

UNIVERSITY OF CAPE COAST

RELATIONSHIP BETWEEN SAFETY MEASURES OF OIL
MARKETING COMPANIES AND SAFETY PRACTICES OF FUEL
SERVICE STATION ATTENDANTS IN SEKONDI-TAKORADI
METROPOLIS

EDWARD WILSON ANSAH

2012

UNIVERSITY OF CAPE COAST

RELATIONSHIP BETWEEN SAFETY MEASURES OF OIL
MARKETING COMPANIES AND SAFETY PRACTICE OF FUEL
SERVICE STATION ATTENDANTS IN SEKONDI-TAKORADI
METROPOLIS

BY

EDWARD WILSON ANSAH

Thesis submitted to the Department of Health, Physical Education and Recreation of the Faculty of Education, University of Cape Coast, in partial fulfilment of the requirements for award of Master of Philosophy Degree in Health Education

JUNE 2012

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Signature Date.....

Name: Edward Wilson Ansah

Supervisors' Declaration

We hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature:..... Date:.....

Name: Prof. Joseph K. Mintah

Co-supervisor's Signature Date.....

Name: Dr. Silvanus L. Lamptey

ABSTRACT

The dual purposes of this study were to explore (1) the safety measures provided by the management of oil marketing companies and/or fuel stations managers and (2) relationship between these safety measures and safety practices of the fuel service station attendants. The study used a cross-sectional survey design in the Sekondi-Takoradi Metropolis. A total of 114 pump attendants from Allied Oil, Goil, Shell and Total Petroleum companies participated in the study. A researcher generated questionnaire (AFSSAQ) with an alpha of .82 was used for data collection.

In general, there was a high provision of safety measures among the companies. The companies were significantly different in their safety policy enforcement $F(3, 110) = 6.78, p < .05$. And that Shell ($M = 14.83, SD = 4.50$) has a higher safety policy enforcement practices than Goil ($M = 10.50, SD = 4.17$). The companies also showed significant difference in the provision of personal protective equipment $F(3, 110) = 4.71, p < .05$. Thus, Total Petroleum ($M = 12.97, SD = 3.49$) provided better personal protective equipment than Goil ($M = 8.97, SD = 4.22$). There was a low to moderate positive correlation between safety practices of the attendants and safety measures of the oil companies.

However, attendants may be exposing themselves to harmful fumes due to the lack of appropriate personal protective equipment. Provision of appropriate safety measures could improve the safety practices of pump attendants in the Sekondi-Takoradi Metropolis.

ACKNOWLEDGEMENTS

I am grateful to my principal supervisor, Prof. Joseph K. Mintah for guiding me through this work. Through his thorough intellectual guidance, encouragements and supply of materials, this research work has seen its successful end. I am equally thankful to my co-supervisor, Dr. Silvanus L. Lamptey. This work has come to its successful end through your immense support, both in kind and cash. I am very grateful to Dr. Joseph K. Ogah, the Head, Department of Health, Physical Education and Recreation (HPER), UCC. Your constant asking of the progress of work has kept me working hard to the successful conclusion. My thanks also go to Dr. (Mrs.) Ursula C. Nnabueze whose support, both kind and cash, has been one of the backbones of the success of this work. I am also indebted to Mr. Elias Menyanu and other Senior Research Assistants in the Department of HPER for their fruitful support. I again extend my thanks to Messrs, Charles Domfeh, and Emmanuel E. Fotwe for assisting in the validation of the research instrument. Special mention is deserved of Ms. Mina E. Adzimah for her valuable support till this day. To all my friends and family members who by diverse means contributed to my second degree education, I say may the Lord richly bless you.

DEDICATION

To my father Mr. Daniel Kodzo Ansah and my uncle Mr. John Kofi Gidigo.

TABLE OF CONTENTS

Content	Page
DECLARATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
DEDICATION	v
LIST OF TABLES	x
LIST OF FIGURES	xi
CHAPTER	
ONE INTRODUCTION	1
Background to the Study	1
Statement of the Problem	10
Purpose of the Study	10
Research Questions	11
Hypotheses	11
Significance of the Study	12
Delimitation of the Study	12
Limitations of the Study	12
Definition of Terms	13
Organization of the Rest of the Study	14

