OCCUPATIONAL HEALTH HAZARDS AMONG WORKERS OF SEVEN-UP BOTTLING COMPANY PLC, KADUNA PLANT

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CERTIFICATION

This project entitled, Occupational Health Hazards Among Workers of Seven Up Bottling Company PLC Kaduna Plant meets the regulation governing the award of the degree of MASTER OF PUBLIC HEALTH. Ahmadu Bello University Zaria, Nigeria.

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DECLARATION

I declare that the work in the project report entitled, Occupational Health Hazards Among Workers of Seven Up Bottling Company PLC Kaduna Plant has been performed by me in the Department of Community Medicine under the supervision of DR. M. N SAMBO. The information derived from the literature has been duly acknowledged in text and list of references provided. No part of this project report was previously presented for another degree or diploma at any university.

_____ _____

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DEDICATION

This work is dedicated to the entire staff of the Dept. of Community Medicine ABU ZARIA and almighty GOD who gave me the power and resource to undergo the (MPH) Programme despite all the obstacles.

ACKNOWLEDGEMENTS

I am grateful to my Project Supervisor, DR. M. N. SAMBO whose guidance, assistance, advice and criticisms at every stage of the project contributed to the success of the study.

My special thanks to the management and staff of Seven Up Bottling Company Plc Kaduna for their kindness, and all the Lecturers in the Department of Community Medicine, Ahmadu Bello University, Zaria who gave me knowledge to handle the complex community better.

To my mates, friends and well wishers thanks for being there always.

And to my family many thanks for all your prayers, most of all, I thank almighty GOD for everything.

ABSTRACT

The study Occupational Health Hazards among workers of Seven Up Bottling Company Plc Kaduna was carried out with the aim of identifying occupational health problems among the workers and predisposing factors of such problems. It was also to assess the knowledge and practice of safety measures among the workers and determine measures taken by the authorities to reduce these problems. A cross-sectional descriptive study was carried out in the premises of Seven Bottling Company Kaduna within eight weeks in April-May 2006.

The study was carried out by use of indept interview of the Head of Human resources and structured questionnaire administered to the entire 240 workers of the company. The information on the types of hazards expose to, knowledge, attitude and practical use of protective devices were obtained.

The result showed that about 87 out of 209 respondents ever had injury on the job, the management and staff of Seven Up bottling company plc Kaduna are aware of existing hazards in their workplace, do have pre-employment training, provision of protective devices and work together as a family.

The main predisposing factors associated with occupational health problem in the company include low pay and lack of formal education.

Chi square test to determine relationship between age, educational level, years of service, satisfaction on the job, pre-placement safety training, awareness of safety measures, all showed significant positive relationship with injury at workplace. The study concluded that even though the management of Seven-up

Bottling company plc Kaduna has adequate safety policy as well as safety committee that organizes induction courses for new employees, educates workers on safety and monitors the workers to ensure strict compliance with safety rules, few recommendations were made for both the staff and management of the company. This recommendation include: **The management** should endeavor to provide more safety devices, have more safety meetings with the workers fortnightly, enforce usage of safety devices and improve on remunerations, starting with those workers who comply best with safety rules and regulations. **The workers** should learn more about safety all the time, follow safety rules displayed on the factory premises, use the safety devices any time they are on duty and discuss with the management freely about safety on the job.

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LIST OF ABBREVIATIONS

ABREVIATION`	MEANING
W.H.O	World Health Organisation
PLC	Public Liability Company
X^2	Chi square
DF	Degree of Freedom
ILO	Internal Labour Organisation
E.G	For example
VIZ	Namely
Et al	and others
LGA	Local Government Area
FEPA	Federal Environmental Protection Agency
OHS	Occupational Health and Safety
GOHS	Group Occupational Health Service

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CHAPTER ONE

INTRODUCTION

Occupational Health is defined by the Joint Committee of International Labour Office and the World Health Organisation as "the promotion and maintenance of the highest degree of physical, mental being of workers in all occupations and places of employment.[1] While occupational hazard is defined as a work material substance, process or situation that predisposes to disease or accident, or can directly cause disease or accident to workers in the work place, and even years after the workers might have left the workplace.[2]

Occupational Health comprises of two main disciplines – occupational medicine and occupational hygiene. Occupational medicine primarily concerns man and the influence of work on his wealth while occupational hygiene concerns the measurement, assessment and control of man's working environment.

Developing countries of the world live in poverty and disease circle. Industrialization in the 50's/60's came as a welcoming process of breaking this circle of poverty and disease, thus the peasants who were subsistence farmers, and knows little about modern methods or production became readily available work force for the industries; exposing them to diseases of various occupations and hazards there in.

The provision of occupational health services is as a result of realization on the part of managements that a healthy worker is a productive worker.

Since the introduction of the health and safety work Act 1974, occupational health hazards and work place environment has received the attention of the managements and efforts to minimize hazards put in place.

The health and welfare of the working force in developing countries should be easy to attain as the problems are already well known in most cases. However, this is not the case; due to lack of compliance with statutory requirement by managements and also lack of interest in the health of workers by their own trade unions as they only always struggle for increase in wages. Most industries take advantage of this and refuse to comply with rules and regulations to protect the workers from occupational health hazards.

As countries undergo industrialization, the need for the health care of workers on whom industrialization depends becomes important.[8] There were increase awareness by the public of workplace hazards and of the health risks that may be associated with them. There was also need for the better enlightenment of the employers of labour on the need for occupational health and safety. A worker may be exposed to five different types of hazards depending upon his occupation. These are the physical, chemical, biological, mechanical and

psychological hazards. Occupational hazard is a worldwide problem affecting both developed and developing countries. As a result of technological advances in industrial hygiene, many toxic factors both physical and chemical that were highly prevalent in the early part of the industrial revolution have been to a large extent controlled in the advanced countries. However developing countries and countries in transition face the traditional industrial hazards in addition to widespread level of malnutrition, poverty and disease be devilling the area.[9]

Also the workers are susceptible to the development of occupational diseases. These occupational diseases are regarded as disease arising in the course of employment.[9] These are classified into diseases due to physical agents such as heat pyrexia, heat exhaustion, occupational deafness etc, biological agents, such as brucellosis, anthrax and actinomycoses, and chemical agents, such as silicoses, anthracosis. Also organic vegetable dusts such as Bagassossis and byssinosis are also included here. They are irreversible fibrotic lung condition know as pneumoconiosis.

Occupational diseases could also result from the toxic effect of metals and their compounds such as lead and mercuric poisoning.

Other diseases of psychological origin such as hypertension and industrial neurosis plus diseases such as occupational cancers and occupational dermatitis can also occur.[10]

Occupational problems can also be inform of physical injury, such as a cut, fracture, sprain and amputation that can result from a work accident or from exposure in the working environment. Work accident or occupational accident constitutes an important cause of sickness absence in industries particularly in developing countries.[10] Certain occupations like mining, agriculture, building and construction are inherently more accident prone than others.

While part of this is due to the intrinsic dangers of the work, there is little doubt that lack of safety practices is characteristic of some sectors. This is particularly marked in the construction industry where neglect of safety precaution is responsible for many serious injuries. Occupational accidents occur in both developed and developing countries. They arise from a conjunction of hazards and an unsuspecting person. The cause of accidents can therefore be as a result of human or environment factors. The human factors include the physical capabilities of the worker, which may not meet his job requirements. Physiological factors such as age, sex working hours, experience and psychological problems have effects on accident. The environmental factors that can cause accident are faulty machine, poor illumination, and noise.[10] The effect

of occupational accidents has been tremendous among workers world wide. It has caused the loss of several lives, caused several disabling injuries and has been responsible for a lot of sickness and absence from work. There is therefore need to pay attention to prevention of occupational accident through safety practices. Successful accident prevention requires some fundamental activities which include adequate pre-placement examination, a study of all working areas to detect and eliminate or control physical or environmental hazards which contribute to accidents, a study of all operating methods and practices, education, instruction, training and discipline to minimize human factors which contribute to accidents. The identification of predisposing factors in the cause of accidents is absolutely fundamental to effective safety prevention measures. Also analysis and thorough investigation of every accident, which results in a disabling injury, produce information, which leads to counter measures that prevent or reduce the number of accidents.

Equally, the application of ergonomics has made significant contribution in the reduction of occupational accidents. Ergonomics is concerned with fitting the job to the worker and seeks to improve the match between the job and man's physical abilities.

Also in the prevention of accidents, engineering controls are more reliable than protection dependent on human factor. This can be in form of reducing noise

levels to acceptable levels by quieting down a machine or enclosing it. In the case of dangerous solvents, chemicals, vapour or fumes, they should be confined to a pipe or closed tank or their vapour should be exhausted mechanically.

Accidents can be prevented by the modification of risk in the work place through counseling, personal protective equipment and engineering controls. All these are safety practices aimed at reducing occupational accidents.

However, if it is impractical to eliminate a course of accident by engineering revision or by safeguarding or to limit exposure time to hazardous dust, mists or excessive noise to acceptable levels by administrative procedures then the use of personal protective equipment becomes mandatory. The protective clothing are classified into two viz: the protection against hazards in the working environment including weather e.g. heat and cold, contact protection against hot or cold surfaces, protection against chemical hazards, protection against other aspects of the physical environments such as electromagnetic and high energy particulate radiation, noise vibration protection against fire, impact protection by the use of safety helmets, impact wear, body armour and hand gloves. These protect against cutting and penetrating injuries. Eye protection and splash protection involve use of goggles, antisplash garment. Protection against falls involves the use of safety harnesses.

However when the need for a particular protective measure has been stressed and understood, its effectiveness depends on the willingness of the workman to use it properly. Several factors may influence and include the extent to which the men who must wear the equipment understand its necessity, the ease and comfort with which it can be worn with a minimum of interference with normal work procedures and available economic, social and disciplinary sanction which can be used to influence the attitudes of men.

Safety practices focus on the preventable aspects of mortality and morbidity.[11]It concerns safe plan layouts, safety devices on machines and use of such devices by employees. There is need to design equipment, control and jobs to fit the limitations of human being so as to achieve safety.

