EFFECTIVE USE OF PERSONAL PROTECTIVE EQUIPMENT AT BMW SA, ROSSLYN ASSEMBLY PLANT GAUTENG, SOUTH AFRICA

By

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DECLARATION

I, Noko Masalesa, declare that this mini dissertation submitted for the Master's Degree in Business Administration is my own unaided work. That all references used have been duly acknowledged, and that this research study has not previously been submitted for any degree or examination at any university.

Signature.....

Date.....

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DEDICATION

I dedicate this work to my late parents Mr Jack Piet and Rosina Masalesa.

ABSTRACT

Employees' health and safety in the workplace have become an integral component of the viability of a business for employers, labour unions, governments and environmentalists in general. In order to maintain safety standards in the workplace, the South African government introduced Occupational Health and Safety Act 85 of 1993 in terms of which employers are obliged to create and maintain a safe working environment for their employees as well as contractors and visitors.

This study sought to investigate the causes of ineffective use of Personal Protective Equipment (PPE) by employees at BMW (SA) Rosslyn Assembly Plant, Gauteng Province of South Africa. The study employed both quantitative and qualitative research methodologies to investigate the reasons for the reluctance of employees at BMW SA, Rosslyn Plant to use PPE; to identify the limitations that some of the PPE have; and to determine the employees knowledge on the importance of using PPE among others.

The findings, in agreement with literature, indicate that problems of the reluctance to effectively use PPEs can be solved by using training to sensitize workers about the importance of PPEs. It is through training that the correct usage of PPEs can be enhanced, leading to the improvement of safety at BMW SA, Plant Rosslyn.

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8. ABBREVIATIONS

PPE	Personal Protective Equipment
OHS	Occupational Health and Safety
OSHA	Occupational Health and Safety Authority
ILO	International Labour Organisation
WHO	World Health Organisation
UN	United Nations
USA	United States of America
SPSS	Statistical Package for Social Science
SA	South Africa

CHAPTER 1: GENERAL ORIENTATION

1.1 INTRODUCTION

Employees' health and safety issues in the place of work have become an integral part of the viability of a business for employers, labour unions, governments and environmentalists in general (Macintosh & Gough,1998: 55; Anderson & Gough, 2004:21). Naturally, a need for safety is an intrinsically human concern. Every person in life whether one is employed or not, both at the workplace and outside the workplace has the inborn need to be safe.

In South Africa creating and maintaining a safe working environment is mandatory in terms of Section 8 (1) of Occupational Health and Safety Act 85 of 1993. Of particular importance is the fact that the employers' obligation to create and maintain a safe working environment is also applicable to other persons other than their employees only. For example, section 9 (1) of the OHS Act 85 of 1993 also stipulates that: 'every employer shall conduct his undertaking in such a manner as to ensure, as far as is reasonably practicable, that persons other than those in his employment who may be directly affected by his activities are not thereby exposed to hazards to their health or safety".

Besides, employees as mature individuals are responsible for every decision they make with regard to securing their own health and safety in every social setting (Bennet, 2002:54). As far as a work place is concerned, all employees are also obliged to take reasonable steps to ensure that they are safe. Section 14 (a) of the Occupational Health and Safety Act 85 of 1993 stipulates that: "Every employee shall at the workplace take reasonable care for the health and safety of himself and of other persons who may be affected by his acts and or omissions". The Act further states in Section 14 (d) that: "if any situation which is unsafe and unhealthy comes to his attention, as soon as practicable report such incident to his employer or to the health and safety representative for his workplace or section thereof, as the case may be who shall report it to the employer".

This research advances the view that employees play a central role in the creation of a safe workplace environment and that through their unions they can exert significant

influence in their workplaces. The purpose of this chapter is to provide an overview and outline of the dissertation. Dryzek and Schlosberg (2005:50) argue that: "Environmental justice demands the right to participate as equal at every level of decision making including needs assessment, planning, implementation, enforcement and evaluation of workplace conditions".

According to Abeyseker (2007:35), the wearing of personal protective equipment (PPE) can be a very effective means of preventing or reducing exposure to occupational injuries. The types of PPE available are numerous and varied and are used to protect eyes (goggles face shields), skin (gloves, slicker suits, boots), and respiratory system (dust masks, respirators) (Schoeman & Schroder, 1994: 86).

Robinson (2001:35) indicates that the selection of PPE depends on the job being done, regulatory requirements, the physical and chemical properties and the hazards of the chemicals used.

1.2 BACKGROUND OF THE STUDY

Employees working at manufacturing plants such as BMW SA are often exposed to occupational injuries and or diseases which oblige employers to provide such employees with PPE to protect them against such injuries and diseases. The type of PPE issued to employees depend on the nature and type of work performed , as well as the risks that such PPE are aiming to mitigate.

According to Guild, Ehrlinch, Johnson and Ross (2001:425), various problems that employees encounter in their daily use of PPE include among others discomfort and improper size which may create communication problems. Employees often remove their hearing protectors and even looseng them so that they can communicate with each other, hear warning signs of moving equipment such as forklifts, and tow motors that are normally used in the day to day execution of tasks (Franks, Stephenson and Merry, 1996).

Despite being exposed to occupational injuries and diseases, most employees do not wear PPEs issued to them by their managers. The excuses of many employees for not wearing PPE are amongst others, discomfort, interference with the performance of tasks

and that it is too much trouble to put them on and take them off (Hattingh & Accut, 2003:115).

The legislation has placed an obligation regarding the use of PPE in terms of Occupational Health and Safety Act 84 of 1993 (OHS Act). According to section 13 of the Occupational Health and Safety Act 85 of 1993, every employer shall:

(a) as far as is reasonably practicable, cause every employee to be made conversant with the hazards to his health and safety attached to any work which he has to perform, any article or substance which he has to produce, process, use, handle which should be taken and observed with respect to those hazards;
(b) inform the health and safety representatives concerned beforehand of inspections, investigations or formal inquiries of which he has been notified by an inspector, and of any application for exemption made by him in terms of section 40 and;
(c) inform a health and safety representative as soon as reasonably practicable of the occurrence for which such representative has been designated;
(d) every employer shall at work take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions; and
(e) if any situation which is unsafe or unhealthy comes to employee's attention, as soon as practicable report such situation to his employer.

In terms of section 14 of the Act, every employee has the following general duties at the workplace:

(a) take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions;

(b) as regards any duty or requirement imposed on his employer or any other person by this Act, co-operate with such employer or person to enable that duty or requirement to be performed or complied with;

(c) carry out any lawful order given to him, and obey the health and safety rules and procedures laid down by his employer or by anyone authorized thereto by his employer, in the interest of health or safety;

(d) if any situation which is unsafe or unhealthy comes to his attention, as soon as practicable report such situation to his employer or to the health and safety representative for his workplace or section thereof, as the case may be, who shall report it to the employer; and

(e) if he is involved in any incident which may affect his health or which has caused an injury to himself, report such incident to his employer or to anyone authorized thereto by the employer, or to his health and safety representative, as soon as practicable but not later than the end of the particular shift during which the incident occurred, unless the circumstances were such that the reporting of the incident was not possible, in which case they shall report the incident as soon as practicable thereafter.

The PPE (personal protective equipment), for the purpose of this study, is divided into categories according to its use. There is equipment for head protection; for hearing protection models; torso protection; hand protection; foot protection; and eye protection.

1.3 PROBLEM STATEMENT

To be protected against occupational injuries and illness that they are exposed to in their workplace, employees working in manufacturing plants such as BMW SA Rosslyn Assembly are issued with Personal Protective Equipment. BMW SA Roslyn employees are provided with PPEs for their own safety by the employer. Despite efforts by the employers to provide employees with PPE to protect themselves against work related injuries and illness, employees continue to sustain occupational injuries and illnesses. Latest reports indicate that work related injuries are caused by human factor and unsafe working conditions, these findings sparked interest but also raise concerns (Machabe & Indermun: 2013).

The researcher observed and conducted interviews with some workers at the plant where a number of them have shown some reluctance to use PPE, and they also mentioned limitations in the PPE used by employees as some employees still sustained occupational injuries and illnesses despite using PPE. As Marangon (2010) states, one of the concerns

of professionals who work with job safety is to provide, guide and observe the correct use of PPE (personal protective equipment). Accident prevention is the objective they want to attain. This safety is characterized as a set of measures adopted to minimize workplace accidents, occupational diseases, while also preserving the integrity and ability to work for professionals involved in the working conditions.

Employees should be encouraged to always use PPEs where they are supposed to. If they do not, reasons for this should be sought, and the importance should be made clear to them. Employees should also be aware of their responsibilities regarding the use of protective clothing at the work place as stipulated by section 14 of OHS Act 85 of 1993.

There is therefore a need to determine in an investigative manner if there may be reasons leading to employees not to put on PPE at the work place. The purpose of this study is therefore to evaluate effective use of Personal Protective Equipment at BMW SA, Rosslyn Plant with the view to understand the reasons why employees do not use PPE issued to them, why do some employees still sustain occupational injuries and illnesses even though they are using PPE in the execution of their duties, as well as to identify specific problems and or limitations experienced by employees with regard to the use of PPE.

1.4 THE AIM OF THE STUDY

The aim of this study is to investigate the causes of ineffective use of Personal Protective Equipments by employees at BMW South Africa Rosslyn Assembly Plant, Gauteng Province of South Africa.

1.4.1The objectives of the study

To achieve this aim, the following objectives were set:

- investigate the reasons for the reluctance of employees at BMW SA, Rosslyn Plant to use PPE, and to determine measures which can be used to encourage employees to always use PPEs ;
- identify the limitations that some of the PPE have ;
- determine the employees knowledge on the importance of using PPE;

- determine employees' knowledge of their responsibilities for safety as stipulated in section 14 of OHS Act 85 of 1993; and
- recommend specific measures that can be implemented to address all the problems encountered by employees at BMW South Africa regarding the use of personal protective equipments, based on the data collected.

1.5 RESEARCH METHODOLOGY

The study follows both the quantitative and qualitative research methodologies. It used a questionnaire as an instrument to collect information from participants. This questionnaire had quantitative feature, where numbers were used and a qualitative feature where participants had to provide information in the form of words. The study also used a non-probability convenience sampling technique to select participants from the study population. Data collected was analyzed and presented with assistance of tables, diagrams, charts and figures. A quantitative analysis was done using the Statistical Package for Social Science (SPSS) version 16.0.

1.6 SIGNIFICANCE OF THE STUDY

According to the literature review conducted, very little research has been conducted on the actual problems and experiences encountered by employees with the use of PPE (Pilusa, 2008). This research therefore intends to make a contribution in this regard by exploring the problems encountered by employees at BMW South Africa Assembly Plant and also to highlight the reasons why employees do not make use of the PPE issued to them with a view of providing intervention measures in this regard. The findings may also assist employers to implement the Occupational Health and Safety Act 85 of 1993 fully.

The significance of this study is supported by Hattingh and Accut (2003:115) who state that investigations of this type may encourage employees on adhering to stipulated safety measures in organizations.

1.7 RESEARCH QUESTIONS

The following are the research questions that this study aims to answer:

- why are employees at BMW SA reluctant to use of personal protective equipment?
- how can employees be encouraged to always use the PPE provided to them?
- what are the limitations do some PPEs have?
- what are the employees' knowledge regarding the importance of using personal protective equipments?
- what is the employees' knowledge regarding their responsibilities for safety as stipulated in section 14 of OHS Act 85 of 1993?
- what measures can be implemented to prevent or deal with problems encountered by employees at BMW SA Rosslyn Assembly Plant regarding the use of PPEs?

1.8 CONSTRAINTS OF THE STUDY

The variable literacy levels of the target participants made some of them unable to fill the research questionnaire. Since the research was conducted at BMW SA, Rosslyn, Gauteng Province only, therefore the results will not be generalized, but the study could be replicated in other Motor Assembly Plants in South Africa. The other constraint was that of using self reported questionnaires which excluded employees who could not read or write.

1.9 CHAPTER LAYOUT

This section presents the research plan in which the researcher indicates what he plans to do and how he plans to set about doing it (Mouton & Marais, 1992:176). This study is therefore divided into five chapters which are outlined as follows:

Chapter 1: General Orientation

This chapter focuses on the introduction and overview of the study. Aspects discussed in this chapter are: introduction, background of the study, problem statement, aim and objectives of the study, significance of the study, research questions, and constraints of the study and the layout of the study.

Chapter 2: Literature Review

This chapter reviews literature to give a clearer understanding of the nature and meaning of the problem that has been identified. In this study literature review will discuss the use of PPE with specific emphasis on different problems and or challenges experienced with different types of PPE.

Chapter 3: Research Methodology

This chapter aims to discuss the methodological dimension of the study. It also covers the population, sampling and ethical considerations. Data collection and data analysis are also important sections to be discussed.

Chapter 4: Discussion of Findings

This chapter discusses the findings derives from the study.

Chapter 5: Conclusions and Recommendations

The purpose of this chapter is to discuss the conclusions, recommendations and limitations of the study.

1.10 CONCLUSION

It is an indisputable fact that employees working in manufacturing plants continue to sustain occupational injuries and diseases despite being issued with PPE to protect themselves. Although employees experience some challenges with regard to the use of some PPEs however, it is also important to mention that ignorance by most employees regarding their obligations as stated in Occupational Health and Safety Act 85 of 1993 is a problem.

The main purpose of the study was to identify problems encountered by BMW South Africa Rosslyn, Gauteng employees while using PPE in an effort to reduce or solve the problems. In chapter 2 a literature review will be discussed.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

In this research literature review covered information provided regarding problems encountered by employees in their daily use of PPE at their workplace. Literature review focused on the following key areas of the research:

- brief background of BMW SA Rosslyn Assembly Plant;
- South African legislative requirements regarding the use of PPE;
- Occupational Health and Safety Act 85 of 1993 and Regulations;
- international perspective on Occupational Health and Safety ;
- specific problems encountered with PPE;
- general problems encountered with the use of PPE;
- challenges of Occupational Health and Safety implementation; and
- improving Occupational Health and Safety through policy initiative

2.2The definition of PPE and its importance

PPE refers to protective clothing helmets, goggles, or other garment designed to protect the wearer's body or clothing from injury by electrical hazards, heat, chemicals, and infection, for job related occupational safety and health purposes, and in sports, martial arts, and combat, among others. There are different types of PPE related to construction. The most common being head, hand, face, eye, foot, and body protection.

Research shows that the major causes of construction and car manufacturing plants accidents are related to human behavior, difficult work site conditions, inadequate use of protective equipment, and poor safety management, which result in unsafe work methods, equipment and procedures (Abdelhamid & Everett, 2000).

It can thus be said that adequate, timely and appropriate use of PPE is essential and can as well contribute extensively to improving the safety performance of the industry. Hence this is an aspect that requires further insight, especially as to why an appreciable

proportion of construction and car manufacturing plants workers do not wear PPE. This diagnosis will be significant, in particular, towards developing strategic recommendations for improved usage of PPE in the industry.

PPE items/devices are not "one size fits all", PPE that fits poorly will not properly protect the wearer and may make it more difficult to work. For example, loose-fitting protective clothing can get caught in moving machine parts; poorly fitting gloves will increase the effort required to do a job. Also, an employee is less likely to use PPE that causes discomfort (Department of Labour and Industries, 2003:10).
One of the key challenges facing the occupational health and safety profession in the 21st century is protecting employees' health and safety in a global economy characterized by a ferocious competition to reduce production costs and a marked decline in the development and enforcement of governmental workplace regulations (Brown, 2005:32).

PPE is the least effective way to protect employees because it does not eliminate or control the hazard itself, but rather places a barrier between the worker and the hazard. PPE devices alone should not be relied on to provide protection against hazards, if the equipment fails; the worker is immediately exposed to the hazard (Department of Labour and Industries. 2003:41).

The International Labour Organization (ILO) estimates that over 2.3 million people die from work-related accidents or diseases each year, of which over 2 million are caused by various types of occupational disease. According to the World Health Organization (WHO), occupational disease has become by far the most prevalent danger faced by people at their work today (ILO, 1999).

To promote decent work in the global economy, the ILO launched the Safe work programme (ILO, 1999:66) which is designed to be a strategic means of reducing poverty and promoting social integration and of giving effect to the more integrated approach to economic and social policies.

According to the ILO and WHO, health and safety at work are seen as fundamental rights, and vital elements of the 'decent work' agenda. Occupational health and safety is a crucial

component of CSR and companies must recognize that they cannot be good externally while having a poor social performance internally (ILO, 1999).

Throughout the world, most adults spend most of their time at work, and while work provides a number of economic and other benefits, the employment environment and the nature of work itself are both important influences on health (Marmot & Wilkinson, 2006:98).