TWO	REVIEW OF RELATED LITERATURE	15
	Overview of Fuel Service Station Industry in Ghana	16
	Hazards Associated with Fuel Service Station Work	18
	The Three “E”s of Safety	20
	Theoretical Framework	21
	Protection Motivation Theory	22
	Protection Motivation Theory in Safety	
	Practices of Workers	23
	Factors Affecting Health and Safety Practices of Workers	26
	Safety Policy Enforcement	28
	Safety Training/Education	35
	Safety Facilities	41
	Personal Protective Equipment	44
	Safety Practices at Workplace	47
	Summary	52
THREE	METHODOLOGY	56
	Research Design	56
	Population	56
	Sample and Sampling Procedure	57
	Instrument	59
	Validity of the Instrument	60
	Reliability of the Instrument	60
	Data Collection Procedure	61

	Data Analysis	62
FOUR	RESULTS AND DISCUSSION	65
	Research Question 1: What Safety Measures are Provided for Fuel Service Station Attendants by Oil Marketing Companies in the Sekondi-Takoradi Metropolis?	65
	Research Question 2: What is the Level of Safety Practice of Fuel Service Station Attendants in the Sekondi-Takoradi Metropolis?	71
	Research Question 3: Do Male and Female Fuel Service Station Attendants in the Sekondi-Takoradi Metropolis Differ in their Safety Practices?	75
	Research Question 4: Does Education Level Influence Safety Practices of the Fuel Service Station Attendants of in the Sekondi-Takoradi Metropolis?	77
	Research Question 5: Are there any Differences in Safety Practices of Fuel Service Station Attendants of Different Oil Marketing Companies in the Sekondi-Takoradi Metropolis?	79
	Research Question 6: Are there any Differences in the Safety Measures Provided by the Oil Marketing Companies for their Fuel Service Station Attendants in the Sekondi-Takoradi Metropolis?	81

	Research Question7: What is the Relationship between the Safety Measures of Oil Marketing Companies and the Safety Practices of Fuel Service Station Attendants in the Sekondi-Takoradi Metropolis?	84
FIVE	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	89
	Summary	89
	Findings	92
	Conclusions	94
	Recommendations	94
	Suggestions for Further Studies	95
	REFERENCES	96
	APPENDICES	122
A	QUESTIONNAIRE FOR FUEL SERVICE STATION ATTENDANTS	122
B	COVER LETTER	125
C	INFORMED CONSENT FORM	126
D	RESULTS OF CORRELATION ANALYSIS	127

LIST OF TABLES

Table	Page
1 Frequency Data of Safety Measures of the Oil Marketing Companies in Sekondi-Takoradi Metropolis?	66
2 Frequency Data of the Level of Safety Practices of Fuel Service Station Attendants in Sekondi-Takoradi Metropolis	72
3 A One-Way ANOVA Calculating the Differences in Safety Practice as a Result of Educational Levels of Fuel Service Station Attendants	77
4 A One Way ANOVA Calculating the Differences in Safety Practice of Fuel Service Station Attendants	80
5 Means and Standard Deviations of Safety Measures of Oil Marketing Companies in Sekondi-Takoradi Metropolis	83
6 Correlation between Safety Practice (SP) and Safety Measures	85

LIST OF FIGURES

Figure	Page
1 The Conceptual Framework showing the Factors Associated with Health and Safety Practices of Workers at Workplace	28

CHAPTER ONE

INTRODUCTION

Background to the Study

One of the functions of World Health Organization (WHO) is to promote the improvement of working conditions in all nations (WHO, 2007). As part of fulfilling this function, an arm of WHO, World Health Assembly, endorsed WHO Global Plan of Action on Workers' Health (GPA) (2008-2017). Preceding this was WHO Global Strategy on Occupational Health for all. This was endorsed by the World Health Assembly in 1996. The main objectives of GPA are to:

Establish basic levels of health protection at all workplaces to decrease inequalities in workers health between and within countries and strengthen the promotion of health at work; ensure access of all workers to preventive health services and link occupational health to primary health care; and improve the knowledge base for action on protecting and promoting the health of workers and establish linkage between health and work (WHO, 2007, p. 8).

The objectives of WHO's GPA (2008-2017) are directly related to the health and safety of workers at various workplaces. Like any other WHO programme, every member state including Ghana has to put measures in place to meet these aims. Meanwhile, Ghana has no national policy on occupational

health and safety (Adie & Kunfaa, 2007; Clarke, 2008) which will be the basis to protect the health and safety of workers.