Most accidents in the workplace happen when people are for some reason not doing their work in the safest possible way. This may be because they do not know about the safe practices they are supposed to follow or because they forget them simply because they are being careless. The human factor operates at all levels in industry and is perhaps the most potent factor for success or failure of a safety program. It is in order to ensure maximum safety at work that the initial interventions were largely centered on legislative controls of the work practices considered injurious to health. The health and safety at work Act, 1974 in Britain detailed ways in which health and safety could be protected in the work

place. It placed an obligation on employers to provide as far as is reasonable practicable a healthy and safe work place for every working man and woman. It requires employers to take reasonable precautions for their safety and that of their colleagues at work. [12]

In Nigeria we have the factory and Allied Matters Decree and later and Act of 1987. In other words everyone is responsible for making sure that work is safe. Safety at work is important that the various rules and regulations for everyone at a workplace should be obeyed. The United Nations in its universal declaration of human rights recognized the right of all people to just and favourably condition of work.[11] It is therefore important to realize the need for safety at the workplace in Nigeria and world over. The Seven Up Bottling Company plc Kaduna is where this study is focusing.

JUSTIFICATIONS FOR THE STUDY

Most workers of the world, Nigeria in particular are bread winners in their homes, thus the Justification for undertaking this study, as it affects the well being and safety of workers in their work place.

Due to the importance of Seven Up Bottling Company PLC, Kaduna and the employment of many Nigerians, any injury among the workers will bring hardship to the worker, his immediate family, to the Management and to the country as a

whole. It is therefore imperative and necessary to reduce the rate and prevalence of occupational health problems.

A study of occupational health hazard among workers of the company (Seven Up) will be of immense importance for the planning and implementation of safety measures in the company and also provide data for the assessment of safety in work place.

GENERAL OBJECTIVE:

To assess the health hazards among workers of Seven Up Bottling Company Plc Kaduna Plant.

SPECIFIC OBJECTIVES

1. To identify occupational health problems among workers in seven up bottling company Kaduna.
2. To identify predisposing factors associated with the occupational health problems.
3. To assess the knowledge and practice of safety measures among workers of seven bottling company Kaduna.
4. To determine measures taken by the authority to reduce the problems.
5. To make recommendation based on findings from the study.

CHAPTER TWO

LITERATURE REVIEW

Many people are at serious risk of ill-health and accidents because of the condition they encounter in their workplaces. Combating these dangers requires a multidisciplinary approach and special attention to the elimination of hazards from the work environment. This is a long-standing concern of WHO.[30]

Worldwide, it is estimated that about 90,000 industrial accidents and about 400 lives are lost daily through occupational hazards.[12]The hazards could be physical, chemical and or biological. Occupational hazards are more and worse in developing countries like Nigeria where laws are not enforced even though in place. These hazards are under-studied and under-reported in developing countries as well.

However, occupational health is concerned with all aspects of workers' health and his relationship with his environment. Health and safety at work has been a topic of continual concern among health professionals ever since Dr. Bernadino Ramazzini.[12]

The initial concept of occupational health was limited to the provision of first aid services and the control of industrial injuries and work related diseases in industrial and manual workers hence it was known as industrial health.

In 1839, however, Chales Thackrah demonstrated the universality of occupational health problems irrespective of what the work actually was.[12]

In collaboration with Thachrah, ILO/WHO expert committee on occupational health stressed that the broader scope of occupational health applies to all employments, be it industrial, commercial or administrative.[12] Occupational health therefore replaced industrial health.

The basic objectives of a good occupational health and safety program is to protect employees against health hazards in their work environment and also to ensure the suitability of individuals according to their physical capabilities, mental abilities and emotional make up in that they can perform with an acceptable degree of health and safety for themselves and that of their family.

The organization and provision of occupational health and safety services are quite different and better in the developed countries. [12] Britain's occupational health program was re-organized as a result of the Health and safety work Act 1974. Legislation on health and safety became stricter and more comprehensive covering almost all workers including the self-employed. The employment of a medical advisory service advises the government, management, union and staff on occupational health services.

Similarly the government of the United States through its occupational health and safety Act 1970 set up a new administration to enforce the law and an institute (HIOSH) to recommend hygiene standards, sponsor and undertake research and to finance training program for health workers.

From few studies, Occupational health and safety services are not adequately provided for workers in the developing nation unlike in developed countries. Even in some countries where it is provided, it is discriminatory between large and small – scale industries as found in a study by Asuzu M.C.[13] He noted that health, safety and welfare services in Nigeria were adequate only in large industries most of whom had or still have international involvement and participation, both in human and material resources. The provisions were inadequate in the medium and small scale industries. In any country where the organisation and provision of occupational health and safety are not strongly enforced, workers health and safety especially in the medium and small scale industries will depend on the owners' perception of risks, social costs of informing or addressing such issues.

Thomas Legg advocated that all workers should be adequately informed about the hazards of their work. Eakin, in a study of management of health and safety in small work place found that some industrial owners tend to discount or

normalize health hazards and to believe that management intervention in employee health behaviour was inconsistent with prevailing patterns of labour relations and norms respecting individual autonomy. Inability by any country or organisation to provide occupational health and safety services to all categories of workers is in contravention to the international labour organization (ILO) convention 161 and recommendation 171 of 1985, which requires that occupational health and safety (OHS) services should be developed for workers in all branches of economic activities and all undertaking. The availability of occupational health and services will protect workers from the effects of occupational hazards prevalent in almost all occupations.

HISTORICAL ANTECEDENCE

The health hazards associated with certain occupations were probably recognized early in history throughout antiquity. However, little interest was shown in protecting worker's health, perhaps the dangerous trades were usually restricted to slave labour.

Hippocrates, in the fourth century B.C. recognized the toxic properties of lead and recorded a series of attack of lead colic in miners. Pliny the elder, a Roman scholar of the first century A.D referred to the hazards of handling sulphur and Zinc and also described a protective mask. About 100 years later, Galen accurately described the pathology of Lead poisoning.[13]

In 1473, Ulrich Ellenbog produce the first publication on the subject, "a pamphlet on occupational diseases and injuries amongst gold miners". He offered instructions on hygiene and other preventive measures.[3]

The first comprehensive book on occupational medicine was published in 1700 in Italy by "the father of industrial medicine" Dr.Bernadino Ramazzini. His "De morbis artificium diatribe" (the disease of the work man), contained accurate description of occupational diseases of most workers of his time.[20]

In early twenty century, an American, Dr. Alice Hamilton observed industrial conditions at first hand and startled mine owners, factory managers and state officials with evidence of illness correlated with toxic exposure. She presented concrete proposals for elimination of unhealthy conditions and exercised tremendous influence on both industrial leaders and lawmakers.[20]

As the number of industrial workers increased, the resultant increase in injuries eventually brought legislation such as factory Acts of Great Britain. The Health and Morals of apprentices act was passed in 1802, and the child labour laws in 1883.

In 1901, a law protecting the health of workers was passed. Prior to the adoption of the compensation principles, workers injured on job had to sue their

employers for damages but could not collect, if it was proved that the injury was due to ordinary risk of the job or negligence of the worker. [20]

These examples illustrate the importance of occupational health and safety (OHS) to both workers and the company.

The Development Of Occupational Health And Safety In Nigeria

In 1908, the Federal Government of Nigeria passed a compensation act for civil employees and 3years later (1911) the first state compensation law was passed. Today, most states in Nigeria do have some coverage for occupational diseases. [20]

The history of occupational health in Nigeria at the close of 1980's was rudimentary, however in 1930's, government owned establishments started some occupational health services such as the Railways and Coal Miners establishments.

Industrial legislation in Nigeria has largely been fashioned after the legislation of Britain without taking into account of our own stage of development and special circumstances.

In Nigeria, the bulk of our industries then were small scaled, consequently the legislation did not affect them. The interest of Nigeria remained at first mainly agricultural then gradually mining and manufacturing and very recently, petroleum has assumed the greatest significance.

The first industrial legislation in Nigeria was in 1941. "The workman's compensation ordinance for accidents and death", in 1942, the department of labour was formed with a labour commission and three labour officers, which were increased to eight in 1943. In 1945, labour code ordinance brought in a number of reforms.

1. It regulated the employment of young persons and women.
2. Forced labour was prohibited.
3. Compulsory maternity leave was instituted.

Between 1949 and 1954, there was full regionalization with labour offices in each region and Lagos. A Federal Ministry of Labour was created in 1951. The factory Act was moderated in 1955 after the British factory Act of 1948.

In 1948, International Labour Organization released a figure of 0.4×10^6 industrial accidents which resulted in 20×10^6 working days loss.

Health and safety at the workplace has been a topic of continual concern among health professionals ever since Bernadino Ramazzini first drew attention to the issue in the late17th and early18th centuries.

The concept of occupational health came to Nigeria and West Africa largely through the British Colonial industries. It became a national issue as part of the political movement for independence; later, more humanitarian concerns came to the fore. The present state of occupational health and safety (OH&S) still leaves much to be desired; marked improvement has occurred in multinational companies but rather little in the indigenous, and especially small-scale, industries. [10]

The first occupational health and safety programs in Nigeria derived from the commercial and industrial enterprises set up in Nigeria when the country was a British colony. [10] These programs saw to the employment and dispatch of occupational health workers to the industrial plants and other commercial undertakings in Nigeria, such as the plantations. Understandably, the occupational health and safety laws in the UK, which required that these same services be rendered to subjects in the colonial territories, had a greater influence at the time than did the humanitarian ideals which had prompted their creation in the British Isles.

The rise of a nationalistic spirit (accompanied by the demand for independence) in Nigeria in the late 1930s and early 1940s helped foster enactment of the

Workmen's Compensation Ordinance (1941), the Labour Code Ordinance (1945) and the first Factory Act (1956). [10] The first conference on occupational safety in Nigeria, which took place in 1962, and the subsequent conference on occupational health in Africa held in 1968 both in Lagos, Nigeria, appeared to be genuine efforts at occupational health and safety based on egalitarian and humanitarian ideals rather than on nationalism. [10] A good deal of influence came from outside Nigeria, indeed, from outside Africa though. The impacts, successes and failures of those efforts, and the factors responsible for them, would need to be studied and taken into full consideration in order to further develop OH&S in Nigeria, in the region and beyond. The initial efforts in OH&S in Nigeria have had the following results.

a. The work started at the first conference to establish a chair in occupational health at a Nigerian university, in order to promote OH&S, has continued.

b. There is on-going work to educate personnel and to create societies for occupational health practitioners in Nigeria: physicians, nurses, safety officers, hygienists, etc.

c. Efforts are being made to create divisions of OH&S in the Nigerian government, in ministries of health at the state and national levels, and to improve OH&S in the district (local government) health systems.

d. The OH&S ordinances dating from the colonial period have been revised and given more Nigerian faces. The new legislation includes the Labour Decree (later an Act) 1974, the Factory Decree (later an Act) 1987, the Workman's Compensation Decree (later an Act) l987 and the Environmental Protection Regulations from 1989 onwards. [10] Also, the Health and Safety Inspectorate of the Ministry of Labour had undergone re-organization, with a slight improvement of staffing. As yet, there has been no corresponding improvement in the equipment and supplies they need to be able to do the work statutorily assigned to them.

e. Efforts are now being made to create a program for specialized education and a separate Faculty of Occupational and Environmental Medicine both in the Nigerian National Postgraduate Medical College and in the West African College of Physicians (based in Lagos, Nigeria at the West African Health Community).

Nigerian OH&S has met with the following successes and failures.[10]

1. In 1964, a candidate was selected and actually trained, with a view to filling the chair to be created, but this never materialized.

2. A Chair in Occupational Health was created at the University of Ibadan in 1992/93 by the Society of Occupational Health Physicians of Nigeria (SOHPON), but this attempt, too, has failed, either because of a lack of funding or because the post has not been filled.

3. Plans for and sometimes even the commencement of professional OH&S programs, such as institutes for occupational health and safety or professional programs and services, wither during the process of development, during the implementation phase, or they become dead letters. The Institute of Occupational Health and Safety and similar programs, all originating in or carried out at Ibadan, are perfect examples of this type. The annual occupational health and safety conference organized by the Federal Ministry of Health in Lagos is one of the programs that survive on this bare existence level.

4. There are three OH&S-related organizations: the quite (but only nationally) active SOHPON; the barely existing society of occupational health nurses; and an association of occupational safety personnel (rather non-professional in its membership, with an activity-based orientation). There is no society for occupational hygiene, which is surely needed in Nigeria. At present, Nigeria has few professional occupational hygienists.

5. The Federal Environmental Protection Agency (FEPA) which itself was established only recently, strives to deal with the issues of industrial effluent management and other related environmental health problems.

6. As shown in the most recent studies, there has seemingly been remarkable improvement in the OH&S services, staff and programs within the large and usually multinational-owned industrial and commercial enterprises of Nigeria, but

very little improvement has taken place in the small-scale and indigenous industries. [10]

In both developing and developed countries, there may be sectors of companies where 80-90% of workers are heavily exposed to traditional physical or chemical factors or to accident risks. As modern production techniques were adopted the number of occupational hazards and personnel injury became larger as business enterprises and mechanical production increased.

The workplace has always been associated with hazards. These health hazards mutually affect every part of the body depending on the nature of work and the type of materials that the worker is exposed to. No one knows the amount of ill health attributable to occupation. It is however well known that workers have been injured or killed in the course of employment.[14]

Bruce T.F reported that over zealous investment promotions may have a tendency to expose workers to hazardous process and operations especially where labour and occupational health standards are compromised as it is found in most developing countries including Nigeria[15].

Nowacki confirmed the existence of occupational hazards in Nigeria.[3] It is therefore necessary to protect workers against the effects of occupational hazards by the application of effective safety practices. The key to avoiding

accidents in work places is to raise the level of awareness of occupational hazards among employers and employees.[3] Precautionary measures will minimize the effect of the hazards on the workers. Workers who are uninformed about hazards to which they may be exposed find it difficult to identify or recognize a disease as occupational. Thus the risk imposed on individuals by occupational hazards is dependent upon the individual's perception of the risk and action taken to avoid it.

In spite of the progress so far made in occupational health and safety in Nigeria, it is reported that the level or workers knowledge of occupational hazards or the existing legislation which should contribute to improving occupational health and services is still low especially in medium and small scale industries. [3]

Equally of concern to the safety of workers is the number of occupational accidents workers are exposed to. In the United States, work accidents destroy more than 14,000 lives annually and 11.5 million disabling injuries. [8] In Nigeria, data on work accidents are not easily available. Most of the industrial accidents are not reported. However the rate of accident in a coal industry in Nigeria has been shown to be higher than a similar industry in Britain.[3] Studies by the health and safety executive in Britain indicates that the overall cost of accidents to employers of personal injury work accident, work related ill- health and avoidable non-injury accidents is estimated to be equivalent to around 5-10% of all United

Kingdom companies gross trading profits.[16] Robens in his report noted that the death toll, injury, suffering and occupational disease remained unacceptably high.[17] Some industries have been found to be more hazardous in terms of accident than others.[17] In Britain, construction work and local mining have the highest overall rates of reported accidents while insurance and business services have least reported cases of accidents.[8] In Nigeria, Asogwa showed that occupational accidents ranged from 8% per annum among tractor drivers to 24% among insecticide spray gangman.[3] While part of this is due to the intrinsic dangers of some occupations, there is little doubt that lack of safety practices is characteristics of some sectors. This is well marked in the construction industry where neglect of safety precautions such as wearing of hand gloves or safety helmets are responsible for many serious injuries each year. Such behaviour speaks of poor safety and supervision of a workplace.

Seaton etal[9] is of the opinion that gender, age, psychological problems, management factors and communication failure affect the rate of accidents. In general, females are less liable to accidental injuries than males. About 90% of fatal and 78% of other reportable injuries occur in males.[8] They tend to select themselves in to more hazardous jobs and that even in the same industrial sectors, the gender difference persists.[8] Females take the less physical jobs and take fewer risks than men.

Also younger age has been found to be at greater risk of industrial accidents, this is because they tend to be more impetuous and perhaps to have a greater fear of appearing cowardly and a greater tendency to show off. This is in line with the findings of Nichole that younger age increases accident rate in construction workers.[18]

Psychological problems, management factors and failure of communication between people themselves or between them and machines have found to increase the rate of accidents. Concentration on the job at hand is clearly important at work and any factors reducing such concentrations may contribute to accidents.[18]

From the works of several workers above, it has been shown that the rate of occurrence of accident, are affected by so many factors. These factors equally have effect on the safety of workers. Accidents generally produce economic and social loss, in pair individual and group productivity, cause inefficiency, and retard the advancement of standards of living. There are therefore sound economic, ethical and regulatory reasons for reducing work-related accidents through effective safety practices. Effective occupational health and safety management should be integrated with management of other aspects of business to minimize risks to employers and others, thus reducing rate of accidents and improved business performance. In trying to justify the need for

safety practices, the British safety council is of the opinion that organizations should attach some importance to achievement of high standard of safety management as they do to other key aspects of their business activities.[19] There are virtually no hazards or operation which cannot be overcome by practical safety measures. Asogwa, in support maintains that safety training should be given to workers as part of their initial training and that it should be integrated into actual work situation so as to constantly remind workers of the need to practice safety measures. Waldron also collaborated with him that individual workers must be aware of their duties for their safety and that of their colleagues at work. Thomas Legg in 1888 also advocated that all workers should be educated on hazards of their work and workplace.

However, it has been shown that apparent lack of interest in safety has been traced to lack of awareness of the safety practices and basic benefits of a safety program. In view of this, most governments are making laws and regulations to ensure that better protection is provided for the workers who are at risk of occupational hazards and injuries.

Most workers are poor and diseased even before employment and need to be build up before employment for maximum output.

Organization Of Industries

Industries are organized mainly into three groups:

1. Small scale (1-50 workers)
2. Medium scale (51-1000 workers)
3. Large scale (above 1000 workers)

This classification is not rigid but very helpful for the organization of occupational health. E.g. A large scale industry should have a full blown hospital with occupational physician, (trained in occupational medicine), a trained occupational nurse, occupational hygienist or toxicologist and ergonomics and also an occupational psychologist.

While for the small and medium scale there three options available:

1. Utilization of retainer hospital mainly private for curative in most cases instead of preventive.
2. Use of Government or missionary health facilities by workers.
3. Group occupational health service (GOHS). This is form of arrangement where small and medium scale industries joined hand to establish a hospital for the workforce, it is cheap, convenient and rewarding. Mainly there are two types of GOHS.
    a. **AREA**: - This type of arrangement is where industries are distributed over a vast area, so a place which is mostly

accepted and accessible to all is chosen for a hospital, which is then jointly built. The hospital will have in-patient facilities with doctors and nurses and the paramedic staff who goes round daily to see and treat patient at the bases and refer if possible to the hospital.

b. **ESTATE:** - Here a big hospital is established in a centre where all the industries are concentrated. The advantage is that the health activities are all concentrated with minimal efforts.

WORKING ENVIRONMENTS

Simply there are five components of working environment that affects workers on the job.

1. **Physical Environment:** These include temperature (excessive heat or cold), light noise, vibration and humidity.
2. **Chemical Environment:** These are made up of all the elements, compounds and mixtures in the workplace and least understood from their numerous nature.
3. **Mechanical Environment:** These include all the machines, implements of the workplace.
4. **Biological Environment:** This environment consists of all the living organisms, plants and animals in the work environment.

5. **Social Environment:** This consists of the man-man relationship in a workplace, very important in occupational health though neglected in most cases.

FUNCTIONS OF OCCPATIONAL HEALTH SERVICE

These include the following:

i. **Pre-employment medical examination:**

* General fitness medical examination.

* Pre-placement medical examination.

ii. **Periodic (follow up) medical examination:** for early diagnosis and treatment.

iii. **Provision of primary medical care and first aid.**

iv. **Environmental monitoring and modification.**

v. **Monitoring and control/management of workplace effluents.**

vi. **Maintenance of accurate health records.**

vii. **Health education.**

viii. **Maintenance and provision of essential social services –** water, toilet, cloak and restrooms, canteen and recreation.

ix. **Planning of factory expansion or outside expansion.**

PRINCIPLE OF HAZARD CONTROL AND DISEASE PREVENTION IN OCCUPATIONAL HEALTH AND SAFETY

As defined earlier a hazard is a substance material agent or process that can cause injury of disease in a workplace, therefore the principle of controlling them is removal of those things that can cause danger from the workplace. Ideally, the thing to do is totally completely eliminate such a hazard. However many hazardous material and process constitute the backbone of the job and complete elimination will mean end of the job. Thus, containment is done at all levels.