In Europe, recent OHS promotion strategies by the European Commission and the European Agency for Safety and Health at Work (EU-OSHA) have attempted to link OHS with Customer Services Relations, establishing a business case of strategic importance for organizations. Labour standards are also a key component in the UN Global Compact; however the three principles in the Compact do not mention OHS provision explicitly. Specialized protective wear may be necessary for certain jobs or work conditions (Department of Labour and Industries, 2003:61) including vehicle assembly plants.

2.2. BRIEF BACKGROUND OF BMW SA ROSSLYN PLANT

BMW SA Rosslyn Assembly Plant is located in 06 Frans du Toit Street, Rosslyn Pretoria, Republic of South Africa. It was the first BMW assembly line established outside Germany, with production starting in 1973. Rosslyn Assembly Plant exports over 50,000 3 Series cars a year and has a significant increase in local content. It operates on three shift systems and it employs about 2,500 people and produces about 220 units per day (Ambe & Badenhorst – Weiss, 2010). Ambe and Badenhorst – Weiss (2010) further state that Rosslyn Assembly Plant makes Four Door 3 Series Sedan, right and left hand drive for both local and overseas market. About 80% of the cars produced by the plant are exported to countries such as USA, Japan and Australia while the remaining is for the South African market.

The Rosslyn Assembly Plant has many departments which include the Assembly department, the body shop department, the logistics department, the Training Centre and the waste management department. These employees have to put on PPEs in their daily in their working environment.

2.3 LEGISLATIVE REQUIREMENT REGARDING THE USE OF PPE

Providing a safe working environment for employees stills remain a challenge for most countries due to either lack of strict legislations that oblige companies to put employees' health and safety on top of their agenda. In South Africa in particular, it is worth noting that a lot of progress has been made because South Africa has specific legislations that compel or oblige employers to create and maintain a safe working environment (Rosenstock, Cullen, & Fingerhut, 2006).

This has led to the government coming up with legislation which forces companies to have standard requirements for the safety of their employees. These requirements among others include the provision of PPEs to employees.

With time, increased requirements of employees and organizations in terms of PPE performance have led to the need for more reliable and realistic characterization methods (Dolez & Khanh, 2009:351). It was a too common occurrence when visiting the workplaces that PPEs had indeed been bought but employees were not using them, thereby exposing themselves and their colleagues to the risk of sustaining occupational injuries and diseases. Inadequacy of PPE also prevented their use by employees (Chullen, 2012:5).

2.3.1. Occupational Health and Safety Act 85 of 1993 and Regulations

The main purpose of Occupational Health and Safety Act 85 of 1993 is to provide a proactive attempt at maintaining a safe and healthy working environment. According to section 8(1) of the Act, every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees. Section 8 (2) of the Act further states that "without derogating from the generality of an employer's duties under subsection (1), the matters to which those duties refer include among others the following:

> (a) the provision and maintenance of systems of work, plant and machinery that, as far as is reasonably practicable , are safe and without risks to health;
>
> (b) taking such steps as may be reasonably practicable to eliminate or mitigate any hazards or potential hazards to the safety or health of employees, before resorting to the Personal Protective Equipment;

(e) providing such information, instructions, training and supervision as may be necessary to ensure, as far as is reasonably practicable, the health and safety at work of his employees;

(f) taking all the necessary measures to ensure that the requirements of this Act are complied with by every person in his employment or on premises under his control where plant or machinery is used; and

(g) enforcing such measures as may be necessary in the interest of health and safety.

Section 9(1) on the other hand stipulate that "every employer shall conduct his undertaking in such a manner as to ensure as far as is reasonably practicable, that persons other than those in his employment who may be directly affected by his activities are not thereby exposed to hazards to their health or safety".

Some of the requirements of the Occupational Health and Safety Act No 85 of 1993 (OHSACT) are that companies must create a health and safety policy under the chief inspectors directions (NOSA, 2011:7). According to section 7 of the Act, the function of the SHE policy regards the protection of health and safety of employees at work. The act further requires that the CEO must sign this policy whereby the company's commitment, responsibility and accountability for health and safety is well stated in order to promote health and safety in the work place (NOSA, 2011:7).

General Safety Regulations 2 of the OHS Act provides minimum standard legislation in this regard. It elaborates on the matter by stipulating that the employer must provide the necessary equipment and facilities to ensure that any person exposed to hazards and risks at a workplace or on the premises or in the course of employment where machinery is used, is safe. The regulation also stipulates that where it is not practicable to safeguard the condition or situation, the employer or user of machinery, shall take steps to reduce the risk as much as is practicable. It should be noted that the main aim should be to firstly prevent or secondly mitigating the risk associated with the exposure to a particular hazard. If the hazard or risk cannot be removed, the next option would be to apply appropriate steps or measures to mitigate it. PPE should be used when it has been

determined that its use will lessen the likelihood of occupational injury and/or illness and when other protection methods are not available. PPE is used to reduce or minimize the exposure or contact to injuries physical, chemical, ergonomic, or biological agents. PPE basically creates a barrier against workplace hazards (Boschof: 2012).

The act further mentions that the use of personal protective equipment as control measures should be considered as a last resort because:

- it does not remove or reduce the hazard at source and therefore does not really address the hazard;
- failure of personal protective equipment would expose workers to harm;
- there is generally poor compliance with use of personal protective equipment on the part of workers; it can give a false sense of security;
- it shifts responsibility from employer to employee;
- it often makes working uncomfortable;
- it relies on the subjective effort of the worker to use effectively; and
- it is often not maintained or kept in a hygienic state.

2.4 THE PROVISION OF EDUCATION AND TRAINING TO EMPLOYEES.

Because of the danger involved in some employment situations, it is important that employees be provided with training regarding the use of PPE. To this effect the act mentions that Education and training are important. Education is required to explain to workers the nature of hazard to which they are exposed, what the company has done to bring down exposure levels, advantages and limitations of personal protective equipment, and the reason why workers should make use of personal protective equipment.

According to the Department of Labour and Industries (2003:46), workers should receive training on selection criteria, proper use of personal protective equipment, fit-testing, inspection, repair, storage and maintenance of equipment.

The use of personal protective equipment requires behavioural change on the part of the worker as its main weakness as behavioural change is difficult to achieve. To maximise such change, new workers should undergo induction training to inculcate good work habits; and older workers must receive regular refresher training to counter bad habits that may have developed.

The Occupational Health and Safety Act 85 of 1993 and Regulations also stipulates that employers are required to train each employee who must use PPE. Employees must be trained to know at least the following:

- when PPE is necessary;
- what PPE is necessary;
- how to properly put on, take off, adjust and wear the PPE;
- the limitations of the PPE; and
- proper care, maintenance, useful life and disposal of PPE.

Employers should make sure that each employee demonstrates an understanding of the PPE training as well as the ability to properly wear and use PPE before they are allowed to perform work requiring the use of the PPE. If an employer believes that a previously trained employee is not demonstrating the proper understanding and skill level in the use of PPE, that employee should receive retraining. Other situations that require additional or retraining of employees include the following circumstances: changes in the workplace or in the type of required PPE that make prior training obsolete.

Training should not be a once off process. There should always be follow up trainings periodically depending on what the employer and employees view as a reasonable period.

2.5 INTERNATIONAL PERSPECTIVE ON OCCUPATIONAL HEALTH AND SAFETY

Regulatory health and safety policies at the international as well at the national level outline the minimum requirements for health and safety protection at the work-place that must be adopted by enterprises. Awwad (2001:1) states that the Occupational Health and Safety Assessment Series specification (OHSAS) 18001 have been developed as a recognizable occupational health and safety management system standard against which management systems can be assessed and certified.

OHSAS 18001 is compatible with the ISO 9001 (Quality) and ISO 14001 (Environmental) management systems standards, which facilitates the integration of quality, environmental and occupational health and safety management systems by organizations. OHSAS

18001 is intended to help an organization to control occupational health and safety risks (Awwad, 2001:1).

A guide to PPE (2008) states that the PPE Regulation together with the Health and Safety at Work Regulation of 1992 regulates that the employer has an overall duty to ensure the safety of employees and visitors at the workplace. Providing PPE wherever health and safety risks are not adequately controlled at work can ensure this.

The Regulation of the Safety and Health Administration as reviewed in the New York Committee for Occupational Safety and Health (2007) states that the employer must ensure that:

- PPE used is the right one for the job that is done;
- PPE is always maintained correctly;
- PPE that is provided adequately protects the employees;
- PPE issued fits the employee properly;
- PPE issues is not defective;
- employees are trained so that they know which PPE is necessary and when PPE is necessary;
- employees are trained on how to put PPE on and off; and
- employees are trained on how to put PPE on how to dispose of PPE.

According to Safe and Healthy Working (2007), the Personal Protective Equipment at work Regulation states that where risks cannot be controlled by any other means, PPE should be correctly selected and used in order to protect employees. This regulation also has specific requirements for provision, maintenance and use of PPE. Under the general requirement of the Health and Safety at Work Act, employees cannot be charged for the provision of maintenance of PPE.

Because economic trends are global, the subject of safety in the workplace has been treated as being crucial that international conventions instituted the international organization for standardization to assist regulate and bring about improved workplace conditions and services (Zwetsloot, 2003: 89). A wide range of issues are covered in the topic of employee safety and health in the workplace. These include issues such as

working with minerals and chemicals which are dangerous and include the following as mentioned by (Armour, 2003:65):

- exposure to contagious diseases and passive smoking psychological safety such as stress, fears and attitudes (Baer & Fraser, 2003:90).
- psychosocial safety such as indifference, xenophobia, homophobia and lesbophobia (Gillen *et al.,* 2002:13).
- criminal and sexual harassment in the workplace (Kong, 1996:90).
- manufactured and manufacturing of harmful substances and innovations (Valent *et al.,* 2003:67).
- harmful infrastructural constructions such as unsafe stairways, unsafely built structures and slippery floors (Mehta and Burrows, 2001:43).
- terroristic intrusions and massacres in the workplace (Miller, 2001:23), and
- safety precautions, safety communication measures and personal protection equipment (Tan and Fitzgerald, 2002:66).

According to the Department of Labour and Industries (2003:46) it is important to provide employees with appropriate protection if they are exposed to hazards that could injure their eyes and/or faces, such as:

- flying particles;
- molten metal splashes;
- liquid chemicals;
- acids or caustic liquids;
- chemical gases or vapours;
- harmful light radiation or any light that could injure the eyes such as lasers, ultraviolet, or infrared light; and
- blood and other potentially infectious body fluids that might splash, spray, or splatter.

The selection of PPE should not be exclusively based on protection properties. Great care must also be put on functionality factors like dexterity, breathability and grip among others, since they contribute to wearers' comfort and their ability to perform their tasks

with a minimal impediment (Dolez & Khanh, 2009:354). Bennet on the other hand (2002:54) argues that industrial hygienists simply concern themselves with auditors, disability management and insurance matters rather than with employees' health and safety. He believes that industrial managers simply focus on issues of quality assurance, productivity, cost benefit and continual improvement rather than on quality of life.

The maintenance of health in industrial communities in the developing countries entails the treatment and prevention of epidemic and endemic communicable diseases, the prevention of occupational injuries and diseases, the planning and organization of medical care, training, the introduction and enforcement of standards of health, and the safety and medical care in industry (Khogali, 1982:123). In this way, OHS is treated as an investment, like quality management, where the payoff might take longer to be realised but is more sustainable (Johanson, Ahonen & Roslender, 2007:232).

Naturally a need for safety is an intrinsically human concern (Macintosh and Gough, 1998:1). Zwetsloot (2003:26) states that the OHSAS 18001 safety and health standard has proved to be an effective standard that continues to gain popularity in well established businesses all over the world. It helps bring about dramatic changes in many companies whose practices are now geared towards zero tolerance of health and safety hazards in conducting their business (Zwetsloot, 2003:33).

Bennet (2002:376) argues that when it comes to the employees' opinions on health and safety, they are often ignored due to various management styles (certain management styles do not take into account the views and opinions of employees) and a lack of an adequate health and safety policy. Chullen (2012:8) indicates that OHS should have coordinators who are qualified, and should be treated as a section on its own if things are to move. Zwetsloot (2003:54) states that the benefits that are derived from complying with the OHSAS 18001 regulation have proved to be very attractive to progressive organizations all over the World.

The standard helps to form an all embracing protective measure for the safety of the employees and makes provision for the evaluation of the success of its implementation.

As in any successful team work, there has to be a person to maintain order so that everyone should play by the rules. To ensure that order is maintained, a referee is put in place. The same applies to the workplace.

According to Hattingh and Acutt (2003:14), specialists in occupational health and safety state that occupational health is concerned with the relationship between work and health and was defined in 1950 by a joint committee of ILO and the WHO as being concerned with:

- the promotion and maintenance of the highest degree of the physical, mental and social well-being of the employees in all occupations.
- the prevention among employees of departures from health caused their working conditions.
- the protection of employees 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/her physical and psychological state.

Despite this, to date OHS has not attained a high profile in the sustainable development agenda particularly in developing countries where most people are engaged in primary industries such as agriculture, logging and mining. Although the right to health and safety at work has been stipulated in the Constitution of the WHO and ILO and is supported by a number of other United Nations documents, there still are important needs for OHS development, especially in countries where an appropriate legal frame-work and associated infrastructure are lacking (UN OHS report, 2010).

According to Bennet (2002:54), academic discourses merely concentrate on the intellectual background of health and safety management. He states that academic literature agrees that in industry, product quality tends to come before employee health (Bennet, 2002:66). Bennet also mentions that academic literature tend to put much attention on employee behaviour than on the actual worker's safety and health. This could be one of the reasons why employees at BMW SA are sustaining injuries and illness since sometimes they compromise their health by not adhering to the safety requirements.

A number of studies indicate that the level of education influences worker health and safety in the workplace. Graham (2004:66) concurs that that education assists in providing the necessary skills crucial to achieve social status and make healthy lifestyle choices. She writes that research looking at health effects of the psychosocial work environment show that individuals in positions that are characterized by routinized work with little supervision have low self-esteem and higher stress levels.

Because of this, they become prone to workplace hazards and leads to adverse effects on production by way of absenteeism. Awareness campaigns can be the solution the safety related issues and could make employees to like the job when they understand the issues of safety (Graham, 2004).

2.5 SPECIFIC PROBLEMS ENCOUNTERED WITH THE USE OF PPE

A hazard is an existing (or potential) hazardous or unsafe condition or work practice that, by itself or in combination with other conditions, could cause injury, illness, or death to employees, as well as cause property damage (Department of Labour and Industries, 2003:35).

PPE is equipment or a device that protects a worker's body from hazards and any harmful conditions (existing and potential) that may result in injury, illness, or possibly death. PPE may be an item worn on the body, such as gloves, or a device, such as a protective shield or barrier (Department of Labour and Industries. 2003:6).

2.5.1 Problems encountered with hearing protection devices

Many suppliers and manufacturers do not only have information about their own products but and good general information about personal protective equipment. It is therefore important to always contact the manufacturer for more information before deciding on the appropriate PPE for a particular work place. (Department of Labour and Industries, 2003:42).

According to Guild (2001:434), there are problems that employees encounter with the use of ear protective PPE, sometimes the deeper the earplugs are inserted, the more they

affect the hearing ability of employees. The literature on workplace safety and health administration reveals that much of the subject has been covered in different parts of the world. The ground thus covered tends to focus predominantly on disease prevention, psychosocial factors at the workplace, safety concerns at the workplace, workplace politics, workplace spirituality, epileptic medication at the workplace, safety climate at the workplace, safety management.

Schoeman and Schroder (1994:38) on the other hand state that some dirt or any other chemical contamination can lead to irritation and inflammation of the employee's ear which can become worse with simultaneous use of earplugs. Other problems encountered include:

- employees who already have noise-induced hearing loss. These employees find it very hard to hear warning sounds or even to communicate with their fellow employees resulting in them loosening their protectors so that they can be able to hear;
- faulty insertion, where employees have not been trained on how to wear or insert hearing protection devices and they are inserted inappropriately resulting in leaks; and
- attenuation leaks, where, because of wear and tear, earplugs become less flexible and no longer moulding to fit snugly into the ear canal, resulting in leaks.

Employees must inspect, clean, and maintain their PPE according to the manufacturer's instructions before and after each use (Department of Labour and Industries, 2003:30). It is further indicated that if the PPE fails or is not used, and then the worker is not protected from the hazard.

2.5.2 Torso/body PPE

The Department of Labour and Industries (2003:58) argues that it is necessary to provide employees with appropriate protection if they are exposed to hazards that could injure their torso, such as: intense heat; splashes of hot metals and other hot liquids; impacts from tools, machinery, and materials; cuts; hazardous chemicals; contact with potentially infectious materials, like blood; and radiation. Some types of PPE for the body include;

vests, aprons, coveralls, jackets, body suits, welding leathers, protective clothing for temperature extremes, cooling vests – Parkas, long-sleeved shirt - Heavy gloves and pants – Hoods, and insulated protective outer wear.

Protective clothing may limit the loss of body heat which may result in discomfort and possible stress. According to Guild et al. (2001:447), some garments may also restrict the movement of limbs, which can turn the worker slow and increase fatigue. According to Abeysekera (2007), problems encountered with body PPE include:

- discomfort in terms of compatibility with the weight and mobility.
- acceptability in terms of fashion as the item might not be accepted for the way it fits, style and material.
- if the PPE is loosely fitting, it can be caught in moving machinery resulting in injuries to the worker.

The US Department of Labour (2007) states that if PPE does not fit properly, it may not provide the designed protection and it can also discourage employees from using it.

2.5.3 Working with tools and machinery

According to the Department of Labour and Industries (2003:56), careful attention must be given to protecting your hands when working with tools and machinery. Power tools and machinery must have guards, installed or incorporated into their design, that prevent the hands from contacting the point of operation, power train, or other moving parts.

To protect hands from injury due to contact with moving parts, workers must do the following:

- ensure that guards are always in place and used.
- always lock-out machines or tools and disconnect the power before making repairs.
- treat a machine without a guard as inoperative.
- do not wear gloves around moving machinery or parts, such as drill presses, mills, lathes, and grinders.

- never wear gloves around power saws or tools with serrated edges or any power tool that has the ability to grab or snag the glove material.
- when needed, arm protectors (Arm Guards) made of the same material are available to cover the sleeve or the whole arm.
- when needed, torso protectors of the same material are available to cover the chest and abdomen.

Workers in car assembly plants always work with tools and machinery which may cause injury. Therefore, workers should always

2.5.4 Problems encountered with head PPE

Ambrose (2004) states that Helmets are the most important protective equipment and principle safety measure for preventing head injury. While helmets cannot protect workers from all injuries, they reduce the risk of fatal injury by 67%. Workers without Helmets who get accidents sustain serious head injuries, are more likely to require ambulance services, be admitted to hospital, incur higher hospital charges, and require neurosurgery, intensive care, rehabilitation, long term care and have permanent disability.

According to Abeysekera (2007), an industrial helmet does not have facilities to unlock and remove helmet in hurry when there is a need. This in ability to unlock can pose a problem to the worker if the helmet gets hooked out from something. The other reported problem is that head PPE is very uncomfortable to wear as it does not just add to changing temperatures. It can therefore become very hot to wear a helmet or hard hat even if the heat is as low as 16 degrees Celsius only becoming of inferior quality if it is very hot.

On the other hand, some helmets may become too cold in cold weather, depending on its make. Some head-protecting PPE might not be compatible with the eye, hearing and respiratory. The US Department of Labour (2007) indicates that a head PPE that does not fit properly because of it being too large or too small, is inappropriate for use as it does not serve the purpose.

2.5.5 Problems encountered with eye PPE

According to Adams (2007:204), the use of eye protection PPE may interfere with usage of respirators. Eye protection PPE also accumulate condensation which makes it difficult for employees to see well through the mist and its surface may easily scratch resulting in a field of vision being affected.

The United States Department of Health and Human Services (2007) states that employees sustain eye injuries due to the fact that they do not wear the right protection, or the eye protection does not fit the employees properly. Guild et al. (2001:436-437) state the following problems which employees encounter while using eye personal protective equipment. They include but not limited to the following:

- eye protectors may not fit properly, as they are not customarily made for the person that uses them;
- eye protectors sometimes do not guard against the work injuries or illness that they are supposed to protect the worker from. This may result in an employee being injured despite putting on the personal protection equipment;
- eye protectors used may be incompatible with other PPE respiratory and or ear protectors;
- spectacles that the worker puts on for correction of vision might interfere with eye protectors that the employees wears to protect his eyes and vice versa; and
- eye protection goggles are uncomfortable to wear and this might lead to employees removing them from time to time. This can result in loss of protection against injuries to the eye.

In order to militate against these problems, the following can be done (Personal protective equipment: Eye safety: 2014):

- provide the highest-quality eye protection, such as that found in polycarbonate lenses;
- make sure protective eyewear can be customized and is adjustable. Gear that cannot be fit to an employee's face is more likely to be removed than gear that fits well.

- inspect goggles periodically for cracks, breaks, and loose frames. Train employees to regularly look for and report these problems.
- regularly assess to determine if current eye protection measures are adequate, especially when new procedures or materials are introduced.

2.5.6 Problems encountered with foot and leg PPE

According to Robinson (2001), the following as problems which are caused by foot personal protection equipment: severe aching feet, blisters, calluses, corns, rheumatism, malformation of toes fallen arches (flat feet), bunions, and sprains.

According to the Department of Labour and Industries (2003:58), it is important to provide employees with appropriate protection if they are exposed to hazards that could injure their feet, such as:

- objects which could fall (impact hazard);
- roll (compression hazard);
- pierce or cut the sole or uppers (puncture hazard);
- electrical hazards; and
- chemical hazards.

The above mentioned problems are caused by poorly fitting footwear that is too loose or too tight, heavy and lack arch support. According to Guild et al. (2007:360-361), ill-fitting boots can cause severe aching of feet thus restricting movement. It can also cause calluses, corns and mechanical strain of the feet, while humid environment inside the foot PPE can predispose a worker to skin maceration, irritation and can result in fungal and bacterial infection and malodors of the feet.

2.5.7 Problems encountered in the use of hand and arm PPE

There are instances when employees may not put on some PPEs resulting to injury in the place of work. In car assembly plants employees have to wear hand and arm PPE in some environments. According to Abeysekera (2007), ill-fitting gloves interfere with carrying out of certain tasks for example; a glove that is too big can slip off easily, thus interfering with the job done. The other problem is that the use of gloves may result in the limiting of hand and finger movement. Employees also have problems with gloves as they enhance hand sweating making it difficult to retain them.

The Canadian Centre for Occupational Health and Safety (2007) indicates that some materials used for gloves like latex, can cause allergies to the users; they can also leak, resulting in no protection from chemicals for the user. Also, gloves need to be taken off for some particular tasks that need fine handling and handiness regardless of the presence of hazards (Hickling, 1986). Sometimes gloves need not be removed to under straps or buckles. Some plastic hardens in cold weather making them difficult to as they may get hard.

The Department of Labour and Industries in the United States (2003:54) indicates that there is a need to provide employees with the appropriate hand protection if they are exposed or likely to be exposed to any of the following hazards that may result in potential hand injury:

- severe cuts, lacerations, or abrasions;
- punctures;
- thermal burns;
- harmful temperature extremes;
- chemical hazards;
- absorption of harmful substances
- chemical burns; and
- rash irritation.

2.5.8 Problems encountered in the use of respiratory PPE

Employees working in for example the spray painting department in a car assembly plant need to put on respiratory PPE. Guild et al. (2001: 430-431) list the following problems encountered when using respiratory PPE:

- facial hair, missing dentures and some skin conditions may affect the seal of the respirator resulting in leakage of contaminated air into the mask.
- the respirator may not be able to protect the worker against all contaminants that are present in the work area at a particular time
- respirator use may place a physiological burden to an employee due to his medical condition.
- respiratory protection is generally uncomfortable to wear, especially those that use lungs to provide motive power.

Schoeman and Schroder (1994: 374-379) mention that the use of respirators can decrease the field of vision; the extra heaviness can put additional stress on the respiratory system resulting in claustrophobia. Leaks that are caused by a seal that does not close properly against the face of the worker can fetter the efficiency of the respirator. The unlucky problems may emerge, as the worker may have an impression that he or she is protected enough even though this may not be the case.

2.6 GENERAL PROBLEMS ENCOUNTERED WITH THE USE OF PPE

An observation made by Miller Electric Mfg Co (2008) has shown that some activities that workers do, like welding generate a lot of heat and it therefore becomes uncomfortable on a PPE such as glove, helmet, woolen hats, boots or full length pants have to be added as extra PPE for protection. Glove for example tends to expand its size as they are elastic and once loses its original size it becomes useless and danger to employee. Therefore, employees may feel that bothering their store man about gloves most of the time is an indication that they do not need the job so they choose to tolerate.

The New York Committee for Occupational Health and Safety (2007) states that the following are some of the general problems with the PPE use, whereupon:

- wearing PPE can be uncomfortable especially in hot weather.
- PPE can be awkward.
- many employees tend to complain that PPE gets in their way thus limiting mobility and visibility.
- some employees may not be able to wear PPE due to illness or certain conditions that they have for example a worker with ear infection cannot use earplugs.
- PPE only protects the person wearing it and does not protect those around him.
- Incorrect fit use of wrong, poorly maintained or damaged PPE can result on less than adequate protection.

The New York Committee for Occupational Health and Safety (2007) mention that the limiting factor of PPE that of only protecting the person wearing it and not those around him or her.

2.7 CHALLENGES OF OCCUPATIONAL HEALTH AND SAFETY IMPLEMENTATION

2.7.1 Challenge of Law

In some countries, such as Ghana, occupational health and safety is virtually non-existent due to the lack of a comprehensive national policy or a legal framework to regulate its application. In Ghana for example, there is no national policy on Occupational Health and Safety, what is available are pieces of legislation that are inadequate to address OHS problems. For example, there exist the mining regulations 1970, which contain some guidelines in OHS pertaining only to the mining industry. There is the Road Safety Commission; however it has little influence on the safety of the transport industry and other road users. Many injuries, illnesses, property damage and losses take place at different workplaces.

Additionally, in countries such as South Africa where there are national policies or law to ensure OHS management, some problems are being experienced. These have to do with grey areas or loopholes integral in the law, allowing those who are guilty to avoid

punishment. For instance, in Tanzania, the acting head of the Occupational Safety and Health Authority (OSHA) has suggested that the Occupational Health and Safety Act 2003 which is the legal framework behind OSHA suffer from technical loopholes (Occupational safety and health and corporate social responsibility in Africa, 2012)..

2.7.2 Acculturation Challenges

Generally, there is a lack of safety consciousness on the part of employees and organizations in developing countries. The lack of safety culture among most companies in Africa serves as a barrier towards ensuring appropriate OHS regimes. It may appear that employees in developing countries are not wary of working in unsafe workplaces. Also, companies operating in Africa, especially within the mining and manufacturing sectors, take advantage of the failure of employees to demand safe working conditions and are consistently unconcerned about OHS (wwwcentersh.org).

It is not amazing that some countries like Ghana do not have a national OHS policy with far-reaching repercussions for the various industries. The media has reported the appalling state of places of work in which employees work in Africa. This is because there is a lack of safety culture and because the apparent silent from the employee, employer and government can also be attributed to the economic environment. Poverty, job insecurity and unemployment are predominant in most African countries, leading to safety being on the back banner of many companies (Occupational safety and health and corporate social responsibility in Africa, 2012).

Possibly, because employees fear to lose their jobs, they are willing being employed in unhealthy working environments. Many organizations are also taking advantage of the prevalent economic situation to exploit the basic rights of employees with regards to the provision of OHS. This is, despite efforts by the International Labour Organization to promote safe working conditions as an important human right for the employed (ILO, 2005).

The consideration of the culture of safety is therefore important for countries in the continent of Africa. This should be a priority for companies and state institutions when

initiating and implementing OHS policies. When viewing it from a psychological side, maintaining a safety culture is a behavioural or attitudinal issue, not a legal one. All those involved need to be educated on their responsibility to ensure OHS standards. The solution therefore lies in targeted behaviour adjustment and enhanced risk perception of employees. if this is done, it may lead them to become conscious enough to begin making the relevant demands and bringing appropriate pressure to bear on employers.

According to the South African Occupational Health and Safety Act (Act 85 of 1993), an employer shall establish and maintain an appropriate system of medical surveillance for employees exposed to health hazards in the workplace. In addition to that there needs to be an arrangement for the promotion of health and wellbeing of employees, including the endorsement of regular, voluntary personal health status assessments for all employees and support to individualized health maintenance and health promotion programmes (Jain, Puplampa & Amponsah: 2012).

2.8 IMPROVING OCCUPATIONAL HEALTH AND SAFETY THROUGH POLICY INITIATIVES

The World Health Organization (WHO) has defined health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1946). The WHO (1994) approximates that 58% of the world's population spend one-third of their adult life at the work place. What one experiences at work can have a positive or negative effect on workers, their families and society, as holding an occupation provides a source of income and material outputs which cater for the needs of lively hood..

Leka and Jain (2010) on the other hand mention that some research suggests that work can have serious detriments on the health of employees. Therefore in following the goal of health, as defined above, there is a need to stimulate standards at policy and practice level that aim to protect employees' health and safety and prevent possible negative impact through unfavourable working conditions.

According to the ILO (2001,) the central focus of occupational health should be on three key objectives: (i) the maintenance and promotion of employees' 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 thought of working culture is aimed in this context to mean a reflection of the essential value systems adopted by the undertaking concerned. Such a culture can be observed in practice in the managerial systems, personnel policy, principles for participation, training policies and quality management of the undertaking (WHO: 2002).

Psycho-social risks are defined as those aspects of the design and management of work, and its social and organizational contexts that have the potential for causing psychological or physical harm as mentioned by Cox and Griffiths (2005). These risks comprise issues such as the demands, control and support that individuals are exposed to at work (Karasek, 1979:87), as well as concepts such as the balance between effort and reward (Siegrist, 1996:45). Psycho-social risks have been linked to a number of health related issues including: mental health (e.g. depression, anxiety and burnout), social and behavioral health (e.g. smoking and drinking), and physical health (e.g. heart disease, musculoskeletal disorders, and diabetes) (Leka & Jain, 2010).

The WHO suggests there are 160 million new cases of illnesses encountered at yearly, and that occupational risks largely contribute to chronic diseases, including cardiovascular disorders, cancer and depression (WHO, 2010). In 1999, a European survey suggested that 4.7% of employees reported a work-related health problem; however in 2007 this had increased to 7.1% (Eurostat, 2010).

It has been reported that workplace accidents and diseases result in 2.3 million deaths a year and a significant influence on the health of employees (ILO, 2011). Moreover, a extensive part of the general ill health of the people is related to work.

2.9 CONCLUSION

From the literature review conducted regarding the use of PPE in the workplace, it is clear that a lot still need to be done to ensure that Occupational Health and Safety become a priority for companies. Although there is some progress with regard to managing Occupational Health and Safety in some countries, especially developed countries such as the United State of America, a lot still need to be done in most African countries such as Ghana where to date there is no legal framework to ensure effective implementation of Occupational Health and Safety service. The implementation of the section 14 of OHS Act 85 of 1993 and knowledge will help to improve safety in working environments.

In chapter 2 different types of PPEs as well as challenges associated with their use were discussed. The review of literature was done from both national and international perspective. The chapter also discussed the relevant legislations and guidelines pertaining to the use of PPE.

Chapter 3 discusses the research methodology that was undertaken during the study. The literature seems to concur with the situation at BMW SA regarding the problems associated with PPEs. It is important to make sure that PPE is inspected before each use, and that it is cleaned and maintained according to manufacturer's recommendations and instructions. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision (Department of Labour and Industries, 2003:10).

CHAPTER 3: RESEARCH METHODOLODY

3.1. INTRODUCTION

Chapter two discussed the relevant available literature regarding the problems experienced by employees from other industries on their day to day use of PPE. The legislative requirements regarding the use of PPE was also briefly discussed with the view to explore the obligations that both employees and employers have with regard to creating and maintaining a safe working environment.

This chapter discusses the methodology upon which the research is based, the strategy, selection criteria and procedures that the researcher indentified and employed for this study. Research methodology is defined as methods and procedures used in implementing research designs (Babbie & Mouton, 2003:64).

The following aspects of the research methodology are discussed; the research design, population, sample, instrument, data collection method, the data type, method of data analysis, and the discussion on the ethical consideration arising out of human subjects.

3.2 RESEARCH METHODOLOGY

3.2.1 Research design

According to Mouton (2001:55), a research design is a plan or blueprint of how the researcher intend conducting the research. Huysamen as stated in De Vos (2002: 137) defines a research design as the plan or blueprint according to which data are collected to investigate the research hypothesis or question in the most economical manner. Gall, Borg and Gall (2003) on the other hand describe a research design as a plan which the researcher sets up in order to solve his or her research problem. It describes the way in which test subjects are selected and also the research field and data gathering techniques. Bless and Higson-Smith (2000) describe a research design as a plan to guide the researcher through the research process. They explain this as the first steps in constructing a good research design required by the researcher to answer several fundamental questions about the study. These relate to the focus, the unit of analysis and the time dimension of the problem at hand. This study followed a quantitative and qualitative research designs using a survey.

A survey is characterized by the systematic collection of numeric/quantitative data from a group of entities using direct observation.

In this study, the primary data were collected by means of survey using a structured questionnaire which was handed to the employees and management who were asked to fill in the questionnaire as well disseminate it to other decision makers in their areas. The reason for taking this route is time and cost efficiency given the geographic location of business units and the size of the company. A survey is a good way, often the only way, of getting a picture of the current state of a group, a community, an organization, an electorate, a set of corporations, a profession.

The questionnaire was used as the data-gathering tool. This allowed the collection of quantifiable and qualitative data and allow for the analysis of this data to determine patterns and relationships. The proposed survey questionnaire was on word document. The employees in the departments where the PPEs should be put on completed the survey. Leedy and Ormrod (2005) have found significantly faster response times with this type of survey.

In this research a survey was used to provide an explicit description of the problems experienced by employees with regard to the use of PPE at BMW SA, Rosslyn Assembly Plant in Pretoria. This design enabled the researcher to provide insight, and understanding in evaluating the effective use of PPE at BMW SA Rosslyn assembly plant (Matthews and Ross, 2010:111).

3.2.2 Quantitative design

Quantitative design of research focuses on measurable aspects. The method employs numbers over words to quantify impact (Babbie & Mouton, 2003:64). Burn and Gove (2003:27) define quantitative research as formal, objective, rigorous and systematic process for generating information about the word. Van der Walt and Van Rensburg (2006: 11) further mention that data, when collected using quantitative design, must be objective and be presented numerically.

Quantitative design was important for the present study as most of the data gathered had to be quantified in order to clearly present the problems experienced by workers in their

daily use of PPE so that management could be able to prioritize these for better management of the PPE in future.

3.2.3 Population

The population of the study is defined as that group of people, items, objects or element who meet designated set of criteria for the study and about whom one want to draw conclusion or conclusions (Babbie & Mouton, 2003:100).

Brink (1996: 132) defines population in research as the entire group of persons that is of interest to the researcher, and which meets the criteria for inclusion in the study. Since this research is aimed at evaluating the effective use of PPE, the population of the study is comprised of employees working at BMW SA Rosslyn Plant who use PPE on their daily basis. The population of the study is made up of employees working in the following departments: body shop, logistics, training centre, waste management and the assembly departments. All in all there are 397 (three hundred and ninety seven) people working in these departments.

3.2.4 Sampling

According to Gay (1992:123), sampling is a procedure of selecting a number of participants from a study population in such a way that those selected are representatives of the larger group from which they are selected. In this study a non-probability convenience sampling was used to select a sample of Body Shop, Logistics, Training Centre, Waste Management and Assembly departments' employees from the population. A convenience sample is simply one where the units that are selected for inclusion in the sample are the easiest to access. A core characteristic of non-probability sampling techniques is that samples are selected based on the subjective judgment of the researcher (Lavrakas, 2008).

Only employees working at Body Shop, Assembly, Training Centre and Waste Management Departments and Logistics were included in the study. Out of the 397 employees in these plants, 212 were sampled with the assistance of stratified random sampling. A stratified random sample is a population sample that requires the population

to be divided into smaller groups, called strata. Random samples can be taken from each stratum (Lavrakas, 2008).

Table 3.1: The study sample

Department	No of employees	Sample	%
Assembly	195	73	51.2
Body Shop	71	35	49.2
Logistics	39	20	51
Training Centre	59	30	50.8
Waste Management	53	27	50.9
TOTAL	397	212	

Table 3.1 indicates that almost 50% of the population in each of the departments was sampled.

3.2.5 Research Instrument

A research questionnaire was used as a data collection instrument. Seaman (1987:435) defines a questionnaire as an instrument and a procedure of collecting data by means of written questions that the subjects answer in writing, with little (if any) help from the researcher. Wegner (1993:17) mentions that "the design of a questionnaire is critical to ensure that the correct research questions are addressed and that accurate and appropriate data for statistical analysis is collected."

3.2.6 The Reliability and validity of the instrument

Validity is the degree to which the instrument measures what it is intended to measure. One essential validity question is: "What is the match between information provided by the instrument and what we want to know – the inferences we want to draw from the results?" (Herman and Winters, 2012). This means that a lot of thought has to go into making clear questions and aiming them accurately at the kind of information you want. To ensure the reliability of the questionnaire used for this study, the questionnaire questions were matched to the research questions. The reliability of a research instrument concerns the

extent to which the instrument yields the same results on repeated trials (Cooper et al., 2001: 216). Reliability is the consistency of the measurement, either across like respondents or across administrations of the survey. In a written questionnaire this means that the same item measures the same thing across similar respondents; if you ask a number of questions about the same factor, all should receive similar responses. Piloting or pre-testing the survey can also help you check its reliability. For this reason, for the questionnaire that was used, the researcher conducted a pilot study for the following reasons:

- to reveal the deficiency of the instrument; and
- to improve the questionnaire.

Cronbach's alpha was calculated to determine the reliability of the questionnaire.
Cronbach's alpha refers to a measure of reliability that ranges from 0 to 1, with values of 0.60 to 0.70 deemed the lower limit of acceptability (Hair, Black, Babin, Anderson, , and Tatham: 2010).

3.2.7 The practicability of the instrument

According to Cooper and Schildler (2001:218), the operational requirements of a questionnaire require it to be practical. The practical criterion of a questionnaire includes convenience, consistency, economical and interpretability.

3.2.7.1 Convenience

An instrument is said to be convenient if it is easy to administer and participants can complete it with the assistance of the researcher. This means that it must have clear instructions, a good design and layout. Instructions for completing the questionnaire for this research were provided in the letter of information and in the questionnaire itself. The researcher also followed the recommendation of Cooperand Schildler (2011) and designed the questionnaire in such a way that it is conveniently readable and has been re-read to pick out minor mistakes such as spelling and punctuation errors. Shop Stewards and Team Leaders were tasked with distributing the questionnaire.

3.2.7.2 Economy

The questionnaire was designed in such a way that the process of data collection becomes flexible, efficient and economic. As Cooper and Schildler (2001) point out, a questionnaire allows respondents to have more time to think about the questions. To accommodate this, the questionnaire was designed to be simple and to take no more than 15 minutes to complete. (Cooper & Schindler, 2001:314).

3.2.7.3 Interpretability

Interpretability of the questionnaire was taken into account as suggested by Copper and Schindler (2011). The questionnaire was discussed and agreed with the supervisor before data collection could be commenced with, hence it can safely be concluded that the questionnaire meets the requirements of validity, reliability and practicability.

3.3 Data collection

In this study, data was collected with the aid of a questionnaire designed by the researcher. A questionnaire which was written in plain English was given to the participants who were conveniently sampled by the researcher for the study. All the questions on the questionnaire were fully explained to the participants. The respondents were also informed that they had to respond to the questionnaire in their own time. They were also requested to return the completed questionnaire to the researcher in a given time.

Permission was granted by the research ethics of the North West University and the management of BMW SA Plant Rosslyn to conduct a study. Only employees working at selected sample of the population included in the study, and participants were informed of the purpose of the study and possible benefits for participating before they gave their consent to participate.

In order to make sure that the data collected is credible and to improve the response rate, the researcher used the 'complete and collect' method. Through the use of this method, the respondents were given the opportunity to complete the questionnaire at their own time and to return it to the researcher.

To ensure anonymity the respondents were requested not to write their names on the questionnaire or to make any mark which may identify the person who completed the questionnaire. It was also emphasized to the respondents that they took part in their own free will and that they had the right not to take part or to withdraw at any stage and their action will not prejudice their employment in the BMW South Africa. Informed consent was obtained from all respondents and BMW South Africa following detailed information about the purpose, aims and objectives of the study.

3.3.1 Procedure of data collection

The following systematic procedure was used in collecting the data:

- a request was made with the Shop Stewards and Team Leaders to distribute questionnaires during constituency meetings;
- the researcher explained the questionnaire to the participants;
- the purpose of the study was also explained to the participants;
- the time to be spent completing the questionnaire was also explained to the participants;
- participants were requested to ask question for clarity before the commencement of the interview; and
- the researcher reiterated that participating in the study is voluntary and that participants have the right not to participate and or to withdraw at any given time if they do not feel comfortable to continue with the questionnaire.

3.3.2 Type of Data

For the purpose of this study the researcher used only the primary data collected through the questionnaire.

Primary Data

According to Ivy (2002), primary data is raw data collected for a specific research purpose. For the purpose of this research, the primary data was collected using a self-

designed questionnaire that was distributed during constituency meetings and returned to the researcher and were administered on the spot to the participants.

3.4 Data analysis

Fink (2009) asserts that after having collected data, it has to be presented in a manner that it is understandable and easy to interpret. The data is presented in the form of tables, diagrams, charts and figures. The reason for using these graphic forms is to take advantage of their ability to present large volumes of data in a way that the data can be read at a glance.

A quantitative data analysis was done using the Statistical Package for Social Science (SPSS) version 16.0. SPSS is a statistical software package that enabled researcher to do both basic and complex statistical procedures with quantitative data (Field, 2005: 65). In addition to statistical procedures, SPSS also allows for the graphic display of data by means of bar charts, pie, histogram and bar charts among others.

Preparing the questionnaire for statistical analysis involves a number of steps. These included inter alia, developing a coding scheme for the different variables, cleaning the data by dealing with missing responses and entering the variable information as well as the data into SPSS data editor. Once this was done, a number of SPSS statistical tests were run in order to generate statistics.

In statistical theory, the type of test one can do generally depends on the measurement levels of the various variables. Since most of the questionnaires' variables were measured at the nominal level, the statistics generated were limited to frequencies and descriptive statistics.

The study will also employ Cronbach's alpha measures of internal consistency of variables, which at the end reveals on how closely related are items of a group.

3.5 Ethical issues

In studies that involve human participants, there is a need that ethical considerations be observed. Vadum and Rankin (1998: 76) describe ethics as rules that suggest expectations about the most correct way of conduct research on human subjects. Bless *et al.* (2006) state that research ethics helps to prevent research abuses and assists

investigators in understanding their responsibilities when conducting research. In this study the participants were informed the research and ensure that it is conducted with their consent. The participants got the assurance that all information gathered will be strictly confidential and will be used for this study. Also data collected will be kept secure. In order to ensure that the researcher was operating within expected research ethics limits, the following steps were taken to satisfy ethical requirements for the study:

- permission to conduct the study was obtained from the Ethics Committee of the North West University, as well as the management of BMW SA Rosslyn Plant where the study was conducted;
- informed Consent from the participants was obtained before involving them in the study (Burns et al (2001:193). A consent letter outlining three elements of consent process: information, comprehension and voluntariness was used to recruit the respondents for the study;
- participants were requested not to give their names to ensure anonymity and confidentiality of the information they provided. No information that will emerge from the investigation would be made available to any interested institutions or third parties without due consideration of ethical issues. The assurance was mentioned in the discussion guide to collect the data; and
- all the participants were requested to complete a consent form that they signed.

3.6 CONCLUSION

Chapter 3 discussed the research design, instrument, data collection method and analysis as well as issues pertaining to research ethics. The chapter also discussed the population, sampling, ethical considerations and analysis technique that will be used in chapter four.

CHAPTER 4: ANALYSIS AND INTERPRETATION OF RESEARCH RESULTS

4.1 INTRODUCTION

Chapter three outlined the methodology upon which the entire research was based, the strategy, selection criteria and procedures that the researcher identified and employed for the study were discussed. The following aspects of the research methodology was discussed, the research design, population, sample, instrument, data collection method, the data type, method of data analysis as well as the discussions on the ethical considerations arising out of the study.

In chapter 4, the results of data obtained through questionnaires are analyzed and interpreted. The findings of this study are discussed in terms of bar charts and graphs. The chapter concluded with the cross tabbing of the variables during the analysis.

The literature has revealed that a lot still need to be done to ensure that safe working environment is created and maintained as required by Occupational Health and Safety Act 85 of 1993. It was also discovered thorough literature review that the challenges experienced with regard to OHS implementation are not just national, but that a lot still need to be done even at international level.

The study has revealed that in some cases, employees continue to sustain occupational injuries and diseases despite being issued with PPE. Reluctance by employees to use PPE could be attributed to among others lack of awareness by employees regarding the importance of using PPE, lack of enforcement of the use of PPE by management, as well as challenges experienced by employees regarding the use of some PPE.

Building a safer workplace is an ongoing task that requires the participation of management and employees, in a bipartite model based on knowledge and effective actions to eliminate hazards and/or reduce risks. From a societal viewpoint, any program of national development requires a labour force that is educated, motivated, and healthy. The latter is one main reason why OHS is included in the "Decent Job" Framework (Chullen, 2012:4). Findings were discussed in terms of the following:

- profile of the respondents such as age;
- gender;
- highest qualifications;
- number of years working at BMW SA;
- title of employees;
- and the department of each employees.;

4.2 THE AIM AND OBJECTIVES OF THE STUDY

The aim of the study was "To evaluate the effective use of Personal Protective Equipments by employees at BMW South Africa Rosslyn Assembly Plant, Gauteng Province of South Africa"

Objectives of the study

To achieve the aim of the study, the following objectives were set:

- to investigate the reasons for the reluctance of employees at BMW SA, Rosslyn Plant to use PPE.
- to determine measures which can be used to encourage employees always use PPES; sustain occupational injuries and illnesses despite using the PPE;
- To identify the limitations that some of the PPE have;
- To determine the employees knowledge on the importance of using PPE;
- determine employees' knowledge of their responsibilities for safety as stipulated in section 14 of OHS Act 85 of 1993;
- recommend the specific measures that can be implemented to address all the problems encountered by employees at BMW South Africa Rosslyn Assembly Plant regarding the use of personal protective equipments, based on the data collected.

4.3 DATA PRESENTATION AND ANALYSIS

4.3.1 Response rate of the survey

In this study, two hundred and twelve (212) questionnaires were distributed to selected departments within Plant Rosslyn and hundred (175) respondents replied. As shown by figure 4.1, this represents 82% of the entire sample chosen for the study. Colis and Hussey (2003) clarify questionnaire non- response bias being of two types, namely:

- questionnaire non-response , whereby the questionnaires are not returned at all; and
- item non-response, where some of the questions in the questionnaire have not been answered.

This shows that there was a good response rate by participants in this study

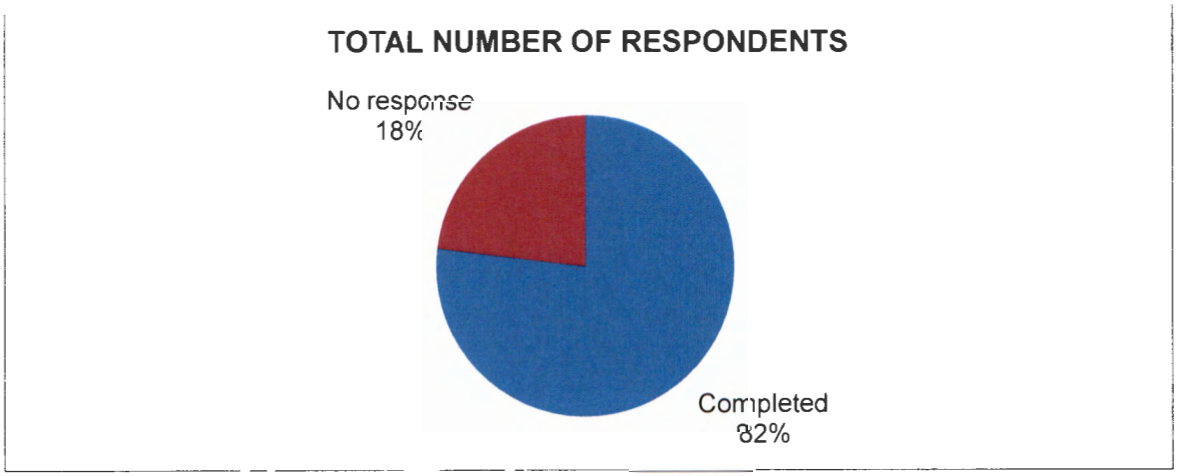


Figure 4.1

Percentage participation in survey

Of the 212 questionnaires that were circulated to the selected sample of the population, 175 completed questionnaires were returned, while 37 respondents (23%) failed to respond. This renders a response rate of 82%. Gillham (2000: 48) states that if the response rate is less than 30%, the value and the validity of the method and results are in

question. Therefore, it is reasonable to conclude that a satisfactory response rate should be at least 30 %. In this study, this target was exceeded with a response rate of 82%.

Table 4.1: Response received

Department	No of employees	Sample	No of responses
Assembly	195	100	88
Body Shop	71	35	24
Logistics	39	20	18
Training Centre	59	30	21
Waste Management	53	27	24
TOTAL	397	212	175

Table 4.1 represents the total responses received from participants. The table indicates that the largest number of respondents at 88 were from the Assembly section. This is understandable as the section employs more workers than any other section in the plant. This is followed by the Body Shop with 24 responses, Logistics with 18 responses Training Centre with 21 responses and Waste Management with 24 responses.