Health is one of the rights of all people. The development of services to promote health is part of the battle against the three major scourges of poverty, ignorance and disease. These scourges still handicap so many people in the developing countries at their worksites (WHO, 2007). It is essential that workers be healthy, whether they are farmers or workers in industries or offices. Thus, the health care of workers is one of the most direct contributions that employees' health services programmes can make to productivity (de Glanville, Schilling & Wood, 1992; WHO, 2007). The working capacity of the workforce sustains the economic and material base of any society. Hence, the occupational health and well-being of working people are crucial pre-requisite for productivity. In effect, socio-economic and sustainable development of every nation largely depends on workers, and for that matter the importance of their health and safety (Clarke, 2008).

Since work plays a central role in people's lives, the work environments should be safe and healthy (Clarke, 2008; Gamperiene et al., 2008; Health and Safety Executive, 2008). Everyday, workers all over the world are faced with a multitude of health hazards such as dusts, gases, noise, vibration, extreme temperatures, ultraviolet rays, violence and many other factors adverse to health and safety. Unfortunately some employers assume little or no responsibility for the protection of workers' health and safety. In fact, some employers do not know that it is their moral and legal responsibility to protect workers in order to prevent illness, injury and anything adverse to the health of their workers (Health and Safety Executive, 2009a). Protecting workers' health could improve productivity, reduce cost due to workers'

compensation payment and save and/or promote the image of the organization (Olaotse, 2010; Veltri, Pagell, Behm & Das, 2007). As a result of the lack of attention given to health and safety, work-related accidents and diseases are common in almost all parts of the world especially in developing nations (Clarke; Zimmer, 2008). Work-related accidents and/or diseases are very costly. Zimmer contends that such accidents and diseases have many serious direct and indirect effects on the lives of workers and their families as well as the society.

Poor working conditions of any type have the potential of affecting worker's health and safety negatively. Overall, efforts in occupational health and safety must aim at preventing industrial accidents and diseases as well as recognizing the link between workers' health and safety in the workplace. Moreover, it is the legal and moral obligation of employers to equip their employees with skills in first aid, handling or lifting of heavy loads and handling of safety equipment such as fire extinguishers (Clarke, 2008; Health and Safety Executive, 2009b). Providing workers with proper personal protective equipment (PPE) and properly educating them about their use are necessary health promoting measures. In addition, educating workers about the dangers of their job and providing them with the opportunities to access curative health are some other critical safety responsibilities of employers (Health and Safety Executive, 2008; NT WorkSafe, 2010; SafeWork BC, 2008). These measures facilitate the attitude of workers towards safety at work.

Fuel service station is also known as filling station, fueling station, garage, gas bar (Canada), gas station (U.S. and Canada), petrol bunk or petrol pump (India), petrol garage or petrol kiosk (Singapore), petrol station (United

Kingdom, Ireland and Hong Kong). It is a facility which sells fuel and lubricants for motor vehicles.

The most common fuels sold today are petrol, known also as gasoline or gas, diesel fuel and electric energy. Moreover, fuel sellers also known as fuel service station attendants (FSSAs), or pump attendants are used to pump petrol/gasoline, diesel, biofuels like biodiesel, kerosene, or other types of fuel into vehicles and calculate the financial cost of the fuel transferred to the vehicle. Fuel dispensers are also known as bowers (in some parts of Australia), petrol pumps (in most Commonwealth countries) or gas pumps (in North America) (Gwynn, 2005).

Petroleum industries including fuel filling or fuel service stations are hazardous workplaces. The working environments for workers require that employers formulate and implement comprehensive safety policies, measures and programmes. Enforcing such policies, implementing the measures and programmes is equally important to safeguard the well-being of all workers (de Glanville et al., 1992; Health and Safety Executive, 2008; Oduro, 2006). Some of these safety measures or programmes may include formulation and enforcement of safety policies and formation of health and safety committees. In addition, pre-employment medical examination and provision of safety equipment such as fire extinguishers, sand bucket with sand at the forecourt, and appropriate changing facilities are very crucial to the safety practices of fuel service station workers. Such safety measures could help prevent injuries and illnesses such as respiratory problems, chemical and fire burns, dermatitis and back injuries. Muscular strain resulting from lifting heavy access cover to storage tanks, robberies and many other events hazardous to health could also be prevented by instituting safety measures (Health and Safety Executive,

2010; Ratard & McFarland, 1993; van Mark, Spallek, Kessel & Brinkmann, 2006).

Many accidents have ripped Ghana of its human and material resources. For example, in 2008, a gas explosion in Kumasi claimed three lives and injured several other workers at the station (Ghana News Agency [GNA], 2007a). Additionally, the incidences according to GNA include armed robbery attacks and gas explosion at a gas station in Kumasi in September 2007. These incidences killed three workers and injured several others including customers. In addition, two workers died in Kumasi at a gas station when one of them earlier entered a dumping tank (gas tank). He was followed later by the other (to verify the situation of the earlier one) who could not hear his friend's activities in the tank. The two workers died of suffocation (GNA). The second worker would not have died if a little precautionary measure were taken. And this may have occurred as a result of lack of knowledge or lack of proper supervision from the part of the management. It is clear from these evidences that many fuel station workers have no knowledge about the hazards of their job. Several of these workplace accidents may be occurring without public notice or unreported.

Chronicle of robbery incidences reported at some filling stations in the country include; robbery of the Fraga oil filling station at Swedru in March 2004, and robbery of Allied oil filling station on the Aflao road in April 2009. Others include robbery of Goil filling station at Sekondi in May 2010, robbery of the Shell filling station at Tema in April 2011 and robbery of Shell filling station again in June 2011 at Takoradi (GNA, 2004; 2009; 2010; 2011a; 2011b) respectively. These incidences pose serious health problems or threats to fuel station workers. The robbers do not only rob their victims at gun point,

they in addition traumatize and sometimes sexually abuse the female workers, kill some of the workers and torture them in various ways (Olaotse, 2010).

Unfortunately, the Agona Swedru District Commander of the Ghana National Fire Service, Mr. Alfred A. Acheampong, reported that most hotels, petrol and gas stations in the Agona Swedru district were without fire certificates and fire extinguishers (GNA, 2007b). According to the commander, even where fire extinguishers were available, they were not in good shapes or simply not refilled periodically to be able to fight fire. A similar report by Mr. Yaw Sarfo-Afriyie, the Western Regional Environmental Officer, revealed that fire incidents at liquefied petroleum gas (LPG) and/or fuel filling stations in some parts of the country especially in the Western Region had given cause to prevent fuel operation in residential areas especially close to naked fires (GNA, 2011c). Meanwhile, majority of the fuel service stations are already situated in the center of towns and cities. In addition, attendants or workers at these stations are faced with violence, including robbery (GNA; Oduro, 2006), putting their life and safety at risk. Thus, safety measures are not given the necessary attention to provide for the health and safety of the workers in these industries.

Clarke (2008) reported that preventive strategies like risk assessment, medical surveillance and control of hazards were not catered for in the informal sector where petrol service station attendants form part. These raise questions about the kind of occupational health and safety measures oil marketing companies (OMCs) and/or filling station owners have at their workplaces which help serve the safety needs of these workers. In addition, personal experience as a former fuel service station attendant, assistant

manager and a manager revealed that health and safety issues of fuel service stations are not given due attention.

Workers in the petrochemical industries including FSSAs are always exposed to various harmful compounds such as benzene, ethyl benzene, nitrobenzene, toluene and many others believed to be carcinogenic (Ahmed, Kutty, Khamidi & Azmi, 2005; Natelson, 2007; Olaotse, 2010; Udonwa, Uko, Ikpeme, Ibanga & Okon, 2009). Exposure to these chemicals could cause central nervous system (CNS) defects such as staggered gait, slurred speech and confusion or cancer in the long term (Hallare, Gervasio, Gervasio & Acacio-Claro, 2009; Majumdar, Dutta, Mukherjee & Sen, 2008; Sudha, Bindhya, Athena & Sabari, 2010). Unconsciousness, death due to respiratory failure, renal dysfunction and lipid degeneration may be evidenced. Other clinical manifestations like haematuria, proteinuria and myoglobinuria could result from exposure to these harmful chemicals (Dede & Kagbo, 2002; Tu, Mitchell, Kay & Risby, 2004). To curtail these health hazards or conditions necessitate the formulation and implementation of specific health and safety measures that protect the health and safety of fuel service station workers in general especially pump attendants. Therefore, it is necessary to understand the safety measures employers/managers provide for FSSAs and the relationship these safety measures have on workers' safety practices.

Petrol service stations are particularly hazardous workplaces for both the workers and their customers (de Glanville et al., 1992; Health and Safety Executive, 2008). Main unsafe conditions found at fuel service stations are related to carelessness, electrical fault, hand brake, mechanical problems and maintenance. These conditions expose the workers to harmful substances such as benzene which is highly carcinogenic (WHO, 2010). If hazards related to

this trade are addressed appropriately, it could help develop safe working environment (Ahmed et al., 2005). Research show that formulation and enforcement of health and safety policies (Gimeno, Felknor, Burau & Delclos, 2005; Smith & Wadsworth, 2009; Worksafe-Victoria, 2006), provision of safety training/education (Lingard, 2002), provision of safety equipment or facilities (Kendrick et al., 2008) and providing workers with PPE (Mathews et al., 2008) will to a larger extent enhance safety behaviours of workers at their workplaces (Health and Safety Executive, 2009a). These may prevent injuries and ill health. Thus, protecting and promoting the health and safety of these workers.