In summary the principles of hazard control are:

(a). **Complete elimination:**

i. substitution e.g. Fibre glass for asbestos

ii. Change of process e.g. ultra-sound for x-ray.

(b) **Containment:**

i. At source e.g. sound muffling in cars

ii. Total enclosure e.g. transformer station.

iii. Partial enclosure as in many factories where dangerous machine are partially enclosed.

iv. Time limited/regulated/monitored exposure as in x-ray department.

v. Personal protection with protective devices e.g. ear plugs, boot, goggles and helmet.

(C) **Adjunct measures:**

i. General cleanliness or house keeping in place of work, dry floors, adequate lightening and good ventilation.

ii. Safety monitoring

- Environmental – noise, heat, dust.
- Biological monitoring e.g. blood test, liver function test, x-ray, stool and urine test to be done periodically.
- Periodic sickness record – evaluation and monitoring.

iii. Health education – to raise general awareness among workers.

- Information process – poster, talks, seminars.
- Use of health and safety committee, accident prevention and accident investigation committee.
- Incentive programmes for safety – prizes for safest/cleanest department.

Factory Managers should attach more importance to achieving high standards of safety management as they do to other key areas or aspect of their business activities. There is no hazard, which cannot be overcome by simple safety measures in place. Safety training should be given to workers as part of their pre employment industrial training and this should be integrated into the actual situation so as to remind workers of the need for safety measures.

CHAPTER THREE

METHODOLOGY

BACKGROUND TO THE STUDY AREA

The Seven Up Bottling Company Plc was founded in 1959 by late Sheik Mohammed El-Khalil. Production started on 1 October, 1960 the day Nigeria got her independence. The brands of soft drinks produced are 7-Up, Pepsi, Mirinda and Teem. Seven-Up Bottling Company Kaduna Plant is a medium sized Company, with a staff population of about 240 workers mostly men, there are about 8 women. It is located in Kakuri Industrial Area of Kaduna town in Kaduna South LGA, Kaduna State. It is very close to Nigerian Bottling Company and Peugeot Automobile Company of Nigeria. There are no residential areas near the factory.

The factory is involved not only in productions but storage and distribution of their products to their numerous Retail customers in and around Kaduna, and also to their depots in Abuja, Jos, Minna, Sokoto and Zaria.

The factory has various departments through which it carry out above functions. The various departments include, Administration, Manufacturing, Workshop and Marketing

There are two good access roads to the company plant that is being used also by Nigerian Bottling Company (NBC) and Peugeot Automobile Nigeria Ltd. (PAN) who are close neighbours of the company.

About 90% of the raw materials needed for production is water. The company depends on Kaduna State Water Board. It has about four boreholes. Water is stored in pretreatment reservoir where it cleansed and transfered to a reaction tank. It is **treated** in the reaction tank with chlorine, calcium chloride, calcium hydroxide and ferrous sulphate. From there it is **filtered,** polished and tested before use. The **preparation of syrup**, **bottling process** and **full product sighting** are the next process of complete production before they are transfered to warehouse and unto the road for sales.

Most of the staff live around or near by settlements like Kakuri, Television and Sabo–Tasha. There are two staff busses that bring staff to and fro in the three shift duties that are operated in the plant.

There is a functional industrial clinic with a part time physician who consults for 5 days a week to review and treat the sick. There are four nurses that run shifts in the clinic so that clinic is operated 24 hours. Cases that could not be treated in the company clinic are usually referred to retainer hospitals within Kaduna.

The workers are exposed to physical, chemical, mechanical and social hazards in their work environment. This is what this study is to find ways to reduce and make the work place friendly for efficiency.

STUDY DESIGN

The Study Design was a cross-sectional descriptive study of the Occupational Health Hazards among workers of Seven Up Bottling Company Plc Kaduna.

STUDY POPULATION

As at time of study the total work force was 240, a medium scale industry, made up of various religious and ethnic groups. Only 8 are females.

SAMPLE SIZE

Sample size determination would have been done using the formula.

$$n = \frac{z^2 pq}{d^2}$$

where

n = The desired minimum sample size

z = The standard normal deviate at 95% significant level

p = Proportion of workers with occupational health hazards problems.

q = 1 – p

d = Degree of accuracy at 0.05

The whole population was studied however, for a sample size of less than 10,000 as in this case 240 the formula for sample size determination is **nf** $\frac{n}{1+\frac{n}{N}}$

Where **n= $\underline{Z^2 pq}$**

d^2 and N = that population less than 10,000 (240).

The entire population was used in the study, irrespective of sex, religion, tribe and status in the office. Therefore, there was no calculation for sample size determination.

SAMPLING TECHNIQUE

The entire target population was used as the study population, thus no sampling was done.

DATA COLLECTION TECHNIQUE

Both quantitative and qualitative methods of data collection technique were used. For the **qualitative** method, **Indept interview** was conducted with the Head of Human Resources. These involve use of check list to indept interview (see appendix).

For the **quantitative** data a structured questionnaire was designed, refined accordingly to Section A): Bio-data, Section B): Occupational Health Hazards, Section C): Predisposing Factors, Section D): Safety Measures, for use. The questionnaire was self administered (See appendix).

DATA COLLECTION

The study was conducted on the premises of Seven Up Bottling Company PLC., Kaduna plant within the period of about 8 weeks, from the 3rd April to 31st May, 2006. Permission was obtained first from the management and staff of the company before the commencement of the study. The study started with the qualitative data collection (indept interview with the Human Resource Manager) which was good as it guided the modification of the questionnaire. Written notes were taken during the indept interview and responses were analyzed. (See Chapter 4)

For the quantitative data collection, the structured questionnaires were given to all members of staff through their heads of department. Those with difficulty in completing the questions on their own were encouraged to seek assistance from the four nurses in the staff clinic and two staff in human resources department that were trained. Supervision of the questionnaire completion continued through out the 8 weeks of data collection.

DATA ANALYSIS

All completed questionnaires were collected and checked for errors, out of 240, 224 returned filled questionnaires and 209 filled theirs properly. Only the properly completed questionnaires were analyzed using Statistical Package for

Social Sciences (SPSS) Version11. Chi-square was used for the qualitative analysis.

ETHICAL ISSUES

The General Manager, the Human Resources manager, the Senior Nurse, Union leaders and some members of senior and junior staff were discussed with at various times for permission to carry out such study in their organization and all agreed.

Privacy and confidentiality was maintained through out the study.

A letter of introduction from department of community medicine Ahmadu Bello University Zaria to the general manager for permission of the study was done.

LIMITATIONS

The population was close and a small one. Despite that 31 workers (12.9%) did not take part in the study, as they did not return their questionnaire and all efforts to locate them failed since no registration was done during the distribution of the questionnaire to maintain confidentiality.

Finance and time were also constraints in the study.

CHAPTER FOUR

DATA ANALYSIS

RESULTS OF INDEPT INTERVIEW WITH THE HUMAN RESOURCE MANAGER

QUESTIONS (CHECK LIST)

1. WHEN WAS THIS COMPANY ESTABLISHED?

   Response

   1st October 1960

2. WHAT ARE THE VARIOUS SECTIONS THAT MAKE UP THE COMPANY?

   Response

   - Marketing
   - Manufacturing
   - Administration
   - Workshop

3. WHAT IS THE WORKFORCE OF THE COMPANY?

   RESPONSE

   240 WORKERS including 8 female (5 in Accounts, 2 in Sales and 1 in Human Resource Department).

4. CAN YOU BRIEFLY DESCRIBE THE WORK ACTIVITIES OF EACH SECTION?

RESPONSE	
Administration	**Manufacturing**
Accounting	Engineering
Computer	Production
Human Resources	Quality Control
Security	**Marketing**
Store	Sales
Transport	Warehouse
Workshop	
Fleet	
Maintenance	

5. WHAT IS YOUR RESPONSIBILITY AND JOB SCHEDULE?

Response

- Managing Human Resources

6. HOW WOULD YOU DISCRIBE THE GENERAL CLEANLINESS OF THE COMPANY?

Response

- Very Clean

7. IN YOUR VIEW WHAT ARE THE OCCUPATIONAL HAZARD WORKERS OF THIS COMPANY ARE EXPOSED TO?

RESPONSE
• Noise • Heat • Road traffic accident • Broken bottle injury • Chemical burns • Bottle burst injury

8. WHAT HAS THE COMPANY DONE TO PROTECT WORKERS FROM THESE HAZARDS?

RESPONSE
• Pre employment training • Provision of safety wears • Enforcing us of safety wears • Regular safety meeting • Running of shift

9. CAN YOU NAME SOME OF THE METHODS THE COMPANY IS PROTECTING THE WORKERS FROM HAZARDS? **RESPONSE** AS IN 8 ABOVE

10. DOES THE COMPANY COMPENSATE WORKERS FOR INJURIES INCURRED DURING THE WORK PROCESS? HOW?

RESPONSE
• Yes • By treating the worker • Excuse from duty if necessary • If disability occurs, they are compensated accordingly

11. WHAT ARE THE WELFARE AND RECREATIONAL FACILITIES FOR THE WORKERS?

RESPONSE
• Monthly free sampling i.e. 6 crates of soft drinks for every staff • Meal subsidy • Volley ball and badminton • Inter departmental football competition annually • Yearly award for long service • Yearly bonus allowance • Staff bus • Promotion • Training

12. WHAT IS YOUR ASSESSMENT OF THE WORKERS RELATIONSHIP TO THE MANAGAMENT AND EACH OTHER?

Response

- As a family

13. ARE THERE SAFETY TRAINING FOR WORKERS? HOW MANY OF SUCH TRAINING IN A YEAR?

Response

- Yes, Two-Three times a year

SUMMARY OF INDEPT INTERVIEW

In summary the company was established on 1st October 1960. they are four main departments with about 240 workers. Each department have well defined job of production, storage and sales of soft drinks.