4.4.2 Findings on the biographical information of participants

Figure 4.2 AGE CATEGORIES in %

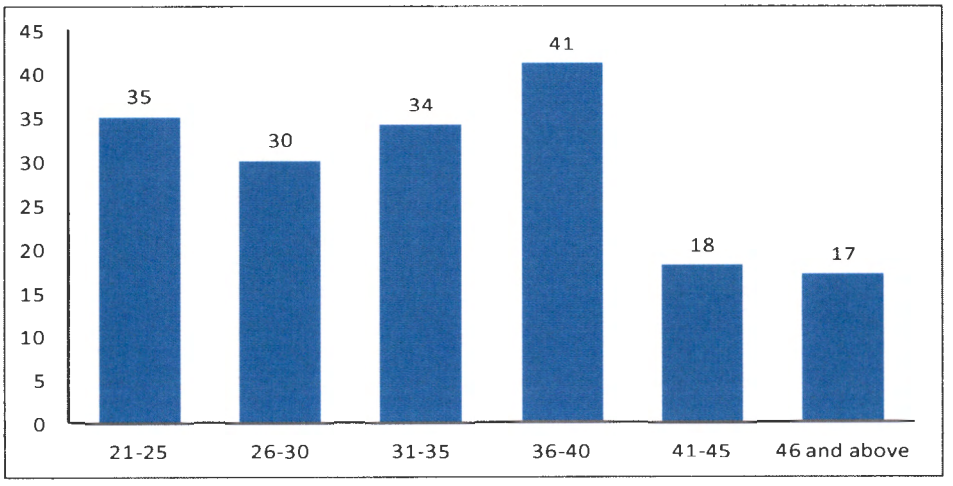
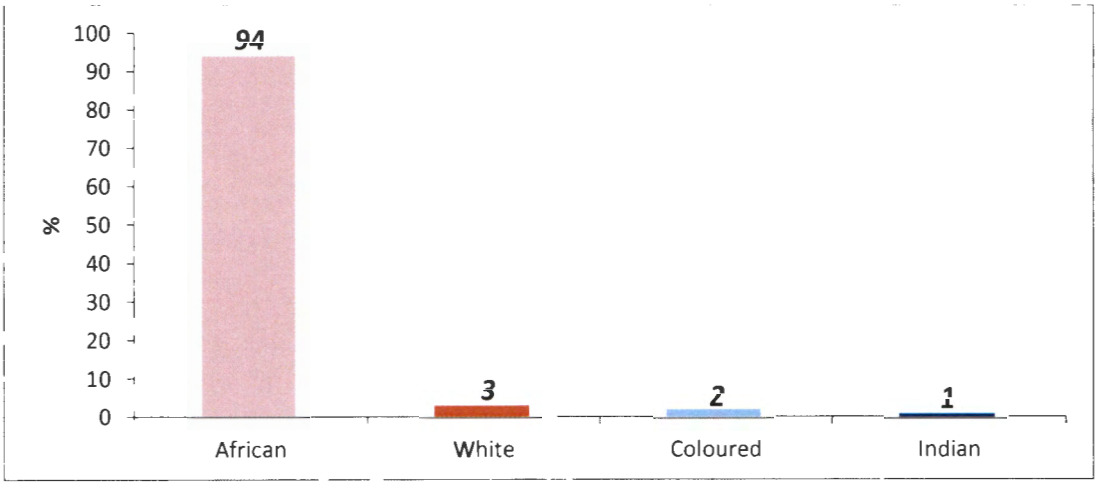


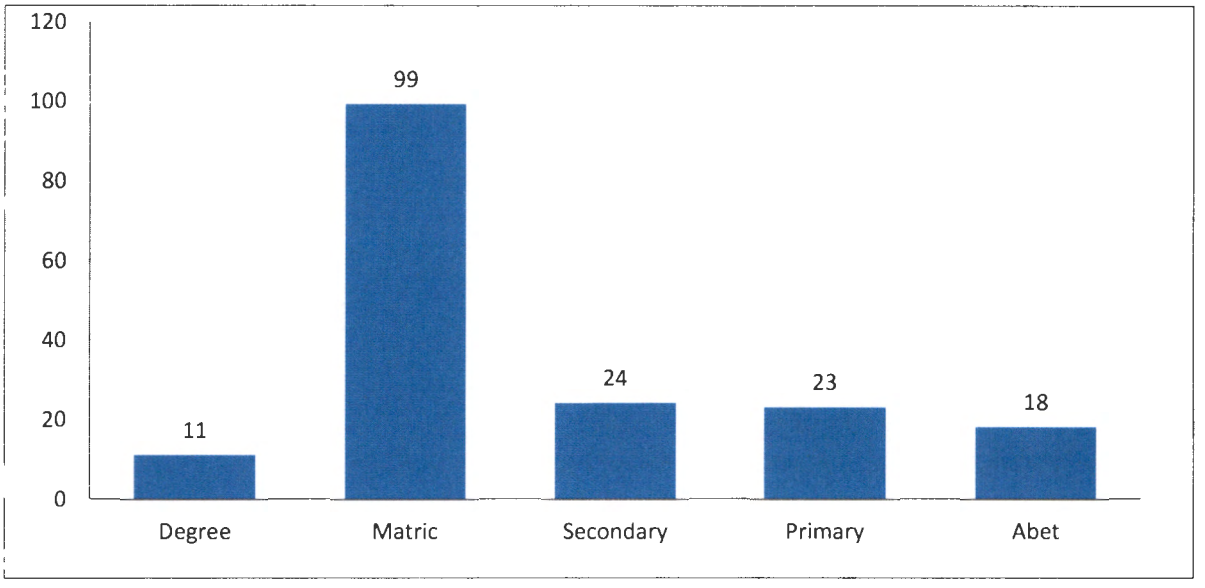
Figure 4.2 above indicates the age of the respondents from different departments that were surveyed. The figure shows that highest number of the respondents is those between 35-40 years old at 41 making 23%. This is followed by the age group 21-25 at 35, making 20% of the respondents. The ages 26-30, 36-40, 41-45 and 46 and above are at 18.8%, 17%, 10% and 9.7% respectively. The relevance of age in this regard is that it could be assumed that the older one gets the more one gets more responsible. It could be assumed that because of these age categories, employees will follow rules regarding the use of PPEs.

Figure 4.3 Race



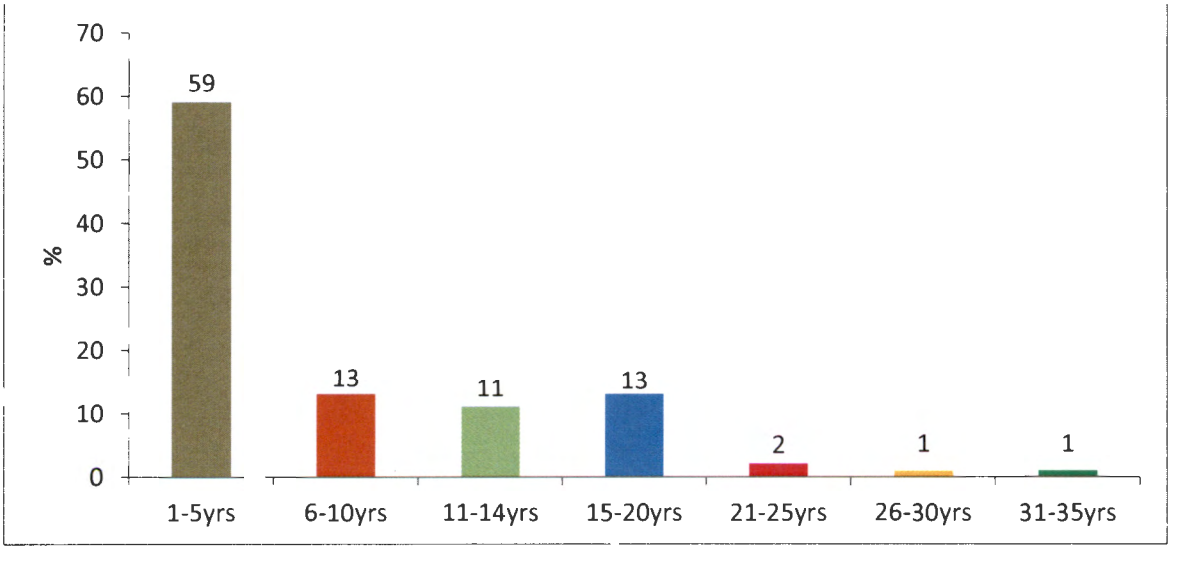
The bar chart above (Figure 4.3) indicates the race of the respondents. From the figure it could be noted that black Africans make up the majority of the respondents at 94%. This can be said to be indicative of the general country population. The above race discrepancy is indicative of the reality within Plant Rosslyn where the majority of employees especially in the production areas are black Africans. The significance of race to the study is that most employees who responded that they sustained occupational injuries are black Africans, which also raises a fundamental question of whether or not black Africans are more ignorant regarding the importance of using protective equipment compared to other racial groups found in the Plant.

Figure 4.4 HIGHEST QUALIFICATIONS OF EMPLOYEES



The findings revealed that most of the employees at BMW SA have matric qualification as their highest qualification at 99; this could be because of the fact that youth unemployment is high and that most of the youth have completed matric but could not continue with higher education. Of the respondents, 11 have a degree, 24 secondary education, 23 have primary education while 8 have achieved some ABET education.

Figure 4.5 THE NUMBER OF YEARS OF WORKING AT BMW



The bar chart above depicts the number of years respondents have been in the employ of BMW SA. According to the findings of the study 59% of the respondents had been working for BMW SA for a between 1-5 years while 13% have been working for 31-35 years. 11% participants have been with BMW for 11-14 years, 13% between 15 and 20 years, 2% between 21-25 years, 2 %between 26 and 30 years, 1% each between 26 and 30 years as well as between 31 and 35 years. Because 59% of employees have not been long with the company, there is therefore important that there should be continual training on safety issues.

Figure 4.6: DEPARTMENT EMPLOYEES WORKING AT BMW EXPRESED IN PERCENTAGES (%).

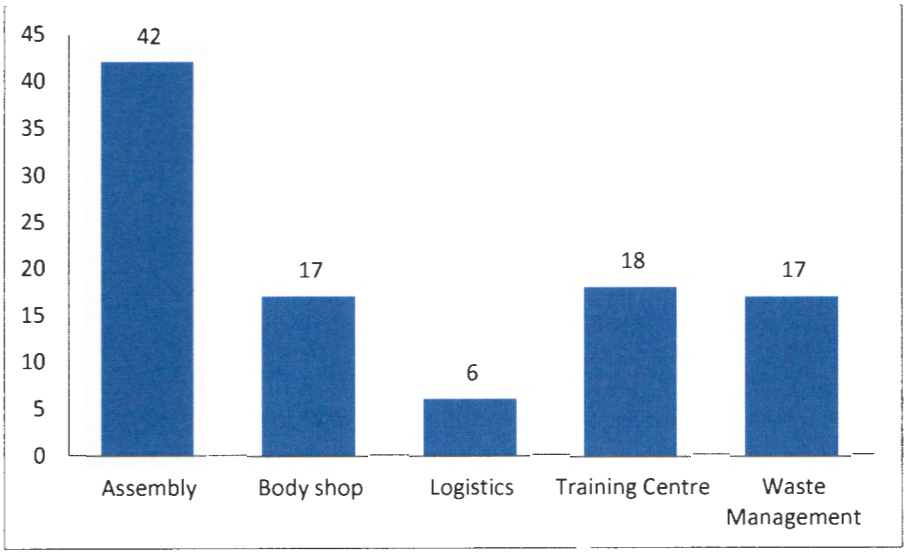
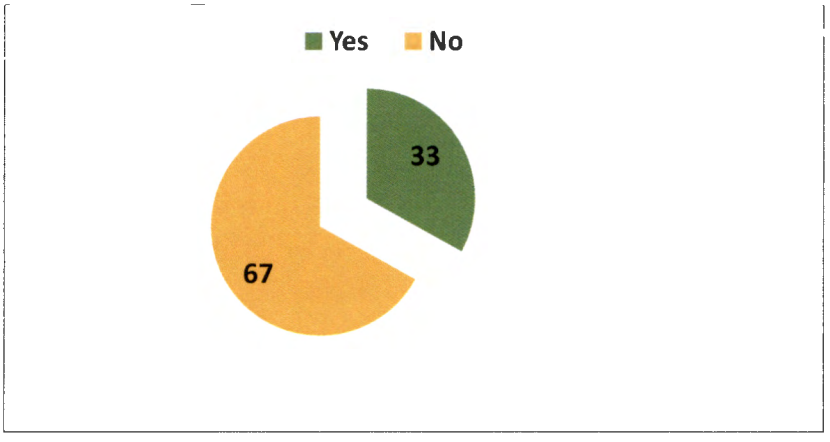


Figure 4.6 shows that 42% of the respondents work at the Assembly department; this is not surprising since assembly is the biggest department and has most employees compared to all other departments. It is also important to mention that assembly department is the area where the actual assembly of vehicles takes place. The figure also shows that 17% work in the body shop department, 6% in the logistics department, 18% in the Training Centre while 17% work in Waste Management department. The indication of the work departments is important as not all departments at BMW require employees to

put on PPEs. These are the departments whereby by law, employees have to put on their PPEs due to the safety risks associated with the activities performed.

Figure 4.7: EXPOSURE TO OCCUPATIONAL INJURIES



With regard to occupational injuries, Figure 4.7 shows that it is 36 respondents who indicated that they had been exposed to occupational injuries as compared to 71% of the respondents who never had exposure to occupational injuries. It is important to find from employees whether they have been exposed to occupational injuries as these at times are a result of not putting PPEs.

Figure 4.8: DIAGNOSED WITH OCCUPATIONAL ILLNESS

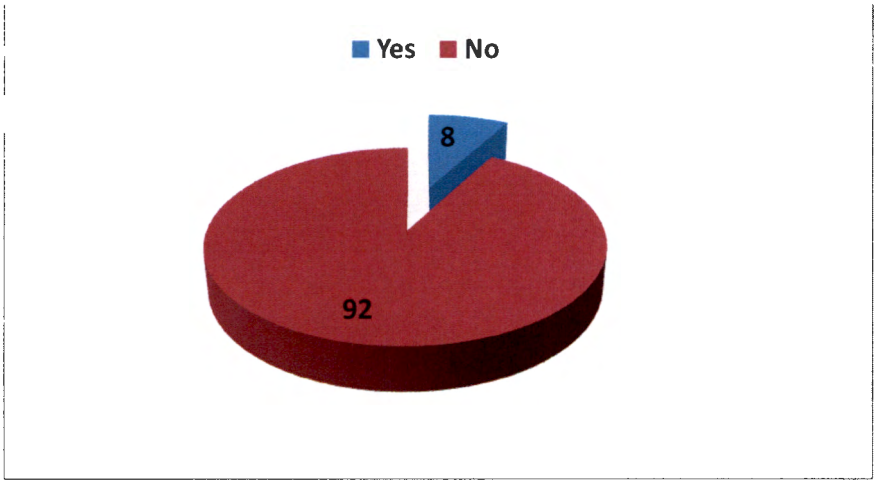


Figure 4.8 indicates that 8% of the respondents reported that they have been diagnosed with occupational illness, whereas 92% respondents indicated that they were never diagnosed with occupational injuries. The estimates of occupational disease place the total at 217 million cases world-wide, with an unknown additional toll on national incomes. Occupational diseases are grossly underreported in most developing countries. In Southern Africa, only about 2% of occupational disease is recognised and reported (Loewenson, 1998:87).

Figure 4.9: The use of PPEs

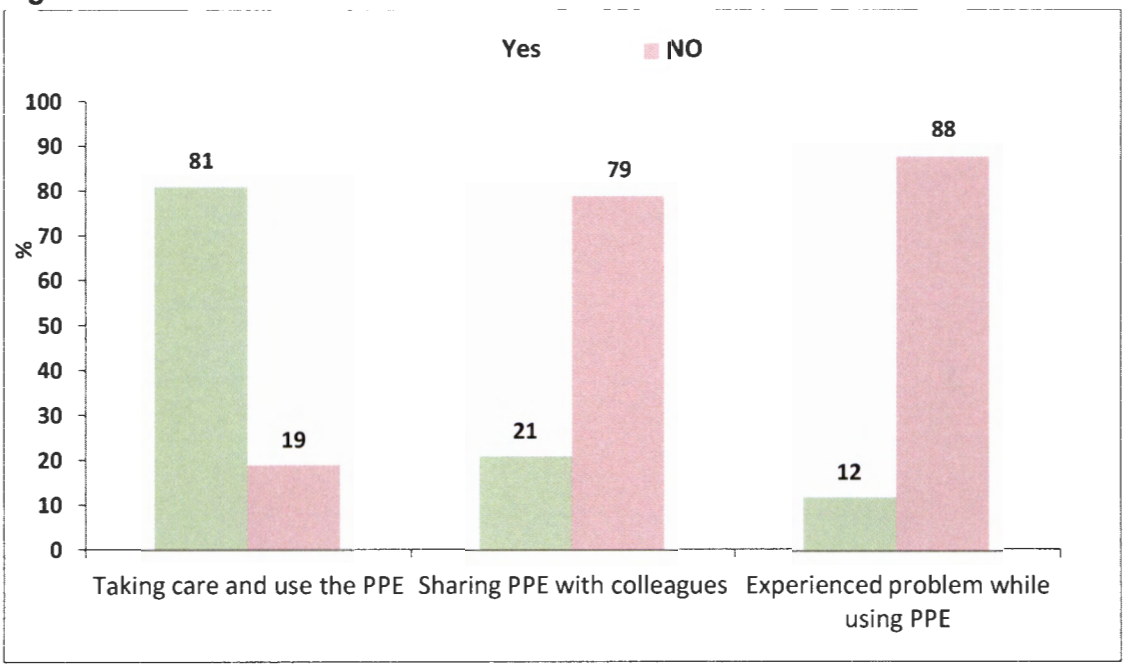


Figure 4.9 shows that the majority of the employees at 81% indicated that they are taking care and use the PPE, while only 19% indicated otherwise. The figure also shows that the majority of employees at 79% reported that they are not sharing the PPE with colleagues with 21% indicating that they do share the use of PPE.