Workers' safety behaviours or practices are high in all workplaces where good health and safety policies are enforced by the management or supervisors (Skelton, 2006; Worksafe Victoria, 2006). The way workers perform their job in a safe manner to protect themselves depends to some degree on their perception of the organizational safety climate (Clarke, 2006; Gimeno et al., 2005; Smith & Wadsworth, 2009) and largely on the safety measures provided to the workers. Thus, if attendants believe that management is concerned about their (workers) health and safety, they are likely to observe safety rules to safeguard their own health and wellbeing. The development of this perception is directly related to the management's relationship and prompt response to the workers' safety needs (Gimeno et al., 2005; Smith & Wadsworth, 2009).

Safety behaviours or practices of workers could be promoted through training and education about the hazards of their jobs (Geller, 2005). Training workers on emergency responses and any other action that they require to perform their job safely, may promote high safety practices. Thus, appropriate

training equips workers with tools to work safely (Lormphongs et al. 2004). In addition, providing the workers with adequate facilities and equipment, providing them with PPE will not only provide convenient places for work, tools or uniform to work with, but will also provide opportunities to engage in self-protecting behaviours. Such protective behaviours might include changing of working cloths after work, responding to emergencies promptly and observing personal hygiene practices (Kendrick et al., 2008; Mathews et al., 2008).

According to protection motivation theory (PMT), workers' motivations or intentions to protect themselves from injuries and ill health are enhanced by four critical cognitions or perceptions. The perceptions include the severity of the risk, the personal vulnerability to the risk, self-efficacy and the response efficacy of the risk-reduction behaviour (Rogers, 1975). Workers' intentions to protect themselves are also weakened by the perceived costs of the risk-reducing behaviours and the perceived benefits of the alternative risk-enhancing behaviours (Rogers, 1975; 1985; Rustemli & Karanci, 1999). That is, the assessment of threats based on their severity, vulnerability and benefits, and coping factors such as self-efficacy, response efficacy and costs combine to motivate workers to protect themselves from the risks associated with their jobs (Bender, Ingrid & Raish, 2006). Therefore, service station attendants' motivation to protect themselves depends on their understanding or knowledge about hazards associated with their jobs. Understanding the impact these hazards have on their health and having the appropriate tools to protect themselves will enhance workers' efforts to safely guard their health and safety at their workplaces (York University, 2009).

Statement of the Problem

Occupational health and safety or workplace health and safety is essential for providing a safe working environment in which employees can work with no or minimal risk to their health. On the job accident can cause instant injuries and illnesses that could lead to permanent disability or even death. Available literature estimates annual non-fatal work related diseases to be 160 million worldwide. Of this figure, 58 million workers experience at least four days of absence from work (Zimmer, 2008). Meanwhile, employers have a common duty to provide a safe workplace for their employees (Cole, 2002).

Ghana, over the years has been bedeviled with occupational disasters especially in the area of petroleum industries. Fire, explosions and armed robberies have been on the increase and claimed several lives in some of these stations (GNA, 2011a). This therefore, makes it important for the provision of appropriate measures that safeguard workers' health and safety. Moreover, as employers make efforts to safeguard the life of workers, it is equally the duty of the workers to observe workplace safety measures to protect their lives (Clarke, 2008; Health and Safety Executive, 2008).

Purpose of the Study

The dual purposes of this study were to explore;

1. The safety measures put in place by the employers and/or managers of FSSAs and
2. The relationship between the safety measures provided by the oil marketing companies and safety practices of the FSSAs in the Sekondi-Takoradi Metropolis.

Research Questions

The following research questions guided the study.

1. What safety measures are provided for FSSAs by oil marketing companies in the Sekondi-Takoradi Metropolis?
2. What is the level safety practice of FSSAs in the Sekondi-Takoradi Metropolis?
3. Do male and female FSSAs in the Sekondi-Takoradi Metropolis differ in their safety practices?
4. Does educational level influence safety practice of FSSAs in the Sekondi-Takoradi Metropolis?
5. Are there any differences in safety practice of FSSAs of different oil marketing companies in the Sekondi-Takoradi Metropolis?
6. Are there any differences in the safety measures provided by the oil marketing companies for their FSSAs in the Sekondi-Takoradi Metropolis?
7. What is the relationship between the safety measures of oil marketing companies and the safety practice of FSSAs in the Sekondi-Takoradi Metropolis?