The management is well informed about hazards in the factory and are doing a lot to reduce them as collaborated by the workers. The workers and management relate to each other as one 7 Up family. They do have regular training on safety in an average of two or three time annually.

1. BIODATA ANALYSIS.

TABLE 1; AGE DISTRIBUTION OF THE RESPONDENTS IN THE COMPANY.

Age in yrs.	Frequency	Percent
<20	1	.5
20-24	23	11.0
25-29	49	23.4
30-34	42	20.1
35-39	45	21.5
40-44	28	13.4
45-49	11	5.3
50-54	6	2.9
55+	4	1.9
Total	**209**	**100.0**

Above table shows age distribution of respondents. The highest is in the age group of 25-29yrs with 23.4%. Only 1.9% is in the age group of 55yrs and above.

TABLE 2; SEX DISTRIBUTION OF THE RESPONDENTS IN THE COMPANY.

Sex	Frequency	Percent
Male	194	92.8
Female	8	3.8
No response	7	3.4
Total	**209**	**100.0**

Above table shows majority of the workers among the respondents are males 194 (92.8%) while only 8 (3.8%) are females.

TABLE 3; ETHNIC GROUP DISTRIBUTION OF RESPONDENTS IN THE COMPANY

Ethnic Group	Frequency	Percent
Hausa	58	27.8
Yoruba	42	20.1
Igbo	37	17.7
Others	65	31.1
No response	7	3.3
Total	209	100.0

Above table shows, Hausa has the majority single ethnic group of 27.8%, Yoruba 20.1% and Ibo makes 17.7%.
The minority ethnic groups like Igala, Idoma, Nupe, Tiv, Ijaw, Urhobo, etc are group as others with 31.1%

TABLE 4; RELIGION DISTRIBUTION OF THE RESPONDENTS IN THE COMPANY

Religion	Frequency	Percent
Islam	64	30.6
Christianity	140	67.0
Traditional	1	.5
Other	2	1.0
No response	2	1.0
Total	**209**	**100.0**

Above table shows 67% are Christians while 30.6% are Muslims.

TABLE 5; EDUCATIONAL LEVEL DISTRIBUTION AMONG RESPONDENTS OF THE COMPANY

Educational level	Frequency	Percent
No formal education	5	2.4
Completed primary school	18	8.6
Completed secondary school	88	42.1
Completed post secondary school	95	45.5
No response	3	1.4
Total	209	100.0

Above table shows majority of the workers have completed post secondary (45.5%) and secondary schools (42.1%).

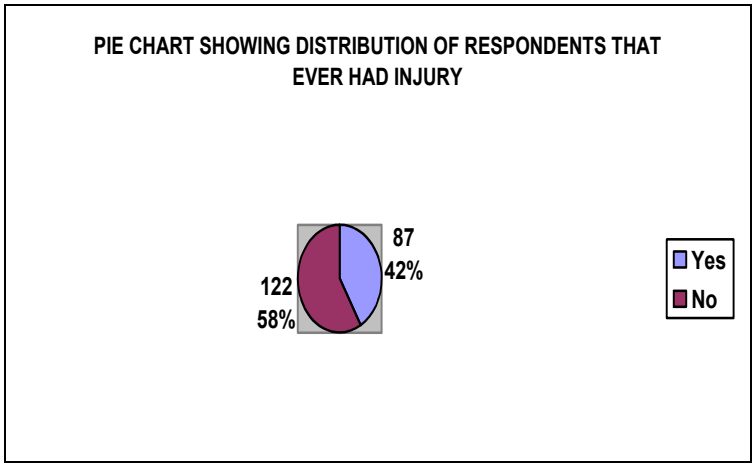
TABLE 6; DEPARTMENTAL DISTRIBUTION OF THE RESPONDENTS IN THE COMPANY

Department	Frequency	Percent
Marketing	18	8.6
Administration	67	32.0
Manufacturing	96	45.9
Workshop	18	8.6
No response	10	4.9
Total	**209**	**100.0**

Above table shows manufacturing (production) has the highest number of workers with 45.9% of the staff strength.

2. **OCCUPATIONAL HEALTH PROBLEM/HAZARD ANALYSIS**

TABLE 7;



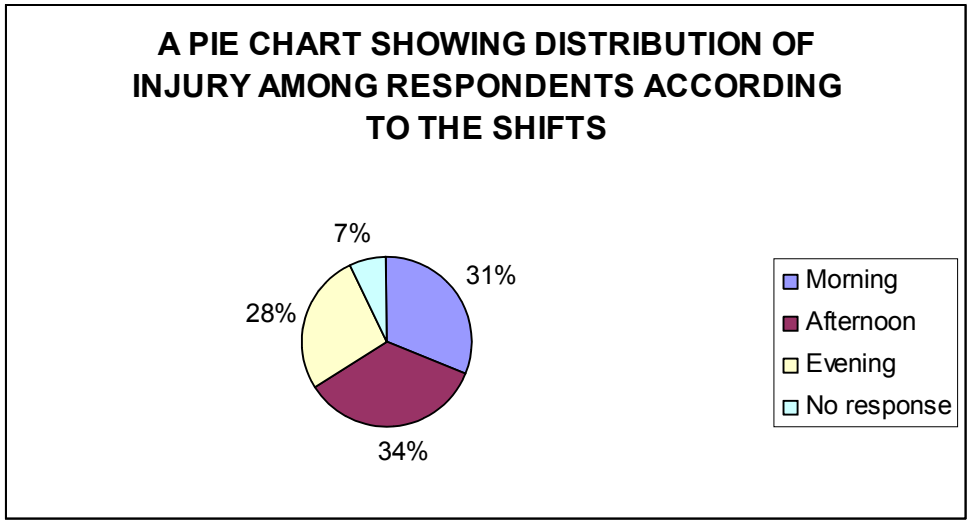
The above Pie shows that 42% ever had injury and 58% never had injury.

TABLE 8; TYPES OF INJURY AMONG RESPONDENTS OF THE BOTTLING COMPANY

Types of Injury (n=87)	Frequency	Percent
Injury by broken bottle	49	56.3
Cuts by sharps object	28	32.2
Chemical burns	8	9.2
Road traffic accident	5	5.7
Chemical eye injury	3	3.4

Above table shows that broken bottle injury is the highest with 56.3% followed by injury by sharp object (32.2%).

TABLE 9;



The above pie shows that most injuries occur in the afternoon shift. 34.5% of total injuries.

TABLE 10; RELATIONSHIP OF INJURY AMONG RESPONDENTS TO DEPARTMENTS

Department	Ever had Injury		Never had injury		Total
	No.	%	No.	%	
Administration	13	19.4	54	80.5	67
Marketing	7	38.9	11	61.1	18
Workshop	7	38.9	11	61.1	18
Manufacturing	55	57.3	41	42.7	96
No Response	5	50.0	5	50.0	10
Total	87	41.6	122	58.4	209

The above table shows that manufacturing (production) has the highest number of injuries (57.3%).

TABLE 11; RELATIONSHIP OF INJURY AMONG RESPONDENTS TO AGE

Age (yrs)	Ever had injury		Never had injury		Total
	No.	%	No.	%	
<25	11	45.8	13	54.2	24
25 -29	18	36.7	31	63.3	49
30 – 34	20	47.6	22	52.4	42
35 – 39	15	33.3	30	66.7	45
40 – 44	12	42.9	16	57.1	28
45 +	11	52.4	10	47.6	21
Total	**87**	**41.6**	**122**	**58.4**	**209**

The above table shows the highest number of injuries (52.4%) occurred in age group 45 years and above closely followed by 30 – 34 (47.6%).

Chi- Square Test

Null relationship Ho: There is no relationship between age and injury.

Alternate Hypothesis H1: there is relationship between age and injury.

$\infty = 0.05$

The appropriate test statistics is x^2 with 5 degree of freedom.

The critical value of Pearson $X^2 = 3.569$ with a p-value of 0.613 which is greater than 0.05; Ho is therefore rejected. Thus age has relationship with injury.

TABLE 12; RELATIONSHIP OF INJURY TO EDUCATIONAL LEVEL AMONG RESPONDENTS OF THE COMPANY

Educational Level	Ever had injury		Never had injury		Total
	No.	**%**	**No.**	**%**	
No formal Education	3	60.0	2	40.0	5
Completed primary school	8	44.4	10	55.6	18
Completed secondary school	39	44.3	49	55.7	88
Completed post secondary school	36	37.9	59	62.1	95
Total	**86**	**41.7**	**120**	**58.3**	**206**

The above table shows the highest number of injuries (60.0%) occurred in those who had no formal education.

Chi square:
Ho = education has no relationship to injury
Ha = education has relationship to injury.
X^2 at degree of freedom 3 = 1.558 and a p-value of 0.669 which is greater than

0.05

Ho is therefore rejected.

Education has relationship to injury on the job.

TABLE 13; RELATIONSHIP OF INJURY AMONG RESPONDENTS OF THE COMPANY TO YEARS OF SERVICE

Years of service	Ever had injury		Never had injury		Total
	No.	**%**	**No.**	**%**	
< 5	33	39.3	51	60.7	84
5 – 9	24	37.5	40	62.5	64
10 – 14	20	47.6	22	52.4	42
> 15	8	57.1	6	42.7	14
Total	**85**	**41.7**	**119**	**58.3**	**204**

The above table shows the highest number of injuries (57.1%) occurred in those whose years of service are more than 15 years.

Chi square:

Ho = years of service has no relationship to injury

Ha = year of service has relationship to injury

X^2 at df3 = 2.645 and a p-value of 0.45 which is greater than 0.05.

Therefore Ho is rejected.

Years of service has relationship to injury on the job.