The figure also shows that 88% of employee did not experience injuries while using PPE, while only 12% indicated that they sometimes experience problems while using PPEs. About 21% of employees reported having to share PPE, which are helmets etc. It is important to notice this as this will indicate a shortage of PPE as well as un-hygienic nature of these PPEs.

Occupational injury and illness are matters of health, but they are also matters of economics, since they stem from work, and work is an economic activity. The economic perspective on occupational health and safety (OHS) encompasses both causes and consequences: the role of economic factors in the etiology of workplace ill-health and the effects this has on the economic prospects for employees, enterprises, nations, and the world as a whole (Dorman 2000:54).

FIGURE 4.10: HAVE YOU EVER BEEN TRAINED ON THE CORRECT USE OF PPE?

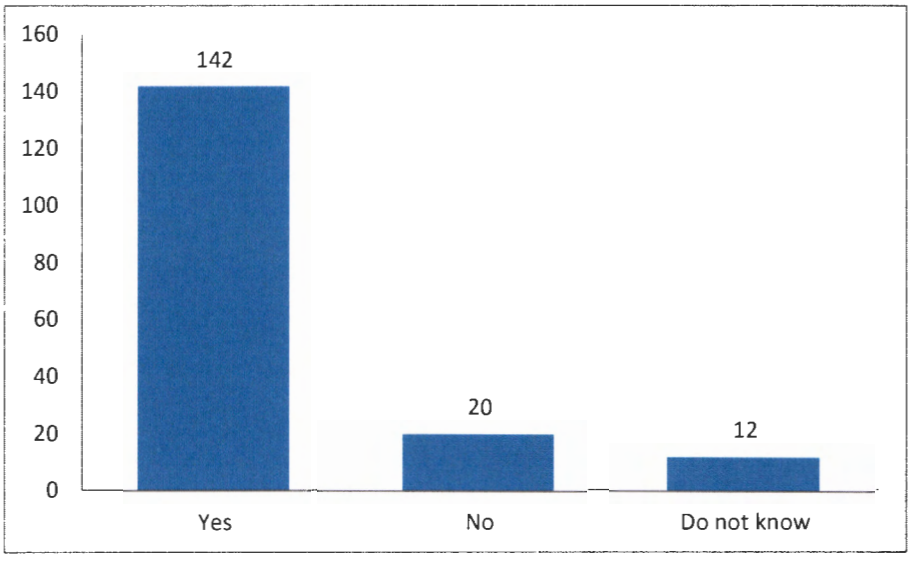


Figure 4.10 shows that only 142 of the participants mentioned that they were trained on the correct usage of PPE. Of the total participants, 20 indicated that they were never trained. Only 12 participants indicated that they do not remember whether they were trained on the correct use of PPE. Section 14 of OHS ACT 85 OF 1993 stipulate that, " employers should make sure that each employee demonstrates an understanding of the PPE training as well as the ability to properly wear and use PPE before they are allowed to perform work requiring the use of the PPE". It could be deduced from this finding that the company may not be following some safety regulations to the latter. As literature has shown (Graham, 2004) awareness campaigns and training can be the solution the safety related issues and could make employees to like the job when they understand the issues of safety.

FIGURE 4.11: IF YOU WERE TRAINED, WAS THERE EVER A FOLLOW UP ON THE TRAINING?

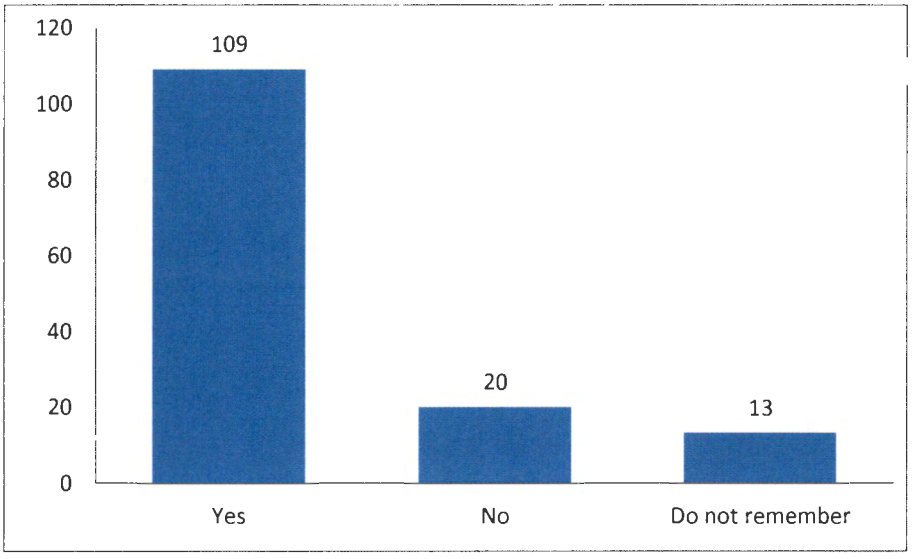


Figure 4.11 shows that 109 of the participants who mentioned that they were trained, 20 indicated that there has never been a follow up training, while 13 indicated that they do not remember that there was any follow up training. Graham (2004) awareness campaigns and training can be the solution to the safety related issues and could make employees to like the job when they understand the issues of safety. He further mentions that employees should be continually trained in the use of PPEs. The training should not be a once off event. Employees should always be reminded of the importance of their safety as well as their responsibilities regarding this.

FIGURE 4.12: DO YOU KNOW YOUR RESPONSIBILITIES REGARDING THE USE OF PPE AS STIPULATED IN SECTION 14 OF OHS ACT 85 OF 1993?

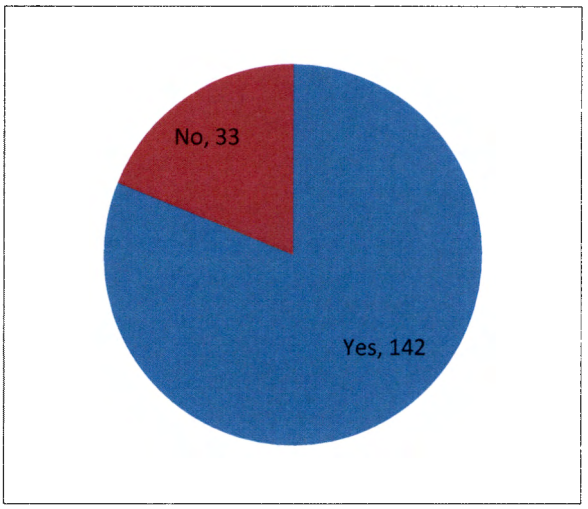


Figure 4.12 shows that 82 of the participants do not know about their responsibilities regarding the usage of PPE as stipulated in Section 14 of OHS act 85 of 1993. Only 35 of participants claim to know about the responsibilities. This calls for a thorough training and awareness campaign to make employees know these important responsibilities. The issue of safety cannot be the responsibility of employers alone. Employees should know their responsibilities regarding issues of safety, which include the use of PPE, in order to assist in enhancing safety in their work environment.

FIGURE 4.13 What may lead you to not putting on your PPE?

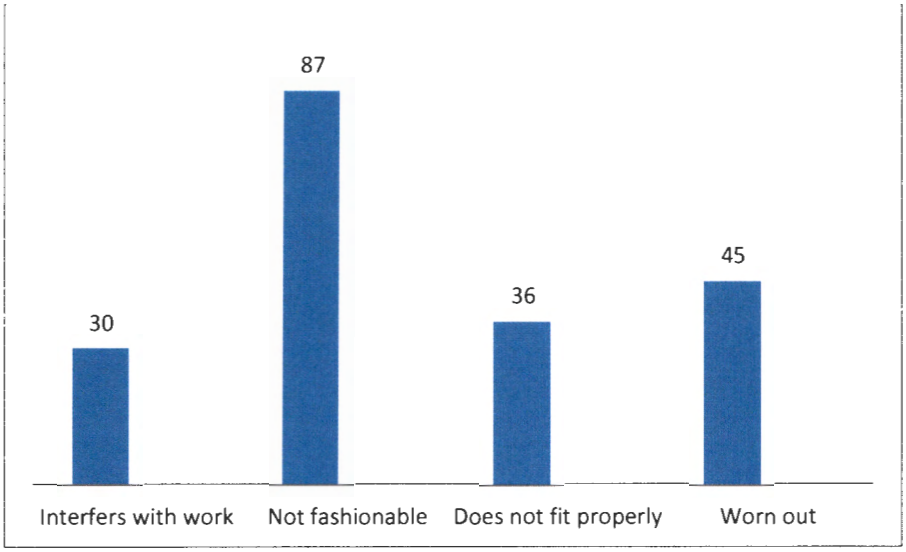


Figure 4.13 displays the findings on what participants think may lead to them not putting on their PPE. From the figure, it could be noted that 30 of the respondents feel that the present PPE interferes with their work. It may be that the PPE is uncomfortable. Eighty seven (87) of the employees mention that they feel the PPE is not fashionable. Thirty six (36) indicated that it does not fit properly. If a protective gear is either small or big, it may affect the way one does one's job. Forty five (45) mentioned that the PPEs they use is worn out. Literature (Randles, 2009) has shown that employees may at times not put their PPE because they feel that it interferes with their work; it is uncomfortable, it is not fashionable or it does not fit properly. Employers should always if possible involve employees in the choice of PPE to avoid issues that may lead them not to put PPE

4.4.3 Qualitative analysis of results

This part of analysis presents the data which asked participants to provide explanations.

QUESTION: MENTION THE RESPONSIBILITIES YOU KNOW?

Most respondents did not respond to this question. The few who responded mentioned that they know that:

- they should take care of their PPEs;
- they must report unsafe conditions; and

- they have to put the PPE properly.

These are however three of the many responsibilities learners should know about. This calls for training and retraining.

QUESTION: IS THERE ANYONE IN YOUR UNIT RESPONSIBLE FOR THE CORRECT USE OF PPE?

All 175 respondents indicated that there is no one in their work units who is responsible for ensuring that employees put their PPE correctly.

QUESTION: What do you suggest should be done to encourage the correct use of PPE?

Not all participants responded to the question. The participants indicated the following to improve the proper usage of PPE:

- there should be a responsible person in each section to check the correct usage of PPE;
- they should be trained on the importance of PPE;
- the limitation to the PPE should always be addressed in time;
- employees should be trained about the importance of PPE.

4.4.3 Statistical analysis of results

1. Data cleaning

Statistics

		Qualifications	Experience	Department	EXPOSURE TO OCCUPATIONAL INJURY	HAVE YOU BEEN DIAGNOSED WITH OCCUPATIONAL HEALTH	DO YOU TAKE CARE OF YOUR PPE?	DO YOU SHARE YOUR PPE?	Problems with PPE	HAVE YOU RECEIVED TRAINIG IN THE USE OF PPE?	WAS A FOLLOW UP TRAINING GIVEN	DO YOU KNOW YOUR RESPONIBILITIES REGARDING THE USE OF PPE?
N	Valid	175	175	175	175	175	175	175	175	175	152	157
	Missing	0	0	0	0	0	0	0	0	0	23	18

The data does not contain any missing values except for last two variables which are (Follow up training and knowledge of responsibilities) and the reason for that is because it is only participants who received training who could respond on whether a follow-up training was given.

-Given that, the conclusion is that the data is clean therefore analysis of the study can and should continue, since there really are no missing values.

2. Reliability analysis

Case Processing Summary

		N	%
Cases	Valid	175	100.0
	Excluded[a]	0	.0
	Total	175	100.0

a. List wise deletion based on all variables in the procedure.

The above table shows that no variables were excluded from the analysis, meaning the results are based on all the variables.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.93	.745	9

Cronbach's alpha measures internal consistency of variables, which at the end reveals on how closely related items of a group are.

The formula for this reliability measure is:

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$$

The rule of thumb for this reliability measure requires its coefficient to be greater or equals to 0.7.

Interpretation:

Since our Cronbach's alpha is 0.93, it also means that there is internal consistency of items within the groups and also how closely related the items of the group are, therefore reliability is assured.

3. Relationship between variables

3.1. Correlation matrix

Inter-Item Correlation Matrix

	Qualifications	EXPOSURE TO OCCUPATIONAL INJURY	HAVE YOU BEEN DIAGNOSED WITH OCCUPATIONAL HEALTH	DO YOU TAKE CARE OF YOUR PPE?	DO YOU SHARE YOUR PPE?	Problems with PPE	HAVE YOU RECEIVED TRAINIG IN THE USE OF PPE?	SMEAN(WAS_A_FOLLOW_UP_TRAINING_GIVEN)	YOU_KNOW_YOUR_RESPONIBILITIES_REGARDING_THE_USE_OF_P
Qualifications	1.000	-.132	.127	-.012	.205	.136	-.041	.046	-.372
EXPOSURE TO OCCUPATIONAL INJURY	-.132	1.000	-.098	-.014	.181	.021	.038	-.006	.070
HAVE YOU BEEN DIAGNOSED WITH OCCUPATIONAL HEALTH	.127	-.098	1.000	-.019	-.088	-.035	-.261	-.035	-.149
DO YOU TAKE CARE OF YOUR PPE?	-.012	-.014	-.019	1.000	.022	.032	.052	-.156	-.019
DO YOU SHARE YOUR PPE?	.205	.181	-.088	.022	1.000	.511	.076	.048	-.004
Problems with PPE	.136	.021	-.035	.032	.511	1.000	-.032	.082	-.029
HAVE YOU RECEIVED	-.041	.038	-.261	.052	.756	-.032	1.000	-.035	.649
SMEAN(WAS_A_FOLLOW_UP_	.046	-.006	-.035	-.156	.048	.082	-.035	1.000	.595
SMEAN(DO_YOU_KNOW_YOUR_RESPONIBILI	-.372	.070	-.149	-.019	-.004	-.029	.649	.659	1.000

The study seeks to investigate the correlation between (Knowledge of responsibility and follow up training given).

Correlation measure the strength of relationship between variables, and it ranges from (-1 to +1) implying positive correlation or negative. In this case correlation is 0.649, meaning there is a positive correlation between the variables.

This means that Knowledge of responsibilities is based on training received.

3.2. Anova results

The Anova table below was computed based on two Hypothesis statements.

Null hypothesis/ statement of claim (H_0) and Alternate hypothesis (H_1).

H_0: Training does not have an influence Knowledge of responsibility @ alpha is 5%

H_1: Training influences Knowledge of responsibility @ alpha is 5%.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig
Between People		58.642	174	.337		
Within People	Between Items	590.417	8	73.802	241.429	.000
	Residual	425.518	1392	.306		
	Total	1015.935	1400	.726		
Total		1074.576	1574	.683		

Grand Mean = 1.80

Rule of thumb is, if the table does yield significant results, then we reject the H_0 (null hypothesis) vice versa.

Interpretation

Our P-value is 0.000, meaning results are significant, therefore reject the H_0 that there is no influence between n the variables meaning there is an influence.

Therefore Training influences Knowledge of responsibility @ alpha is 5%.

