

You are requested to submit a final report on the study to assure the ERC that the project was implemented as per approved protocol. You are also to inform the ERC and your sponsor before any publication of the research findings.

Please note that this approval is given for a period of 12 months, beginning July 13th 2015 to 12th July 2016.

However, you are required to request for renewal of your study if it lasts for more than 12 months.

Please always quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....


DR. CYNTHIA BANNERMAN
(GHS-ERC CHAIRPERSON)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra