

# The Role of Personal Protective Devices in Preventing Industrial Accident

## A Case Study at Kinkinau Area of Kaduna South Local Government Area

Ismaila Muhammed Dankogi  
Anisha Michael C,  
Isah Adamu

Department of Environmental Health Science  
College of Health Science and Technology, Idah, Kogi State

**Abstract:-** The study assessed the role of Personal Protective Devices in the prevention of Industrial Accident. A case study at Kinkinau Area of Kaduna South Local Government Area Kaduna state owing to the fact that an effective usage of Personal protective equipment can be very benefiting in preventing, controlling, and elongating the life of both employees and employers from any form of hazard that can arise within the working environment such as physical hazard, biological hazard, chemical hazard, and mechanical hazard, which can lead to loss of life or lead to deformity, the survey method of research was used for this study, this method involves the study of both large and small population by selecting and studying sample chosen from the population to discover the relative incidence, distribution and interrelation of variables, the researcher administered 100 questionnaires randomly to respondents, the questionnaire covered areas like awareness on personal protective equipment, their importance and types of personal protective equipment. Upon the conclusion of the research it would be seen that the requirement for Personal protective equipment are made quite inadequate in most of the working environments within Kinkinau area of Kaduna South local government area.

### I. INTRODUCTION

As defined by the World Health Organization (WHO) "occupational health deals with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards" ([www.wpro.who.int](http://www.wpro.who.int)). Health has been defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". Occupational health is a multidisciplinary field of healthcare concerned with enabling an individual to undertake their occupation, in the way that causes least harm to their health. Health has been defined as it contrasts, for example, with the promotion of health and safety at work, which is concerned with preventing harm from any incidental hazards, arising in the workplace.

Occupational safety and health (OSH) also commonly referred to as occupational health and safety (OHS) or workplace health and safety (WHS) is an area concerned with the safety, health and welfare of people engaged in work or

employment. The goals of occupational safety and health programs include fostering a safe and healthy work environment. OSH may also protect co-workers, family members, employers, customers, and many others who might be affected by the workplace environment. In the United States the term occupational health and safety is referred to as occupational health and occupational and non-occupational safety and includes safety for activities outside of work (Fanning, Fred E. (2003).

Occupational safety and health can be important for moral, legal, and financial reasons. In common-law jurisdictions, employers have a common law duty (reflecting an underlying moral obligation) to take reasonable care for the safety of their employees, (Guidance note; 2005) Statute law may build upon this to impose additional general duties, introduce specific duties and create government bodies with powers to regulate workplace safety issues: details of this will vary from jurisdiction to jurisdiction. . Good OSH practices can also reduce employee injury and illness related costs, including medical care, sick leave and disability benefit costs.

#### A. Background of the Study

Since 1950, the International Labour Organization (ILO) and the World Health Organization (WHO) have shared a common definition of occupational health. It was adopted by the Joint ILO/WHO Committee on Occupational Health at its first session in 1950 and revised at its twelfth session in 1995. The definition reads:

"Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities; and, to summarize, the adaptation of work to man and of each man to his job".

The main focus in occupational health is on three different objectives: (i) the maintenance and promotion of workers' health and working capacity; (ii) the improvement of working environment and work to become conducive to

safety and health and (iii) development of work organizations and working cultures in a direction which supports health and safety at work and in doing so also promotes a positive social climate and smooth operation and may enhance productivity of the undertakings. The concept of working culture is intended in this context to mean a reflection of the essential value systems adopted by the undertaking concerned. Such a culture is reflected in practice in the managerial systems, personnel policy, principles for participation, training policies and quality management of the undertaking" (Joint ILO/WHO Committee on Occupational Health)

Those in the field of occupational health come from a wide range of disciplines and professions including medicine, psychology, epidemiology, physiotherapy and rehabilitation, occupational therapy, occupational medicine, human factors and ergonomics, and many others. Professionals advise on a broad range of occupational health matters. These include how to avoid particular pre-existing conditions causing a problem in the occupation, correct posture for the work, frequency of rest breaks, preventative action that can be undertaken, and so forth.

The research and regulation of occupational safety and health are a relatively recent phenomenon. As labor movements arose in response to worker concerns in the wake of the industrial revolution, worker's health entered consideration as a labor-related issue.

In 1840 a Royal Commission published its findings on the state of conditions for the workers of the mining industry that documented the appallingly dangerous environment that they had to work in and the high frequency of accidents. The commission sparked public outrage which resulted in the Mines Act of 1842. The act set up an inspectorate for mines and collieries which resulted in many prosecutions and safety improvements, and by 1850, inspectors were able to enter and inspect premises at their discretion.

Otto von Bismarck inaugurated the first social insurance legislation in 1883 and the first worker's compensation law in 1884 – the first of their kind in the Western world. Similar acts followed in other countries, partly in response to labor unrest.

Efforts by the federal government to ensure workplace health and safety were minimal until the passage of OSHA. The American system of mass production encouraged the use of machinery, while the statutory regime did nothing to protect workplace safety. For most employers, it was cheaper to replace a dead or injured worker than it was to introduce safety measures (Hounshell, David; 1984). Tort law provided little recourse for relief for the survivors of dead workers or for injured employees. After the Civil War, some improvements were made through the establishment of state railroad and factory commissions, the adoption of new technology (such as the railway air brake), and more widespread availability of life insurance. But the overall impact of these improvements was minimal (Aldrich, Mark; 1997).

The first federal safety legislation was enacted in the Progressive period. In 1893, Congress passed the Safety Appliance Act, the first federal statute to require safety equipment in the workplace (the law applied only to railroad equipment, however). In 1910, in response to a series of highly publicized and deadly mine explosions and collapses, Congress established the United States Bureau of Mines to conduct research into mine safety (although the Bureau had no authority to regulate mine safety). Backed by trade unions, many states also enacted workers' compensation laws which discouraged employers from permitting unsafe workplaces. These laws, as well as the growing power of labor unions and public anger toward poor workplace safety, led to significant reductions in worker accidents for a time (Aldrich; 1997).

#### *B. Statement of the Problem*

The provision of personal protective equipment by the management and usage of the personal protective equipment by the employee/staff have become a challenging issue among most working environment within the whole federation, whereby the staffs are being exposed to hazards with their working environment which can be either physical, biological, mechanical, chemical etc. which mostly lead to deformity of loss of life in a long run. Therefore, there is need to enlighten the staff on the importance of personal protective equipment in preventing the occurrence of industrial accident.

#### *C. Aim of the Study*

This project work is aimed at assessing the role of personal protective equipment in preventing industrial accident.

#### *D. Objectives of Study*

- To discuss on what personal protective equipment is all about.
- To discuss on types of personal protective equipment.
- To identify protective clothing and ensembles.
- To discuss on hazard assessment.
- To know means of selecting personal protective equipment.
- To discuss on the training of employees on the proper use of PPE.

#### *E. Significance of the Study*

This project work titled "An Assessment on the Role of Personal Protective Equipment in Prevention of Industrial Accident" will help the researcher, community members, the employers, the employees, the health workers, students, other researchers, policy makers and the government to know what Personal protective equipment is all about and its role in the industries, factories and companies as a whole in prevention of industrial accident.

#### *F. Scope of the Study*

This project work is aimed to assess the role of personal protective equipment in prevention of industrial accidents.

### G. Research Questions

For the researcher to achieve its objectives, the following questions were drafted;

- What is personal protective equipment all about?
- What are the types of personal protective equipment we have?
- What is protective clothing and ensembles?
- How is hazard assessed?
- What are the means of selecting personal protective equipment?
- Is there need for training of employees on the proper use of PPE?

### H. Limitation of the Study

This study would have been carried out in Kaduna metropolis but was limited to a welding organization within Kinkinau area due to some factors thus;

- **Financial Constraint:** Due to lack of enough funds for purchasing research materials, it hinders the appropriate findings.
- **Language Barriers:** The researcher does not speak some of the respondents language, thus makes her to use interpreter who could not adequately interpret the information needed well.
- **Time:** The time of this research study was short; in view of this the researcher could not cover many areas for more facts.

### I. Definition of Major Terms

- **Health:** Health is the level of functional or metabolic efficiency of a living organism. In humans, it is the general conditions of a person's mind and body, usually meaning to be free from illness, injury or pain.

The World Health Organization (WHO) in 1946 defined health as "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.

- **Occupation:** Occupation may refer to as any activity engaged by an individual which serves as his regular sources of livelihood. Occupations include; farming, mining, chimney sweeping, baking, blacksmithing etc.
- **Occupational Environment:** Occupation environment refers to all the external conditions and factors in the place of work that have impacts on the health of workers.
- **Occupational Health:** Occupational health and safety is the sum total of all activities and programmes that are engaged upon, aiming to attain and maintain the highest level of health and safety of all category of workers in all occupations.
- **Non-Occupational Environment:** Non-occupational environment are places that do not constitute occupational hazards. They include places like home and recreational centers. However, in most cases factors from occupational environment may affect non-occupational environment and vice versa. For instance, stress at work may affect

your sleep at home; likewise stress at home may affect the workers performance at work..

## II. RESEARCH METHODOLOGY

This chapter deals with the method adopted in conducting this research. It discusses the procedures used in conducting the research work, the population and sample of the study, the sample size, the instrument used for data collection and how they will be administered. Other issues discussed include; the method and technique(s) used in analyzing the data collected and the difficulties encountered in data collection.

### A. Research Design

The survey method of research was used for this study. This method involves the study of both large and small population by selecting and studying sample chosen from the population to discover the relative incidence, distribution and interrelation of variables.

Therefore, personal observation, primary and non-primary materials, questionnaire were all used by the researchers to gather all necessary information.

### B. Area of the Study

The area of the study is Kinkinau Area of Kaduna South Local Government Area.

### C. Population of the Study

The population of the study comprises of selected workers from various welding construction organization within the study area, which are 1234 which was gathered during the process of field work.

### D. Samples and Sampling Technique

The sample of the study is 100 people working in the welding department within the area of the study, which is Kinkinau, Kaduna south local government area of Kaduna state. The sampling technique used for this study is simple random sampling; it is easy to use because each element has equal and independent chance of being included in the sample.

### E. Instrument for Data Collection

The instrument used for data collection is questionnaire. Questionnaire refers to the statement which the respondents have to react to, in writing so as to give out information required.

### F. Method of Data Collection

The researcher intend administer 100 questionnaires randomly to my respondents, the questionnaire covered areas like awareness on personal protective equipment, their importance, types of personal protective equipment etc.

**G. Validity of the Instrument**

After all necessary correction and observation by the supervisor, the instrument will be validated for data collection.

**H. Reliability of the Instrument**

The questionnaire was pre-tested in an area similar to the study and it was found reliable. This is used in restricting the questionnaire and for confidential use.

**I. Method of Data Analysis**

The returned filled questionnaire from the respondent will scored in percentage and presented in tabular form.

By using the formula:  $\frac{\text{No of responses}}{\text{Total No.of respondents}} \times 100$

**III. DATA PRESENTATION AND ANALYSIS**

**A. Results**

AGE RANGE	FREQUENCY	PERCENTAGE
15 – 25	30	31.3%
26 – 35	41	42.7%
36 and above	25	26%
<b>TOTAL</b>	<b>96</b>	<b>100%</b>

Table 1:- Age distribution of respondents

SEX	FREQUENCY	PERCENTAGE
Male	86	89%
Female	10	11%
<b>TOTAL</b>	<b>96</b>	<b>100%</b>

Table 2:- Sex distribution of respondents

OCCUPATION	FREQUENCY	PERCENTAGE
House wife	10	11%
Civil servant	64	66%
Students	22	23%
<b>TOTAL</b>	<b>96</b>	<b>100%</b>

Table 3:- Occupational status of respondents

MARRIED STATUS	RESPONDENTS	PERCENTAGE
Married	76	79.2%
Single	20	20.8%
<b>TOTAL</b>	<b>96</b>	<b>100%</b>

Table 4:- Distribution of Marital Status

LEVEL OF EDUCATION	RESPONDENTS	PERCENTAGE
Primary	13	13.5%
Secondary	53	55.2%
Tertiary	30	31.3%
<b>Total</b>	<b>96</b>	<b>100%</b>

Table 5:- Distribution of Educational status

OPTION	RESPONDENTS	PERCENTAGE
Yes	43	44.8%
No	53	55.2%
<b>Total</b>	<b>96</b>	<b>100%</b>

Table 6:- Do you have any idea on personal protective equipment?