4. Multicolinearity check

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.792	.057		13.877	.000		
	HAVE YOU RECEIVED TRAINIG IN THE USE OF PPE?	.305	.041	.494	7.468	.000	1.000	1.000

a. Dependent Variable: SMEAN(DO_YOU_KNOW_YOUR_RESPONIBILITIES_REGARDING_THE_USE_OF_PPE)

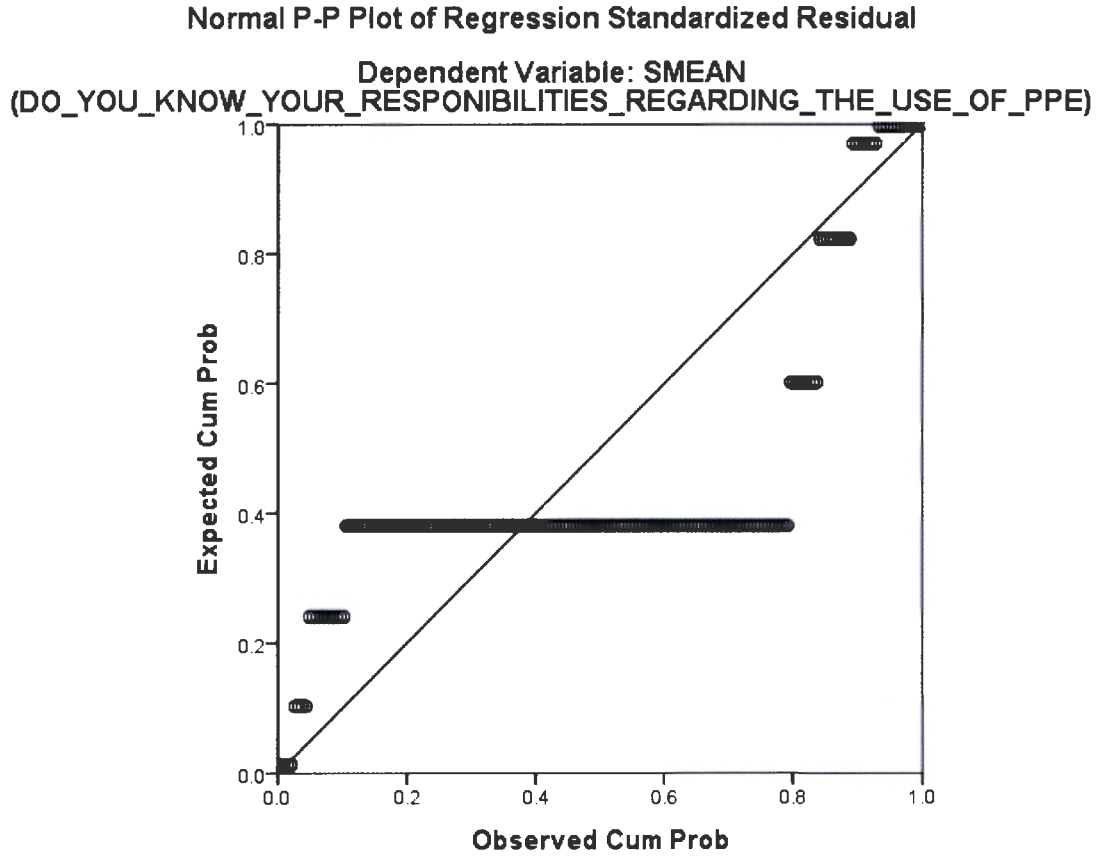
The rule of thumb says that if Variance inflation factor (VIF) is >.5 and Tolerance rate (Tol) < 0.2, then there is Multicolinearity. Multicolinearity is a sickness in statistics which can mean too much correlation and which at end will render spurious results.

Interpretation:

Since the Tol is not < 0.2 and VIF is not > 5 from the table above, this means that multicolinearity is not a problem for the analyses and variables at hand.

5. Normality check

Another important element is that the residuals have to be normal and that is (with the aid of the diagram below), the slope has to be 45 degrees.



From the above, it is evident that the slope of residuals is roughly 45 degrees, which means residuals are normal.

6. Descriptive statistics

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	*Statistic*	*Statistic*	*Statistic*	*Std. Error*	Statistic	*Statistic*	Statistic	*Std. Error*	Statistic	*Std. Error*
Qualifications	175	4	1	5	3.35	.084	1.114	1.242	-.914	.184	-.241	.365
EXPOSURE TO OCCUPATIONAL INJURY	175	1	1	2	1.66	.036	.474	.225	-.695	.184	-1.535	.365
HAVE YOU BEEN DIAGNOSED WITH OCCUPATIONAL HEALTH	175	1	1	2	1.93	.019	.253	.064	-3.444	.184	9.974	.365
DO YOU TAKE CARE OF YOUR PPE?	175	1	1	2	1.81	.030	.397	.157	-1.559	.184	.435	.365
DO YOU SHARE YOUR PPE?	175	1	1	2	1.78	.031	.413	.171	-1.384	.184	-.086	.365
Problems with PPE	175	1	1	2	1.87	.025	.332	.111	-2.278	.184	3.224	.365
HAVE YOU RECEIVED TRAINIG IN THE USE OF PPE?	175	2	1	3	1.27	.045	.589	.347	2.075	.184	3.053	.365
SMEAN (WAS_A_FOLLOW_UP_TRAINING_GIVEN)	175	2	1	3	1.30	.044	.578	.334	2.022	.184	3.015	.365
SMEAN (DO_YOU_KNOW_YOUR_RESPONIBILITIES_REGARDING_THE_USE_OF_PPE)	175	1	1	2	1.18	.027	.364	.132	1.790	.184	1.335	.365
Valid N (listwise)	175											

Interpretation:

- Mean for a qualification is 3.45 approximately 4, meaning on average most employees have secondary education followed by matric.
- Mean for 'Exposure to occupational injury' is 1.66 approximately 2, meaning on average less employees have been exposed to occupational injury
- Mean for 'Diagnosed with occupational health' is 1.93 = 2, implying on average most employees have not been diagnosed with occupational health.
- Skewness for 'do you take care of your PPE?' shows that employees who take care of their PPEs are below average, meaning they take care of their PPEs.
- Skewness for 'Do you share your PPE?' shows that they don't share their PPEs since below average.
- Skewness for 'have you received training in the use of PPE?' shows that most have not received training since it is above the mean.
- Skewness for 'was follow-up training given' shows that shows that No it was not done for many but only a few.

- Mean for 'do you knew your responsibilities regarding the use of PPE?' shows that most employees knows their responsibilities since 1.30 is approximately = 1.

4.5 CONCLUSION

The chapter discussed the findings of the study. The discussion of findings was done by means of using bar charts, pie charts and tables which were supplemented by narration into the findings. It was discovered that in general, few employees at BMW SA, Rosslyn Assembly sustained occupational injuries and diseases. This can be attributed to the fact that the use of PPE at the workplace is strictly enforced and also that the company is investing adequately with regard to providing PPE to the employees.

Of particular concern is the fact that employees are not aware that they also have a responsibility in terms of section 8 (2) of Occupational Health and Safety Act 85 of 1993 to ensure that they do not expose themselves and or their colleagues to an unsafe working conditions and also that they must report any unsafe condition to their managers and or to the Safety Representatives responsible for their work place.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter discussed the findings that emanated from the questionnaires. While an OHS culture is seldom found in the sector, all individuals have to take responsibility for their own and their colleagues' working environment. It is important to mention that ongoing risk assessment needs to be conducted as this will provide an indication of what effective mitigation measures could be implemented. Conducting a workplace risk assessment will also enable the employer to decide on the most appropriate PPE for any hazards present or likely to be present (Department of Labour and Industries, 2003:8). This chapter summarizes the findings of the study and presents recommendations.

5.2 SUMMARY OF FINDINGS

The aim of this study is to investigate causes of ineffective use of Personal Protective Equipment by employees at BMW South Africa Rosslyn Assembly Plant, Gauteng Province of South Africa. In order to achieve this aim, a number of objectives were put forward. These objectives are now looked at based on the empirical findings.

5.2.1 The first objective was to investigate the reasons for the reluctance of employees at BMW SA, Rosslyn Plant to use PPE.

From the empirical findings, the study showed that fifty six (56) of the respondents are reluctant to put on PPE because PPE at times do not make them feel comfortable. This may have a negative effect on how they go about performing their duties. Eighty (80) respondents indicated that the PPEs do not always fit them properly. This may be the problem of PPEs either being small or big. Twelve of the employees indicated that they prefer to use their clothes instead of the provided PPEs. One hundred and twelve (112) participants mention the hassle of asking for a replacement when there is a need. One hundred and three (103) are reluctant because there is no supervision on the correct use of PPEs in the company. This is in agreement with literature (Randles, 2009) which has shown that employees may at times not put their PPE because they feel that it interferes with their work; it is uncomfortable, it is not fashionable or it does not fit properly.

Employers should always if possible involve employees in the choice of PPE to avoid issues that may lead them not to put PPE. Another study has shown that the reasons why workers do not always comply with PPE protocols were mainly because they say that PPE is uncomfortable, not necessary, too hot, fits poorly and unattractive looking (Raylesburg, 2008:online).

5.2.2 The second objective was to identify the limitations that some of the PPE have.

From the empirical findings, it was noted that 30 of the respondents feel that the present PPE interferes with their work. It may be that the PPE is uncomfortable. Eighty seven (87) of the employees mention that they feel the PPE is not fashionable. Thirty six (36) indicated that it does not fit properly. If a protective gear is either small or big, it may affect the way one does one's job. Forty five (45) mentioned that the PPEs they use are worn out. This is in agreement with literature where it was shown by Miller Electric Mfg Co (2008) that some activities that employees do, like welding generate a lot of heat and it therefore becomes uncomfortable of a PPE such as glove, helmet, woolen hats, boots or full length pants have to be added for protection. Glove for example tends to expand its size as they are elastic and once loses its original size it becomes useless and danger to employee. Therefore, employees at BMW SA feel that bothering their store man about gloves most of the time is an indication that they do not need the job so they choose to tolerate.

5.2.3 The third objective was to determine the employees' knowledge on the importance of using PPE.

The empirical findings show that the general response from the participants was that the importance of the PPE is:

- to protect them from harm and injury by the equipment that they use;
- to protect their clothing from wear and tear due to work; and
- to keep them clean as they sometimes work in areas where there is dust and dirt.

This suggests that there is a need for the employees to be provided with information, and this can be done with training. Literature has shown that the primary aim of an occupational health and safety programme is the prevention of accidents and illness, which employs knowledge as the principal tool. Only accurate knowledge of the risks and adequate training in handling them can enable the worker to adopt appropriate behaviour in a hazardous working environment. A successful accident prevention programme depends on leadership by the employer and safe work habits and practices by the employees (Hatting, 2003:105). It is only through providing knowledge to workers that the use of PPE by employees could be enhanced.

5.2.4 The fourth objective was to determine employees' knowledge of their responsibilities for safety as stipulated in section 14 of OHS Act 85 of 1993.

Findings from empirical research show that 82 of the participants do not know about their responsibilities regarding the usage of PPE as stipulated in Section 14 of OHS act 85 of 1993. Only 35 of their participants claim to know about the responsibilities. This calls for a thorough training and awareness campaign to make employees know these important responsibilities. Regarding which of the responsibilities they know, most respondents did not respond to this question. The few who responded mentioned that they know that:

- they should take care of their PPEs;
- They must report unsafe conditions; and
- They have to put the PPE properly.

These are however three of the many responsibilities learners should know about. This calls for training and retraining.

According to Section 14 of OHS Act 85 0f 1993, the following are the responsibilities of employees regarding safety in a work situation:

(a) Taking reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions;

(b) As regards any duty or requirement imposed on his employer or any other person by this Act, co-operate with such employer or person to enable that duty or requirement to be performed or complied with;

(c) Carry out any lawful order given to him, and obey the health and safety rules and procedures laid down by his employer or by anyone authorized thereto by his employer, in the interest of health or safety;
(d) If any situation which is unsafe or unhealthy comes to his attention, as soon as practicable report such situation to his employer or to the health and safety representative for his workplace or section thereof, as the case may be, who shall report
it to the employer; and
(e) If he is involved in any incident which may affect his health or which has caused an injury to himself, report such incident to his employer or to anyone authorized thereto by the employer, or to his health and safety representative, as soon as practicable but not later than the end of the particular shift during which the incident occurred, unless the circumstances were such that the reporting of the incident was not possible, in which case he shall report the incident as soon as practicable thereafter.

5.2.5 The fifth objective was to make recommendations on specific measures that can be implemented to address all the problems encountered by employees at BMW South Africa Rosslyn Assembly Plant regarding the use of Personal Protective Equipments, based on the data collected.

Findings from empirical research show that not all participants responded to the question. The participants indicated the following to improve the proper usage of PPE:

- there should be a responsible person in each section to check the correct usage of PPE;
- they should be trained on the importance of PPE;
- the limitation to the PPE should always be addressed in time; and
- employees should be trained about the importance of PPE.

In order to change the attitude of employees regarding the use of PPE, the employer should listen to the suggestions by employees this will help change the situation regarding the reluctance of employees to put on their PPEs. According to Section 14 of OHS Act 85

0f 1993, the following are ways in which employers could use to address all the problems encountered by employees regarding the use of PPE:

(a) Managers wear their PPE and act as role models at all times.
(b) You've issued employees with PPE.
(c) The PPE is the correct size and type to protect the person from the hazard to which they're exposed.
(d) They have been trained in the correct use, maintenance and storage of their PPE.
(e) Supervisors reinforce the need to wear the PPE on a regular basis and insist that correct PPE is worn at all times.
(f) Employees are counselled on the risks associated with not wearing PPE.
(g) Colleagues are encouraged to motivate each other for safe practices which include using PPE.
(h) As a last resort enforce your disciplinary code for non-compliance with company requirements

5.3 RECOMMENDATIONS

Although it can be concluded that PPEs are effectively used at BMW SA Rosslyn Assembly Plant, however, some areas that require improvement have also been identified. The following recommendations are therefore made in an effort to address the weaknesses identified:

5.4.1 All employees using PPE must be trained on how to effectively use such equipments;

5.4.2 Occupational Health and Safety awareness training sessions must be continuously conducted to ensure that employees understand the importance of using PPE, as well as their general duties as stipulated in the Act;

5.4.3 Team Leaders must be tasked with the responsibility to periodically check the condition of the PPEs issued to employees. This will force the employees to take care of their PPEs and also to report whatever problems they may experience with their issued PPEs. It is also recommended that PPEs be checked from time to time to ensure that they function optimally;

5.4.4 Symbolic posters of different PPEs must be displayed at different areas within the plant to remind employees that unless such PPEs are worn, access to such areas will be denied.

5.4.5 All the employees ought to be made aware of the repercussions of not complying with PPE, e.g. that claims for injury on duty or occupational disease might not be paid or entertained by the Compensation Commissioner.

5.4.6 Corrective actions must be taken against employees who are continuously found disregarding the use of PPE at the work place;

5.4.7 Safety culture must be imbedded in the day to day operations of the company and all initiatives that support health and safety enhancement must be supported by top management.

5.4.8 Prizes can be awarded to the most complying sections or individual employees to encourage the use of PPE.

5.4 CONCLUSION

This chapter presented a summary of the findings from the empirical study. The chapter also came up with recommendations for the organization to implement in order to create a safe environment for the employees. The findings of the study have shown the importance of proper training in the correct use of PPE. This training should always be reinforced through follow up training.

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6. LIST OF REFERENCES

Abdelhamid, T. S. & Everett, J. G. (2000). "Identifying root causes of construction accidents." *Journal of Construction Engineering Management*.126(1), 52-60.

Abeysekera, J. 2007. The use of personal protective equipment in the cold environment. Available: www.*Coldtech-preliminary study report* (Assessed: 20 November 2012).

Adams. D, Du Plessis, AG, Gumbie, A & Willis, RPH. 2007. Introduction to safety practice in South African Mines. Braamfontein. Creda Communication.

Ambe, IM & Badenhorst-Weiss, JA. 2010. Strategic supply chain framework for automotive industry. *African Journal of Business Management* 4(10), August:2110 –2123.

Armour, M.A. 2003. *Hazardous Laboratory chemicals and disposal guide.* New York: CRC Press.

Awwad, J. 2001. *Effective occupational safety and health management system: Integration of OHSAS 18001, ILO-OSH 2001 and OR-OSHA*. University of Jordan.

Babbie, E & Mouton, J. 2003.*The practice of social research*. Cape Town: Oxford University Press.

Bennet, D. 2002: *Health and Safety Management Systems: Liability or Asset Pub.* Healthcare Institute.

Bless, C., Higson-Smith, C. & Kagee, A. (2006). *Fundamentals of Social Research Methods: An African Perpective, 4th Edition*. Juta: Cape Town.

Boschof, T. 2012. The Use of Personal Safety Equipment and Facilities at Work. *TheSouth African Labour Guide.*

Brink, HI. 1996. *Fundamentals of research methodology for health care Professionals* . Cape Town: Ceda Press.

Brown, G.D. 2005. *Protecting worker's health and safety in the globalizing economy* thorough international trade treaties. *International Journal of Occupational and Environmental Health*, Vol 11, 207-209.

Burns, N. & Grove, S.K. 2003. *Understanding research. 3rd edition. Philadelphia: W B Saunders.*

Canadian Centre for Occupational Health Safety. 2008. OHS Answers. *Designing an effective OHS* (Accessed 22 January 2013).