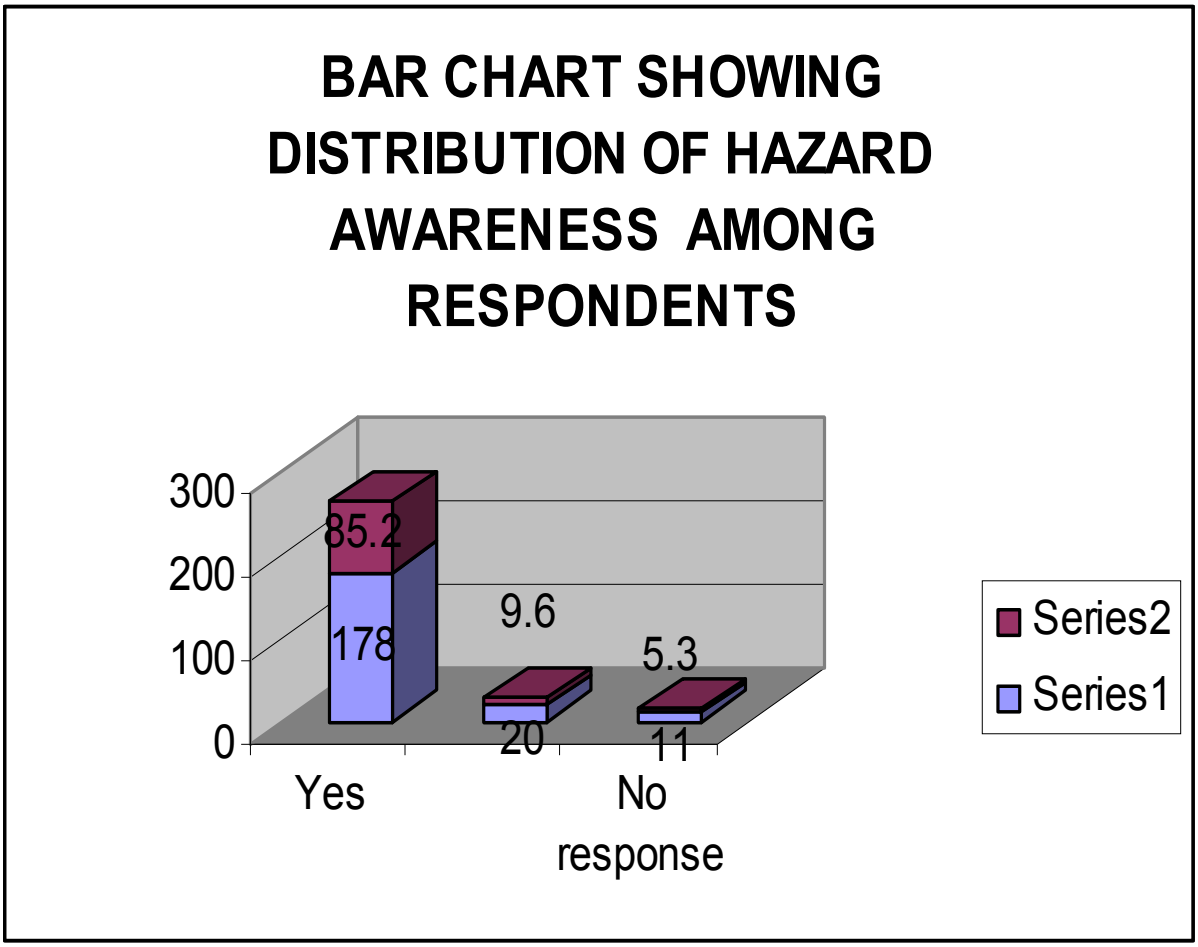
TABLE 14; RELATIONSHIP OF INJURY AMONG RESPONDENTS TO MARITAL STATUS

Marital status	**Ever had injury**		**Never had injury**		
	No.	**%**	**No.**	**%**	**Total**
Married	67	45.3	81	54.7	148
Single	20	35.1	37	64.9	57
Widow			1	100	1
Total	**87**	**42.2**	**119**	**57.8**	**206**

The above table shows that married workers have more injuries on the job than their single counterparts. 45.3% among married workers have ever had injuries.

3. ANALYSIS OF KNOWLEDGE AND PRACTICE OF SAFETY MEASURES AMONG WORKERS OF 7UP BOTTLING COMPANY PLC KADUNA RESPONDENTS.

Table 15; AWARENESS OF HAZARDS AMONG RESPONDENTS OF 7UP BOTTLING COMPANY PLC KADUNA WORKERS



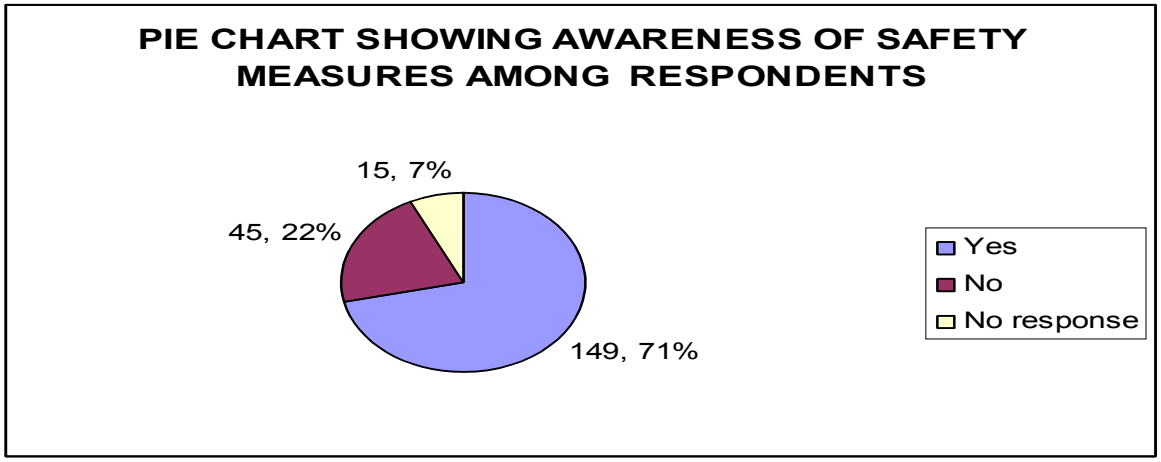
Above Bar Chart shows that majority (85.2%) are aware of hazards existing in their work place.

Table 16; TYPES OF HAZARDS RESPONDENTS OF 7UP BOTTLING COMPANY PLC KADUNA ARE AWARE OF

Types of hazards	Frequency	Percent
Broken bottles	132	74.2
Sharp object	99	55.6
Chemical	76	42.7
Fumes	52	29.2
Machine	70	39.3
High way travels accidents	32	18.0

Above table shows majority (74.2%) are aware of injuries from broken bottle.

Table 17; THE AWARENESS OF SAFETY MEASURES AMONG RESPONDENTS



Above Pie Chart shows majority of the workers (71.3%) are aware of the safety measures.

Table 18; **TYPES OF SAFETY MEASURES RESPONDENTS OF 7UP BOTTLING COMPANY PLC KADUNA ARE AWARE OF.**

Type of safety device	Frequency	Percent
Goggles	72	48.3
Earplugs	57	38.3
Safety boot	108	72.5
Overall	105	70.5
Other	16	10.7

Above table shows that majority (72.5%) are aware of use of safety boot as a safety measure.

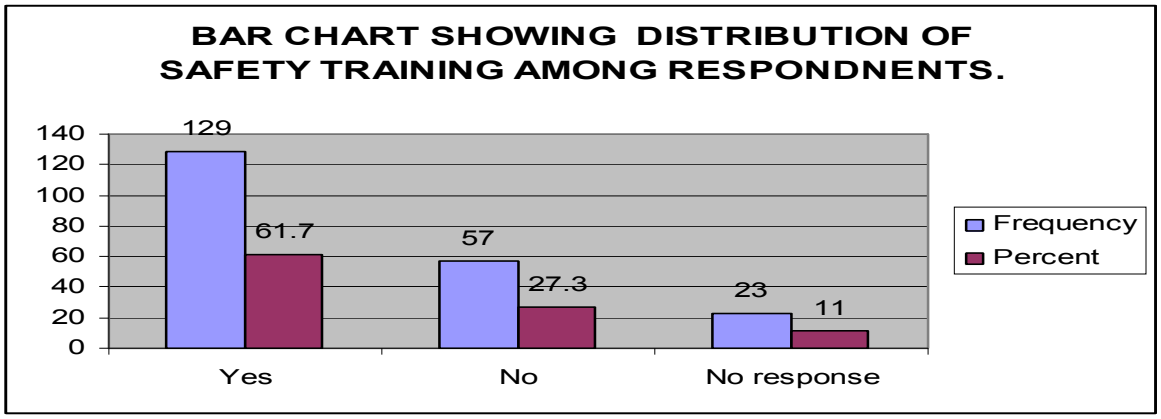
4. ANALYSIS OF MEASURES TAKEN BY THE AUTHORITY TO REDUCE OCCUPATIONAL HEALTH PROBLEM

TABLE 19; PRE-PLACEMENT SAFETY TRAINNG AMONG WORKERS OF

Pre-placement safety training	Frequency	Percent
Yes	119	56.9
No	73	34.9
No response	17	8.1
Total	**209**	**100.0**

Above table shows that slightly above half (56.9%) of the respondents agree to have pre-placement safety training.

TABLE 20



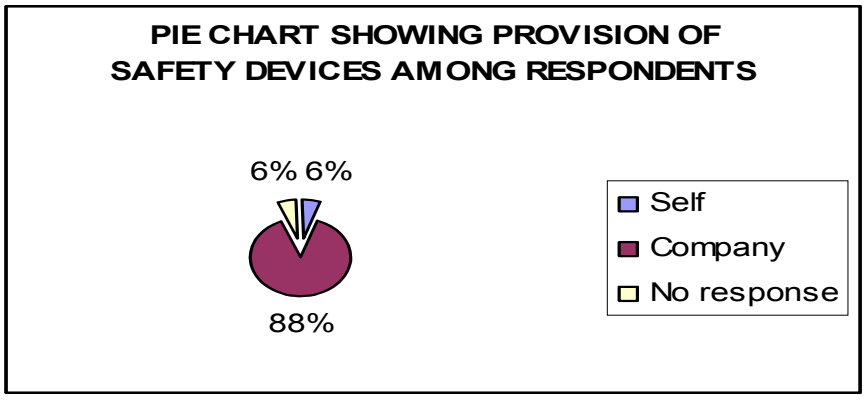
Above Bar Chart shows that 61.7% of the respondents have on the job safety training.