Hypotheses

The following hypotheses were also formulated to guide the study;

1. Male and female FSSAs in the Sekondi-Takoradi Metropolis will differ in their safety practices.
2. There will be a positive relationship between the safety measures of oil marketing companies and the safety practice of FSSAs in Sekondi-Takoradi Metropolis.

Significance of the Study

Employers, the government and its agencies are required to promote and protect the health and safety of the workers of fuel service stations in the country. Findings from this study will help OMCs or service station managers to enforce safety policies at the fuel service stations. Safety policies enforcement may lead to a reduction in the companies' health care expenses. It will also promote the image of the companies.

FSSAs may be enlightened by the findings of this study to demand from their employers adequate OHS services. Beside, the results of this study will help the Ministry of Employment and Social Warfare, the Department of Health and Occupational Safety (of the Ministry of Health), Ghana Employers Association and other relevant agencies to strengthen relevant safety regulations/policies to promote and protect the health and safety of workers, especially those in the fuel marketing industries. Finally, the findings will assist Shop and Factory Inspectors and other labour associations to demand appropriate health and safety for FSSAs.

Delimitation of the Study

The study was delimited to only FSSAs who work at the forecourts (pump attendants) of the following OMCs, Total Petroleum Ghana Limited, Shell Ghana Limited, Allied Oil Limited and Ghana Oil Company (GOIL) Limited located in the Sekondi-Takoradi Metropolis in the Western Region of Ghana.

Limitations of the Study

The participants (pump attendants) and the OMCs (Allied, Goil, Shell and Total) used in this study were selected purposively. The participants and the OMCs were not necessarily the representative of all FSSAs and all OMCs

in the Sekondi-Takoradi Metropolis. The purposive sampling procedure limited the generalizability of the research findings.

Definition of Terms

Attendants, Filling Station Attendants, FSSAs: Include all workers who sell petrol, diesel, kerosene, work (repair) on the vehicles at the fuel filling stations and those that sell in the shops (Ghana Oil Company, 2010).

Service Station: An established fuel dispensing station where petrol, diesel and kerosene are sold to the public and vehicles engines are work on. It also includes the stations with lube bays, where vehicles are repaired (Ghana Oil Company, 2010; Shell Australia, 2007).

Forecourt: An open space either with or without roof where the sale of fuels, petrol, diesel, kerosene and other products take place at the service stations (Ghana Oil Company, 2010; Shell Australia, 2007).

Hazard: A situation, condition or environment which has a potential to cause harm, damage, human injury or ill health or combination of these (Shell Australia, 2007).

PPE: All equipment (including clothing affording protection against the weather) which is intended to be worn at work and which protect workers against one or more risks to health or safety, e.g. safety helmets, gloves, eye protection, safety footwear and safety harnesses (Chilcott, 2007; Shell Australia, 2007).

Pump Attendants: Are the service station workers who normally sell at the forecourt.

Risk: the probability of occurrences of a hazardous event or exposure and the severity of injury or ill health that can be caused by event or exposure (Chilcott, 2007; Shell Australia, 2007).

Supervisor: Person who helps the station manager and other station workers in the discharge of their duties. He or she also liaises between the manager and other workers (Ghana Oil Company, 2006; 2010; Guisefield & Frimpong, 2011; Olaotse, 2010).

Organization of the Rest of the Study

The rest of the study was organized under chapters two, three, four, five, references and appendices. Chapter two addressed the review of related literature under the following variables; overview of fuel service station industry in Ghana, hazards associated with fuel service station work, the three “E”s of safety, and theoretical frameworks. The chapter also has other headings including factors affecting health and safety practices of workers, safety policies enforcement, safety training/education, safety facilities, PPE, safety practices and summary of review of related literature. Chapter three, the methodology, focused on the research design, population, sample and sampling procedure used in this study. The research instrument used for data collection, validity and reliability of the instrument, pilot test, procedures for data collection and data analysis also form part of the chapter three. Chapters four and five composed of the results and discussion, summary, conclusions and recommendations of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Occupational health and safety of workers has been a concerned since the Code of Hammurabi, circa 2000 (Goetsch, 2005; LaDou, 2003). Workers' health and safety has led WHO and ILO to formulate regulations and organize institutes for their member countries (Asogwa, 2000; Jensen, 2005). The regulations enjoin employers and/or managers to protect the safety and well-being of their workers and other people affected by the operations of the companies (Cooper, 2006). The employee is also required to comply with the measures to protect his/her own health and that of others (Health and Safety Executive, 2007). The dual purposes of this study were to explore (1) the safety measures put in place by the employers and/or managers of service station attendants and (2) the relationship between the safety measures provided by the OMCs and safety practices/behaviour of the FSSAs in Sekondi-Takoradi Metropolis. The review of literature was organized under the following sub-headings:

1. Overview of Fuel Service Station Industry in Ghana
2. Hazards Associated with Fuel Service Station Work
3. The Three "E" S of Safety
4. Theoretical Framework
5. Factors Affecting Health and Safety Practices of Workers
6. Safety Policy Enforcement
7. Safety Training/Education

8. Safety Facilities
9. PPE
10. Safety Practices of Workers
11. Summary of Review of Related Literature

Overview of Fuel Service Station Industry in Ghana

Until the offshore discovery of crude oil in commercial quantities in July 2007, Ghana's oil industry featured more prominently in the downstream sector. However, with the impending commencement of crude oil production in the last quarter of 2010, Ghana's oil and gas industry can now be categorized into the upstream and downstream sectors. The upstream sector covers the exploration, development and production of crude oil and natural gas. The downstream sector covers the refining, storage, internal transportation, marketing and sale of petroleum products including petrol, liquefied petroleum gas (LPG), diesel and kerosene (Prempeh, 2010).

The downstream oil sector is dated back to the colonial era where only expatriate OMCs like Shell, Texaco, British Petroleum, Mobil and Total Oil Company imported, distributed and sold fuel and fuel products in the country. These companies built fuel service/filling stations at the various vantage places in the country where the distribution and sale of petroleum products took place (Prempeh, 2010). The selling of petroleum products at the various service stations was done by the pump attendants. Aside trading in petroleum fuel and fuel products, the OMCs also trade in other products including lubricants, car care products, car wash bays and convenience goods (Total Petroleum Ghana, 2010).

Many OMCs came to the fore of oil marketing in Ghana just after independence and recently (in 21st century) because of economic growth and

expansion in country's oil industry (Prempeh, 2010; Total Petroleum Ghana, 2010). Many companies, both local and foreign, joined in for oil marketing in the face of this expansion. These companies operated as a loose organization for many years until in October 2003 when an Association of Oil Marketing Companies (AOMCs) was established. The association has mandate to promote the interest of their members and that of their customers.

Currently, AOMCs have about 40 licensed OMCs as it members. The OMCs have about 1,800 licensed retail outlets all over the country. The members of this association include Agapet Oil, Allied Oil, Anasset Oil, AP Oil & Gas, Bano Oil, Capstone Oil Ltd, Champion Oil, Dukes Petroleum, Engen Ghana Ltd, Excel Oil, Fraga Oil, Frimps Oil, Galaxy Oil, Ghana Oil, Glory Oil, Havillah Oil, Keysens Oil Market and Manbah Gas. The rest include Merchant Oil, Modex Oil, Nasona Oil, Oando Ghana, Obiba J. K, Pacific, Shell Ghana, Sky Petroleum, Star Oil, Sonnidom Energy, Strategic Energies, Superior Oil Co, Top Oil, Total Petroleum, Trade Cross, Trinity Oil, UBI Petroleum, Union Oil, Unity Oil, Universal Oil, and Virgin Petroleum (Allied Oil, 2009; AOMCs, 2011; GNA, 2011d).

This industry has over the years seen some major mergers with assistance from the association. Such mergers involved the acquisition of Elf Petroleum by Mobil Oil Ghana and later, the acquisition of Mobil Oil by Total Petroleum Ghana. In addition Shell Oil Ghana Limited also acquired Unipetrol Ghana Limited (Allied Oil, 2009; AOMCs, 2011; Prempeh, 2010).

The OMCs in Ghana engage mostly young energetic males and females as sales girls and boys in the convenience shops or marts in African countries (Olaotse, 2010; Total Petroleum Ghana, 2010). In the convenience shops or marts, products from break fluids to insecticides to grocery are sold.