Chullen, J. 2012. *Occupational health and safety in the sugar industry of Kenya IUF global sugar program and Kenya union of sugar plantation employees (KUSPW) special publication*. IUF Global Sugar project in East and Southern Africa.

Collis, J. & Hussey, R. (2003) *Business Research: a practical guide for undergraduate and postgraduate students, second edition. Basingstoke*: Palgrave Macmillan.

Cooper, D.R. and Schindler, P.S. 2001. *Business Research Methods. 7th ed.* Boston: McGraw-Hill/Irwin.

Cox, T, & Griffiths, A. 2005. The nature and measurement of work-related stress. In J. Wilson & N. Corlett (Eds.), *Evaluation of Human Work: A Practical Ergonomics Methodology,* (3 ed). Boca Raton, FL: CRC Press.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches (3rd ed.). Thousand Oaks, CA: Sage.*

Department of Labour and Industries. 2003. *Protective Equipment (PPE) Guide Volume 1.* General PPE F417-207-000.

Dolez, P.I & Khanh, T.V. 2009. *Recent developments and needs in materials used for personal protective equipment and their testing. International Journal of Occupational Safety and Ergonomics (JOSE) Vol. 15, No. 4, 347–362.*

Dorman, P. 2000. *The economics of safety, health, and wellbeing at work: An over-view.* Geneva: International Labour Office.

Dryzek & Schlosberg: 2005.*Debating. Debating the Earth: The Environmental Politics Reader. Oxford: Oxford University Press.*

European Agency for Safety and Health at Work (EU-OSHA). 2004. *Corporate social responsibility and safety and health at work. Luxembourg: Office for Official Publications of the European Communities.*

Eurostat. 2010. Health and safety at work in Europe (1999-2007). *A statistical portrait. Luxembourg: Publications Office of the European Union.*

Field, A. 2005. *Discovering statistics using SPSS. CA: Sage.*

Fink, A. 2009. *Conducting Research Literature Reviews: From Internet to Paper. New Delhi: SAGE.*

Frank, J.R., Stephenson, M.R. & Merry, C.J. 1996. *Preventing occupational hearing loss-A practical guide. U.S. Department of Health and Human Services.*

Gall, M. D., Borg, W. R., Gall, J. P. (2003). *Educational research: An introduction. (7th Edition). White Plains, New York: Longman.*

Gay, L.R. 1992. *Educational research: competencies for analysis and application. New York: MacMillan.*

Gillham, B. 2000. *Developing a Questionnaire. London: Continuum Publishers.*

Gillen, M., Baltz, D., Gassel, M., Kirsch, L., & Vaccaro, D. 2002. *Perceived safety climate, job demands, and coworker support among union and nonunion injured construction workers. Journal of Safety Research, 33, 33-51.*

Graham, H. 2004. *Social determinants and their unequal distribution: Clarifying policy understandings. Blackwell Publishers. Health Assessment Systems Vol. 82(1), 101 124.*

Guild, R, Ehrlich, R.I, Johnson, J.C & Ross M.H. 2001. SIMRAC: *Handbook of occupational health practice in the South African mining industry. SIMRAC: Lippincott.*

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., and Tatham, R. L. L. 2010. *Multivariate Data Analysis. 6th Edition. Upper Saddle River, New Jersey: Pearson Education, Inc.*

Hattingh, S. P. & Accut, J. 2003. *Occupational health management and practice for health practitioners. Lansdowne: Juta.*

Herman, J.L., Aschbacher, P.R. & Winters, L. (1992). *A practical guide to alternative assessment. Alexandria, VA: Association for Supervision and Curriculum Development..*

Hattingh, S. & Acutt, J. 2009. *Occupational health: management and practice for health practitioners.* 3rd Edition. Pretoria: Juta.

Hickling, E.M. 1986. Occupational health: *Compatibility in PPE. Occupation Health: A Journal for Occupational Health Nurses, Vol 38(5).121-134.*

International Labour Office (ILO). 1999. *Economic and social effects of multinational enterprises in export processing zones. Geneva: International Labour Office.*

Jain, A.K., Puplampa, B.B. & Amponsah, K. 2012. *Occupational Safety and Health and Corporate Social Responsibilty in Africa: Repositioning Corporate Responsibility towards National Development. Glasgow: Cranefields Press.*

Johanson, U, Ahonen, G, & Roslender, R. 2007. *Work health and management control. Stockholm: Thomson Fakta.*

Karasek, R. A. 1979. *Job demands, job decision latitude and mental strain: Implications for job redesign. Administrative Science Quarterly, 24, 285-308.*

Khogali, M. 1982. *A new approach for providing occupational health services in developing countries. Scandinavian Journal of Work, Environment & Health, 8(1), 152-156.*

Lavrakas, P.J. 2008. Encyclopedia of Survey Research Methods. Available at: http://dx.doi.org/10.4135/9781412963947. Date Accessed: 25th May 2014.

Leedy, P. D., & Ormrod, J. E. (2005). Practical research: Planning and design (8th ed). Upper Saddle River, NJ: Prentice Hall.

Leka, S., & Jain, A. 2010. *Health impact of psychosocial hazards at work: An overview. Geneva: World Health Organization.*

Loewenson, R. 1998. *Assessment of the health impact of occupational risk in Africa: current situation and methodological issues. Epidemiology, 10(5), 632-639.*

Machabe, A.P. & Indermun, V. 2013. *Management perceptions of the occupational health and safety system in a steel manufacturing firm. Arabian Journal of Business and Management Review (Nigerian Chapter) Vol. 1, No. 25.*

Macintosh, M. & Gough, R. (1998). *The impact of workplace on occupational health and safety: A study of four manufacturing plants. An international journal of human factors in manufacturing. Wiley science*

Marangon, C. 2009. Job Safety and Ergonomics. Available at: http://www.areaseg.com. Accessed 11/10/2013.

Marmot, M. & Wilkinson, R. G. (Eds.) 2006. *Social determinants of health. Oxford: Oxford University Press.*

Mehta, P.K. & Burrows, R.W. 2001: *Building durable structures in the 21st Century. Concrete International. 23(3), pp. 57-63.*

Miller Electric Mfg Co. 2008.*Safety gear compliance failures.(Accessed on 22 August 2012.*

Miller, N. 2001. Stalking laws and implementation practices: *A National review of policymakers and practitioners. Institute of Law and Justice Research: Social Science Research Network.*

Mining safety (2014) Personal protective equipment: *Eye safety. Available at: www..mining safety.co.za . Date Accessed: 21 May 2014.*

NOSA. 2011. *Occupational health and safety act and regulations 85 of 1993.* 10th Edition.

O'Connel, R. 2004. *OHSAS 18001 Comprehensive Safety Management System. Available: www. OHSAS18001ComprehensiveSafetyManagement System..Accessed: 14 May 2014.*

Pilusa, M. 2008. *Problems encountered by foskor mine workers With the use of personal protective equipment. Unpublished MA dissertation. University of South Africa. Pretoria.*

Randles, V. 2009. *3M Occupational health and end environment safety division. PPE Matters. Available at: www.3m.co.uk/ohes. Date Accessed: 16 July 2014.*

Raylesburg, I. 2008. PPE compliance remains a Top Workplace Concern. Available at: http;//www.reuters.com/article/press Release/idUS13678. Date Accessed: 23 August 2014.

Robinson, E. 2001. *Personal protective equipment. Foot protection. (Accessed 23 February 2013).*

Rosenstock L, Cullen M, Fingerhut M. *Occupational Health. In: Jamison DT, Breman JG, Measham AR, et al., editors. Disease Control Priorities in Developing Countries. 2nd edition. Washington (DC): World .*

Safe & Healthy Working. 2007. *Health and safety information. Personal Protective Equipment. Personal Protective Equipment at work. (Accessed 02 January 2013).*

Schoeman, J. J. & Schroder, H.H.E. 1994.*Occupational hygiene. Cape Town: Juta.*

Seaman, E.H. 1987. *Research: principles, practice and theory for nursing. California: Appleton & Lange.*

Siegrist, J. 1996. *Adverse health effects of high-effort/low-reward conditions. Journal of Occupational Health Psychology, 1(1), 27-41.*

South Africa. 1993. *Occupational health and safety amendment Act, No. 85 of 1993. Pretoria: Government Printer.*

US Department of Health Human Services. *2008. National institute of health. National eye institute (Accessed 23 June 2012).*

US Department of Labour. 2007. *Occupational safety and health administration. (Accessed 25 February 2013).*

Vadum, A.C. & Rankin, N.O. 1998. *Psychological Research. Methods for Discovery and Validation . Boston: McGraw Hill.*

Valent, F., McGwin, G., Bovenzi, M. & Barbone, F. 2003: *Fatal work related inhalation of harmful substances in the United States. San Diago Carlifonia. Chest Journal.121: No. 3, 969 – 975.*

Van der Walt, C. & Van Rensburg, G. 2006. *Fundamentals of research methodology for health care professionals. 2nd ed. Lansdowne: Juta.*

World Health Organization (WHO. 2002. *Good Practice in Occupational Health Services: A Contribution to Workplace Health: Available at: www.who.int/occupational_health/publications: Accessed: 12 March 2014.*

World Health Organization (WHO). *1994. Global strategy on occupational health for all: The way to health at work. Recommendation of the second meeting of the WHO collaborating centers in Occupational Health, 11-14 October 1994, Beijing, China. Retrieved March 3, 2012, from http://www.who.int/occupational_health/globstrategy/en/ index2.html.*

World Health Organization (WHO). 1946. *Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946. Signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100).*

Zwetsloot, G. 2003: *From management system to corporate Social responsibility. Kluwer Academic Pub. Journal of Business Ethics.44, 201 –207.*

ANNEXTURES

Request for permission to conduct research **Annexure 1**

Noko Masalesa
6 J Elk Place
Phillipnelpark
0183
25 November 2013

Mr. Lyon Pretorius
BMW SA
6 Frans Du Toit Street
Rosslyn
0200

Dear Sir

Subject: Request for permission to conduct research

The above matter refers

I am a final year Masters of Business Administration student at North West University, and hereby wish to request permission to conduct research for my mini dissertation in partial fulfillment of the above mentioned qualification.

My research topic is "**Evaluating effective use of Personal Protective Equipment at BMW SA, Plant Rosslyn in Gauteng**".

As part of the research project, I intent to distribute research questionnaires to my selected sample of my population which consists mainly of the hourly workers who are using or are expected to be using PPE on a daily basis in the execution of their tasks.

Please take further note that the information obtained during such a research will be used purely for academic purposes and will not be used in any way that may put the image of BMW SA in disrepute.

Attached please find copies of confirmation letter, ethical clearance letter from North West University as well as a sample questionnaire and any more information regarding this matter will be provided upon your request.

Your approval to conduct this study will be greatly appreciated

Yours Faithfully,

_____

Mr Noko Masalesa
Risk Control Manager

Date: _____

Permission granted / Not granted

Comments:

_____
_____
_____

_____

Mr. Lyon Pretorius
Chief Security Officer: BMW SA

Date:_____

Request supported / not supported

Comments:

_____
_____
_____

_____

Ms Sonti Lurayi
Manager: Human Resources Development

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
MAFIKENG CAMPUS

11 December 2013

Informed consent for participation in an academic research study

Graduate School of Business and Government Leadership

Evaluating effective use of Personal Protective Equipment at BMW South Africa Plant Rosslyn, Gauteng Province

Research conducted by:
Mr. N. Masalesa (21965854)

Cell: +27 078 801 8198

Dear Respondent

You are invited to participate in an academic research study conducted by Noko Masalesa, a Masters of Business Administration student from the Graduate School of Business and Government Leadership at North-West University.

The purpose of the study is to evaluate effective use of Personal Protective Equipment at BMW SA Plant Rosslyn, Gauteng Province.

Please note the following:

- This study involves an anonymous survey. Your name will not appear on the questionnaire and the answers you give will be treated as strictly confidential. You cannot be identified in person based on the answers you give.
- This research adheres to all ethical requirements. Permission for this study was granted by Prof Nicolene Barkhuizen, Research Chair, Faculty of Commerce and Administration.
- Your participation in this study is very important to me, you may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- Please answer the questions in the attached questionnaire as completely and honestly as possible. This should not take more than 20 minutes of your time.
- The results of the study will be used for academic purposes only.
- Please contact my supervisors, Dr.J.A Meyer, janmeyer56@gmail.com should you have any questions or comments regarding the study.

Please sign the form to indicate that:

- You have read and understand the information provided above.

- You give your consent to participate in the study on a voluntary basis.

Respondent's signature	**Date**	

SECTION A

Demographic Information **Annexure 3**

1. **What is your gender?**

☐ Male

☐ Female

2. **What is your age?**

☐ 21 -25 years old

☐ 26-30 years old

☐ 35 -40 years old

☐ 41-45 years old

☐ 46-50 years old

☐ 51 years and over

3. **What is your race? [single mention]**

☐ Black
☐ White
☐ Coloured
☐ Indian/Asian
☐ Other (please specify)

_____

4. **What is your highest educational level?**

☐ No schooling

☐ Primary school

☐ Matric

☐ Undergraduate Degree/ Diploma

☐ Post graduate

☐ Other (Please specify_____)

5. **What is the number of years of working at BMW?**

- ☐ 1-5 years
- ☐ 6-10 years
- ☐ 11-14 years
- ☐ 15-20 years
- ☐ 21-25 years
- ☐ 26-30 years
- ☐ 31-35 years
- ☐ 40 and above

6. **What is your title?**

- ☐ Operational Coordinator
- ☐ Team Leader
- ☐ Associate
- ☐ Learner

7. **At which department are you working?**

- ☐ Assembly
- ☐ Body shop
- ☐ Logistics
- ☐ Training centre
- ☐ Other (please specify----------)

SECTION B:

Research Questionnaire Annexure 4

1. **Are you exposed to occupational injuries at your workplace?**

1.1 Yes ☐

1.2 No ☐

2. **If yes, what occupational injuries are you exposed to?**

_____

_____

3. **Were you ever diagnosed with occupational illness?**

4. **Do you know how to take care and operate the PPE that you use?**

4.1 Yes ☐

4.2 No ☐

5. Do you share PPE with your colleagues?

5.1 Yes ☐

5.2 No ☐

6. Have you ever experienced problems while using PPE?

6.1 Yes ☐

6.2 No ☐

7. If yes, what problem did you experience?

_____

_____

_____

8. Were you ever injured on duty?

8.1 Yes ☐

8.2 No ☐

9. If yes, what type of injury did you sustain?

_____

_____

_____

10. Were you making use of PPE issued to you at the time of injury?

10.1 Yes ☐

10.2 No ☐

11. If no why did you not make use of the PPE supplied to you?_____

_____

12. Were you trained on how to use PPE?

12.1. Yes ☐

12.2. No ☐

13. **Were disciplinary and or corrective actions ever been taken against you or any other person you know for not using PPE while on duty to prevent occupational illness?**

13.1. Ye☐

13.2. No☐

Thank you for your participation in the research!!!

DEFINITIONS OF KEY CONCEPTS

The following are concepts used in the study:

Personal Protective Equipment	PPE is defined as safety clothing and equipment for specified circumstances or areas where the nature of the work involved or the conditions under which people are working requires it's wearing or use for their personal protection to minimise risk (Occupational Health & Safety Act No. 85 of 1993. PPE may be an item worn on the body, such as gloves, or a device, such as a protective shield or barrier (Department of Labour and Industries. 2003:6).
Workplace	Workplace refers to any working area at BMW South Africa Assembly Plant where the workers perform their work.
Occupational Health and Safety Act 85 of 1993	This refers to the Act regulating the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith
An employee	An employee is defined as any person who

	is employed by or works for an employer and who receives or is entitled to receive any remuneration or who works under the direction or supervision of an employer or any other person.
An employer	An employer refers to any person that employs or provides work for any person and remunerates that person or expressly or tacitly undertakes to remunerate him but excludes a Labour Broker as defined in the Labour Relations Act 66 of 1995.
A hazard	Is an existing (or potential) hazardous or unsafe condition or work practice that, by itself or in combination with other conditions, could cause injury, illness, or death to employees, as well as cause damage to property.

ACRONYMS

BMW SA	Bavarian Motor Works of South Africa.
CSR	Customer Services Relations.
ILO	International Labour Organization.
JIT	Just in Time
MBSA	Mercedes Benz South Africa.
NOSA	National Occupational Safety Association.
OHSA	Occupational Health and Safety Act.
OHS	Occupational Health Service.
OHSAS	Occupational Health &Safety Assessment
PPE	Personal Protective Equipment
RSA	Republic of South Africa
SPSS	Statistical Package for the Social Sciences.
WHO	World Health Organization.
VDC	Vehicle Distribution Centre.

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