TABLE 21; FREQUENCY OF SAFETY MEETINGS AMONG RESPONDENTS OF THE COMPANY

Frequency of safety meetings	Frequency	Percent
Weekly	4	1.9
Forth nightly	2	1.0
Monthly	91	43.5
Yearly	45	21.5
Others	14	6.7
No response	53	25.4
Total	**209**	**100.0**

Above table shows that majority of the workers (43.5) agree the management do organize monthly safety meeting

TABLE 22



The above Pie Chart shows that the company provides most of the protective devices, 88.2% of the respondents as indicated.

TABLE 23; MANAGEMENT ATTITUDE TOWARDS SAFETY OF WORKERS IN 7UP BOTTLING COMPANY KADUNA

Satisfied?	Frequency	Percent
Yes	141	67.5
No	49	23.4
No response	19	9.1
Total	**209**	**100.0**

Above table shows that 67.5% are satisfied with management attitude towards workers safety.

TABLE 24; SATISFACTION ON THE JOB AMONG WORKERS IN RELATIONSHIP TO INJURY AT WORK IN 7UP BOTTLING COMPANY KADUNA PLC.

Satisfaction with work	Ever had injury		Never had injury		Total
	No.	%	No.	%	
Yes	48	33.1	96	66.9	145
No	38	62.3	23	37.7	61
Total	**86**	**41.7**	**120**	**58.3**	**206**

The above table shows that about 33% of those who are satisfied with their job had injuries, why about 62% of those not satisfied with their job have injuries at work.

X^2 =15.01 at df1 p-value 0.000 at ∞ 0.05. . Therefore Ho is not rejected, no enough evidence to show relationship between satisfaction and injuries on the job.

TABLE 25; PRE-PLACEMENT SAFETY TRAINING AMONG WORKERS IN RELATIONSHIP TO INJURY AT WORK IN 7UP BOTTLING COMPANY KADUNA PLC

Pre-placement safety training	Ever had injury		Never had injury		Total
	No.	%	No.	%	
Yes	57	47.9%	62	52.1%	119
No	27	37.0%	46	63.0%	73
Total	**84**	**43.8**	**108**	**56.3**	**192**

The above table shows that 47.9% among those who have training had injuries on the job.X^2= 2.190 df1 a p-value of 0.139 at ∞ 0.05.Therefore Ho is rejected and pre-placement training is related to injury on the job.

TABLE 26; AWARENESS OF SAFETY MEASURES AMONG WORKERS IN RELATIONSHIP TO INJURY AT WORK IN 7UP BOTTLING COMPANY KADUNA PLC

Awareness of safety measures	Ever had injury		Never had injury		Total
	No.	%	No.	%	
Yes	71	47.7	78	52.3	149
No	14	31.1	31	68.8	45
Total	**85**	**43.8**	**109**	**56.2**	**194**

The above table shows that 47.7% injury occurred among those with safety awareness.

X2 = 3.84 df1 and p-value0.05 at ∞ 0.05. Therefore Ho is not rejected. Awareness of safety measures may not be significantly related to injury at work place.

Table 27; REASONS FOR LACK OF SATISFACTION WITH MANAGEMENT ATTITUDE TOWARDS WORKERS, AMONG RESPONDENTS IN SEVEN UP BOTTLING COMPANY KADUNA (n=61)

Reasons for lack of satisfaction.	**Frequency**	**Percent**
The work is boring and repetitive	13	21.3
Low pay/wages	46	75.4
Obsolete equipment/Machines	6	9.8
No/Lack of welfare	36	59.0
Other	5	8.2

The above table shows that majority of the workers (about 75%) are not satisfied with the management due to low pay and 59% due to lack of welfare.

CHAPTER 5

DISCUSSIONS

Over the years, occupational health has been found to be gaining more grounds even in developing countries. Its importance lies in the fact that the greater proportion of the economy is contributed to by the workforce of any country. This requires that the health of workers should be adequately maintained so that they can continue to work and sustain their nation's economy. Another importance is the fact that workers are occasionally exposed to different occupational hazards which could be detrimental to their health.[26]

The results of the study showed that the respondents are from diverse ethnic and religious groups (Tables 3 and 4) thus reflecting the ethnic and religious diversities in the country. Their age ranges between 20 - 55years. One respondent was found to be below 20 years of age. Just about 4 were above the age of 55 (Table 1). This may be consistent with the company's retirement age of 60years.

From this study, 92.8% of the respondents were males while females formed 3.8% (Table 2). This is not surprising considering the strenuous nature of the job. It is consistent with what was found in Agriculture, Energy, and manufacturing and constriction companies in the United States. In these, males constituted majority of the workers. The difference is due to the fact that women

take to less physical jobs and take fewer risks than men. A similar study in Finland showed that women constitute 35% of the work force[38], though very small here less than 5% most probably due to religious and cultural background/behaviour of the northern Nigeria.

Females generally form 43% of the global work force. This rate varies from country to country with 60% in the industrialized countries and 13-20% in developing countries.

The literacy level of the respondents is high (table 5); 96.2% have completed primary, secondary and post secondary education, while only 2.4% of the respondents had no formal education. This is necessary in order to understand and appreciate basic safety measures. Also the strategic nature of 7up bottling company plant work or operations makes it necessary to have a certain level of education in order to be able operate the machines and equipment. This high literacy level is in line with what was found in the assessment of safety practices in a construction industry where 73% of the workers had completed at least High school.[19, 35] It however contrasts with that found in a tin mining company in Jos where over 90% of the workers there were illiterate with no formal or informal education.[38]

About 87 out of the 209 (41.6%) respondents had ever had injury at work. These injuries vary from broken bottle (56.7%), cuts by sharp objects, chemical burns etc (tables 7 and 8). This is far low from the Alabama's company where 90% injuries were recorded. Manufacturing department has the highest number of injuries (57.3%) mainly due to the production staff where majority of factory accidents especially broken bottle injury from blast do occur, (Table 10). It is interesting to note that most of these injuries occurred during the afternoon shift, may be due to fatigue on the workers interfering with their mental alertness and safety on the job. The rate of industrial accident as shown from this study is higher compared to that from similar study among mechanized agricultural workers which range from 8% per annum among tractor drivers to 24% among insecticide spray gang.[6] Most of the workers that had accident in this study claimed they were not properly protected at the time of accident. Administration department has the lowest injury of 19.4% (Table 10) as compared to production, this is consistent with the findings of Ranatanen et al that; there may be sectors of companies where 80 – 90% of workers are heavily exposed to accident risks more than others.[38] Generally, industrial accidents as reported by several workers are a major problem in industries in both developed and developing countries. However in industrialized countries, accidents at work are on the decline. This is mainly because of the involvement of high technology in designing safer work places and machines. Most operations there are

automated. In Nigeria work accident rate is still high compared to what is obtained in advance countries.[6]

About Eighty – five Percent (85.2%) of the respondents were found to have a good knowledge of the hazards related to their job (table 15). This reflects the high literacy level among the respondents such that despite what they have been told about the hazards of their job and its safety, it also reflects a good level of the enlightenment campaign to educate workers on their occupational hazards. This high level of knowledge of occupational hazard is consistent with the findings of Asuzu that workers in large and medium scale industries are well informed of their occupational hazards than their counterparts in small scale industries.[35] The keys to the prevention of a hazard is to appreciate its presence and to take appropriate avoidance action. The risk posed on individuals by a hazard is dependent upon the individual, knowledge and perception of that risk and actions taken to avoid it and ensure safety .Thomas Legg propounded that workmen should be told something of the danger of the material with which they come into contact with and not be allowed to find out for themselves, sometimes at the cost of their lives.

Also table 17 shows that 71.3% of the respondents have good knowledge of their safety measures around their workplace. In a similar study in a construction company only 56% of the workers had knowledge about safety measures.[19] In

this study the probably reasons for good knowledge of safety measures among the workers could be because of their high level of education and the company policy of punishing those who disobey safety rules. No job shall be considered efficiently completed unless the worker has followed every precaution and safety rule to protect himself and his fellow workers and of course the consumer of his food. During the walk-through survey a lot of billboards at different strategic position informing workers of safety measure to adopt were observed, and this seems to have assisted in enriching the workers of safety measures. The American National safety council listed activities to foster safety attitudes and practices to include training or educational activities in which formal teaching is done and also general safety advertisement or propaganda.

This study also highlighted the fact that age, safety training, knowledge of hazards and marital status have effect on the occurrence of injuries at workplace. Table 11 showed that 52.4% of the accident occurred in age group 45 years and above and 33.3% of the accidents occurred among those 35 - 39 years of age. The fact that many of the respondents had been on their job for a long time and are more relaxed with the machines, also more careless with safety and safety measures. This finding is not consistent with the findings obtained by Nicole et al that age was positively related to construction workers safety performance[19]. He found that 68% of workers under26 years had low safety performance score. It however supports the findings obtained by

Cheradame and Kuye[22]. Seaton et al found that younger people are at greater risk of industrial accidents than the older workers[12]. They are of the opinion that the younger tend to be less experienced, more impetuous and perhaps have a greater fear of appearing cowardly and a greater tendency to show off thereby jeopardizing their safety wait for the older man to take the risk.

There is a strong positive relationship between marital status and occurrence of industrial accidents as shown in table 14, which shows that married workers have more injuries on the job than their single counterparts. 45.3% among married workers have ever had injuries compared to 35.1% of the singles, while 64.9% of the unmarried, 54.7% of the married never had accident on the job.

Another strong factor contributing to injury on the job is the number of years of service as shown in table 13. It shows the highest number of injuries (57.1%) occurred in those whose years of service are more than 15 years as compared to 39.3% in those less than 5 years on the job, an obvious cumulative effect.

Psychologically satisfaction with work has a tremendous impact on injury at work. This is clearly shown in table 24, were only 33% of those satisfied with their work had accident on the job compared to 62.3% rate of accident among those who are not satisfied with their work.