OPTION	RESPONDENTS	PERCENTAGE
Yes	70	73%
No	26	27%
<b>TOTAL</b>	<b>96</b>	<b>100%</b>

Table 7:- Does the organization provide you with personal protective equipment?

OPTION	RESPONDENTS	PERCENTAGE
Helmet	25	26%
Goggles	10	10.4%
Uniform	30	31.3%
Hand gloves	31	32.3%
<b>TOTAL</b>	<b>96</b>	<b>100%</b>

Table 8:- Which of the Personal protective equipment is provided for you?

OPTION	RESPONDENTS	PERCENTAGE
Yes	30	31%
No	66	69%
<b>TOTAL</b>	<b>96</b>	<b>100%</b>

Table 9:- Does this organization provide welfare services for its workers?

OPTIONS	RESPONDENTS	PERCENTAGE
Yes	70	72.9%
No	26	27.1%
<b>TOTAL</b>	<b>96</b>	<b>100%</b>

Table 10:- Is there any hazard that can arise from your working environment?

OPTION	RESPONDENTS	PERCENTAGE
Physical hazard	40	42%
Biological hazard	13	14%
Chemical hazard	20	21%
Mechanical hazard	23	24%
<b>Total</b>	<b>96</b>	<b>100%</b>

Table 11:- What forms of hazard mostly occur in this organization?

OPTION	RESPONDENTS	PERCENTAGE
Yes	60	62.5%
No	36	37.5%
<b>TOTAL</b>	<b>96</b>	<b>100%</b>

Table 12:- Is there any problem affecting use of personal protective equipment in this organization?

OPTION	RESPONDENTS	PERCENTAGE
Lack of usage	40	42%
Lack of adequate PPE	20	21%
Ignorance on the usage of PPE	26	27%
<b>TOTAL</b>	<b>96</b>	<b>100%</b>

Table 13:- What are the problems affecting the usage of personal protective equipment in this organization?

OPTIONS	RESPONDENTS	PERCENTAGE
Yes	50	52%
No	46	48%
<b>TOTAL</b>	<b>96</b>	<b>100%</b>

Table 14:- Is there any contributory measures health workers can take to prevent occupational hazard within your working environment?

OPTIONS	RESPONDENTS	PERCENTAGE
By Health Educating workers on usage of PPE	76	79%
By enacting a law on the usage of PPE	20	21%
<b>TOTAL</b>	<b>96</b>	<b>100%</b>

Table 15:- What are the contributory measures health workers can take in preventing occupational hazard within your working environment?

**IV. CONCLUSION**

Conclusively, an effective usage of Personal protective equipment can be very benefiting in preventing, controlling, and elongating the life of both employees and employers from any form of hazard that can arise within the working environment such as physical hazard, biological hazard, chemical hazard, and mechanical hazard, which can lead to loss of life or lead to deformity.

**RECOMMENDATION**

From the foregoing account, it would be seen that the requirement for Personal protective equipment are made quite inadequate in most of the working environments within Kinkinau area of Kaduna South local government area; so;

- The state government should be embarking on a plan to establish an everlasting solution to the usage of personal protective equipment within each and every working environment.
- The management should try and continue training and retraining their staff at least four times in a year by employing a professional on each aspect of the training to be covered.
- Proper medical examination should be conducted on the employees before being allocated to their various posting areas within the working environment.

- Health workers should also be employed within the working environment so as to be health educating and enlightening the workers on the use of protective wears and maintenance of good human relationship among staff.
- There should be provision of good working environment, information and education to employers and also discipline and implementation of instructions should be implemented by the employers.
- The safety and health processes and performance of the organization should be compared with others in order to improve health and safety performance.
- The management each and every working environment should try as much as possible to provide their employees with personal protection equipment such as helmet, rain boot, uniform, hand gloves etc.
- The management should also provide welfare services for its workers such as free medical health and subsidized transportation.

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