Those with good knowledge of the hazards they are exposed to at work employ safety measures to protect themselves and others. However Nicole in his study found that knowledge of hazards and safety practice did not contribute to the workers safety performance.[19]

Equally, in this study, work accidents were less among respondents who had safety training (table 25). It is the policy of the company to organize a safety induction course for all its new employees so as to equip them with safety procedures. There is a safety committee that organizes courses on safety. This finding is in contrast to that of Nicole that construction workers safety performance was weakly related to safety training exposure and attendance at safety meetings. However the American National Safety Council found that safety training is the only way to influence human behaviour at the workplace. No matter how well safety is engineered into plant or a job, much of the safety of employees depends upon their own conduct which is influenced by safety training.[39] According to Seaton et al safety training should be part of every organization's strategy.[12]

The 7up bottling company plc has a very strong rule regarding the use of safety devices. Workers are not allowed to enter any of the plants without putting on safety devices. To enhance compliance workers are punished for failure to put on safety devices. There is an existing committee on safety to identify offenders.

However during the walk-through survey few workers were seen without wearing a safety device. For those wearing safety devices their reasons include to protect against accidents 84.2%, to do what others are doing 1.4% and 14.4% did not have any reason for wearing safety device.

American National Safety Council maintains that it is better to use extreme measures than allow accidents to happen because of laxness in the enforcement of safety rule.

88.2% of the respondents (tables 22) agree that they have safety devices provided by the management. This is contrary to the provisions of the American National Safety Council and the Nigeria Factory and Allied Matters Act of 1987 that require employers to provide adequate safety devices for the protection of their employees (100%).

61.7% of the respondents do agree to have on the job safety training (table 20).
56.7% agree that they had pre-placement safety training (table 19).
43.5% agree that they do have monthly safety meeting organized by the management (table 21).

67% of the respondents are satisfied with the management attitude towards workers (Table 23). Reasons given by those not satisfied are showed in table 27.

Despite all that the management of 7up bottling company plc has done to institute standard safety mechanism, 33% of the respondents still feel that the management attitude towards workers safety is not satisfactory. They alleged shortage of proper safety devices to provision of safety devices that are of inferior quality, and poor fitting. Several workers have found that management makes the biggest contribution to occurrence of accidents. This range from complete neglect of appropriate design of workplace for safety, lack of provision of proper safety devices for workers protection to cutting corners or abject neglect of safety precaution to speed up a job or to facilitate it.

Also Bruce noted that the use of imported protective clothing and equipment without consideration of anthropometrics characteristics, climatic conditions and culture has a negative impact on the effectiveness of occupational health and safety services in developing countries.[16]

CONCLUSION

From the study, there exist occupational health problems in Seven-up Bottling Company Kaduna. The predisposing factors associated with occupational health problems in Seven Up Bottling Company Kaduna include low pay, and lack of formal education. However there is increase level of knowledge of occupational hazards among workers. The management of 7up bottling company plc has adequate safety policy as well as safety committee that organizes induction courses for new employees, educates workers on safety and monitors the workers to ensure strict compliance with safety rules.

However, there are shortages of safety devices for the protection of the workers.

RECOMMENDATIONS

The study do recommend for both the management and workers of Seven up Bottling Company Kaduna that;

The management should;

1. Endeavor to provide more safety devices,
2. Have more safety meetings with the workers fortnightly.
3. Enforce usage of safety devices.
4. Improve on remunerations, starting with those workers who comply best with safety rules and regulations.

The workers should;

1. Learn more about safety all the time.
2. Follow safety rules displayed on the factory premises.
3. Use the safety devices any time they are on duty.
4. Discuss with the management freely about safety on the job.

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APPENDIX I

GUIDE LIST TO INDEPT INTERVIEW AT SEVEN UP BOTTLING COMPANY KADUNA, FOR THE STUDY OF OCCUPATIONAL HEALTH HAZARDS AMONG WORKERS OF THE COMPANY.

KEY RESPONDENT

Human Resource Manager

1. When was this company established?
2. What are the various sections that make up the company?
3. What is the work force of the company?
4. Can you briefly describe the work activities of each section?
5. What is your responsibilities/job schedule?
6. How will you describe the general cleanliness of the company?
7. In your view what are the occupational hazards the workers of this company are exposed?
8. What has the company done to protect workers against these hazards?
9. Can you name some of the methods the company is protecting the workers from hazards?
10. Does the company compensate workers for injuries incurred during the work process? How?
11. What are the welfare and recreational facilities for the workers?

12. What is your assessment of the workers relationship to the management and each other?
13. Are there safety training for the workers? How many of such training in a year?

APPENDIX II

QUESTIONNAIRE ON OCCUPATIONAL HEALTH HAZARDS AMONG WORKERS OF SEVEN – UP BOTTLING COMPANY KADUNA

SECTION A: BIODATA

1. Age: _____ Yrs
2. Sex: M ☐ F ☐
3. Department:_____
4. Ethnic group: Hausa ☐ Yoruba ☐ Ibo ☐
   Others (Specify)_____
5. Religion: Islam ☐ Christianity ☐
   Traditional ☐ Others (Specify)_____
6. Educational Level: No Formal Education ☐
   Completed Primary School ☐
   Completed Secondary School ☐
   Completed Post Sec. / Tertiary ☐
   (Tick as appropriate)
7. Marital status? Married ☐ Single ☐
   Divorce ☐ Widow/err ☐
8. Number of wives? One ☐ Two ☐
   Three ☐ Four ☐
9. Number of Children? ≤ 4 ☐ 5 – 9 ☐

10 and above ☐

10. How long have you been working in seven – Up bottling Company Kaduna?

< 5 Years ☐ 5 – 9 Years ☐ 10 – 14 Years ☐ 15 Years and above ☐

11. Nature of Employment. Casual ☐ Full Time ☐

12. How many hours do you work daily?

≤ 6 Hrs ☐ 7 – 14 Hrs ☐ ≥ 15 Hrs ☐

SECTION B: OCCUPATIONAL HEALTH / HAZARDS

13(a). Have you had any form of accident/injury in this company while discharging your duties?

Yes ☐ No ☐

If yes, what type of injury?

Injury by broken bottle ☐ Cuts by sharp object ☐

Chemical burns ☐ (Name of chemical)_____

Chemical eye injury (Fumes) ☐

Amputation by Machine Specify Site _____

Road Traffic accident ☐

13(b). What shift were you on when the injury occurred

Morning ☐ Afternoon ☐ Night ☐

14. Are you provided with protective device? Yes ☐ No ☐

If No why?_____

If Yes, who provides it? Self ☐ Company ☐

15. Are you aware of hazards (Problem you are likely Exposed to) in your working place?

Yes ☐ No ☐

16. If yes, Tick the types of Hazards you are exposed to in your work Place?

☐ ☐

Broken bottle Sharp object

Chemical ☐ (Name of chemical)_____

Smoke/Fumes ☐

Machine ☐ Specify _____

Highway travels ☐

17. What other Hazards are other workers exposed to in your opinion?

---

18. What is the effect of these hazards on your health? ----------

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SECTION C: PREDISPOSING FACTORS

19a. Are you happy/satisfied with your work?

Yes ☐ No ☐

19b. If No, why are you not happy?

The work is boring / repetitive ☐

Low pay / Wages ☐

Obsolete equipment / machines ☐

No / Lack of welfare facility ☐

Others, (Specify)_____

20a. What is the company's pattern of promotion.

Automatic yearly ☐

Yearly Appraisal by H.O.D. ☐

Through Examinations ☐

Others, (Specify)_____

20b. When was your last promotion? <1 Yr ☐ 1-2Yrs ☐ >3yrs ☐

21a. Are the various section of this company well illuminated? Yes ☐ No ☐

21b. If Yes, which section/s are well-illuminated _____?

_____

If No, why? _____

22a. Is the company premises (environment) surrounding well maintained? Yes ☐ No ☐

22b. If Yes, how?

Dustbins in strategic locations ☐

Regular / Periodic Cleaning water / detergent ☐

Daily cleaning and mopping to pick broken bottles ☐

Others, (Specify) _____

23c. If No, why? _____

_____

24. What is your relationship with other co-workers?

Work as a team and see ourselves as family ☐

Cordial relationship ☐

Just work and everybody goes his own way ☐

Others, (Specify) _____

25. Are you comfortable while working? Yes ☐ No ☐

If No, why?

The space is too small ☐

Noisy environment ☐

Protective device make me uncomfortable ☐

Poor illumination ☐

The place is littered with broken bottles ☐

Others (specify)_____

SECTION D: SAFETY MEASURES

26. Are you aware of safety measures to protect you from these hazards? Yes ☐ No ☐

27. If yes, please Tick as appropriate

Goggles ☐

Ear plugs/Muff ☐

Safety boots ☐

Overall coat ☐

Others, (Specify) _____

28. Were you given any form of training or instruction on safety measures?

When you were employed? Yes ☐ No ☐

If yes, what type of training/instruction on safety measure was given?

_____

29. Any on the job training after employment Yes ☐ No ☐

30. How regular do you have safety Meetings/ Instructions (please tick appropriate)

Weekly ☐

Fortnightly ☐

Monthly ☐

Yearly ☐

Others, (Specify) _____

31. Which safety device are you putting on now? (Please tick appropriate)

Goggles ☐

Earplugs ☐

Safety boots ☐

Overall coat ☐

Others, (Specify) _____

32. Do you think the protective materials on you are enough? Yes ☐ No ☐

33. If no, please give reasons _____

_____

31. How regular are your safety devices replaced? (Please tick appropriate)

Weekly ☐

Monthly ☐

Yearly ☐

Other, (specify) _____

32. Does your exposure to safety training/instruction encourage your use of safety devices? Yes ☐ No ☐

If No, why? _____

_____

33. Does the availability of proper safety equipment encourage your use of Safety devices? Yes ☐ No ☐

If No, why?_____

34. Do you think the sight of co-workers, friends injured at work encourage your use of safety devices? Yes ☐ No ☐

If yes, explain_____

_____

35. Do you think management's attitude towards safety has any effect on your use of safety devices? Yes ☐ No ☐

If No, why? _____

_____

36. How regular do you use protective safety or devices? (Please tick appropriate)

Daily ☐

Weekly ☐

Monthly ☐

Others, (specify) _____

37. Why do you use safety devices? (Please tick appropriate)

To protect against accident ☐

To please the management ☐

To avoid being punished ☐

To do what others are doing ☐

38. Are you satisfied with the management's attitude towards workers'

safety? Yes ☐ No ☐

If No, give reason_____

THANK YOU