In addition, pump attendants attend to customers at the forecourt at the services stations. These attendants also check brake fluid, engine oil, water level and wash windscreen of vehicles. Furthermore, most of the stations have lube bay where in most cases young mechanics are employed to service vehicles. Most of these stations operate on a 24-hour basis with the pump attendants and the sales girls running shifts within groups.

The fuel service stations are mostly owned and operated by OMCs but few of such stations are owned and operated by individuals called dealers under the various OMCs (Shell Australia, 2007). Each of the fuel service stations is headed by a station manager and assisted by station supervisor(s) who are in charge of the day-to-day running of the station. These service stations can be found all over the cities, towns and villages in Ghana with majority and big ones found in the big cities like Accra, Tema, Kumasi and Takoradi (AOMCs, 2011; Olaotse; Total Petroleum Ghana, 2010).

Hazards Associated with Fuel Service Station Work

Attendants at fuel service stations are exposed to many risks. FSSAs are exposed to more and complex hazards as a result of poor maintenance, carelessness, poor house-keeping, mechanical fault and robbery (Ahmed et al., 2005; Eugene, 2007; GNA, 2011b; Olaotse, 2010). Through refueling of vehicles, washing windshield, checking fluid level, air pressure and replacing tires, light bulbs and windshield-wiper blades of vehicles (Chilcott, 2007), FSSA are exposed to volatile organic compounds (VOCs) such as benzene, ethyl benzene, nitrobenzene) 1,3-Butadiene, Ethylbenzene, n-Hexane, Toluene Xylene (Health and Safety Executive, 2007; Netelson, 2007; Udonwa et al., 2009). The attendants by their job operations involve in frequent standing, walking and handling of heavy weighing objects with weight up to

6.8 kg (15 pounds). They also work outside in all kinds of weather exposing them to cuts and burns (CONCAWE, 2007; Wheatley & Sadhra, 2004). These and many of their duties are potential risk sources and can lead to health damage if appropriate measures are not put in place.

The American Conference of Government and Industrial Hygienist (ACGIH) (2001) recommend an occupational exposure limit of 23mg/m³ for a 10-hour work day in a 40-hour work per week. Meanwhile, unlike the developed countries where petrol stations are self-served, in the developing countries such as Nigeria and Ghana, petrol stations are still largely dispense by attendants. This 24-hour continuous dispensing of fuel expose the attendants to VOCs for more than a typical 40- hour work week (Udonwa et al., 2009). Exposure to these compounds is a potential risk to many illnesses such as cancer (Attfield et al., 2012; Health and Safety Executive, 2010).

Exposure to low chronic doses of petrol vapour can be irritating to the eyes, respiratory tract, skin and neurocognitive functioning (Tu et al., 2004). In addition, exposure to higher concentrations of petroleum vapour, which contains benzene and other harmful compounds, may produce central nervous system (CNS) effects such as staggered gait, slurred speech and confusion or cancer in the long term (Attfield et al., 2012; Hallare et al., 2009; Majumdar et al., 2008; Sudha et al., 2010; WHO, 2010). Rapid unconsciousness and death due to respiratory failure may also result due to exposure to petroleum compounds at very high concentration (Boschetto et al., 2006; Dede & Kagbo, 2002). Prolonged dermal exposure to petrol fumes or inhalation of the vapour has also been associated with renal dysfunction, lipid degeneration and other clinical manifestations such as haematuria, proteinuria and myoglobinuria (Tu et al.; Majumdar et al.). Additionally, likelihood of developing cancer such as

lung cancer increases as a result of prolonged exposure to diesel exhaust (Attfield et al.).

Continuous exposure of fuel FSSAs to hazardous materials at filling stations calls for concerted effort by employers to protect and promote the health and safety of these workers. It is important for all FSSAs to be educated about health risks of exposure to benzene (and other products contained in petrol fumes) found in petrol products. The acquisition of knowledge may motivate self-protective attitude among the attendants. Attendants need to be trained to respond appropriately to emergencies (fire, armed robbery), situations common to their work (Health and Safety Executive, 2010). In addition, attendants need to perform their activities by observing good hygiene practices such as keeping their hands and clothes clear from the spillage of petrol fuels, washing hands before meals, standing in the upwind when refueling vehicles and also using PPE such as gloves and disposable mask (Chawla & Lavania, 2008). Moreover, FSSAs need to avoid direct contact with petroleum products from every route of exposure such as inhalation, ingestion and absorption by the nose, mouth and the skin respectively (Shell Australia, 2007; Worksafe-Victoria, 2006).

The Three “E”s of Safety

Since early 1900, employers and safety practitioners had adopted the philosophy of the three Es (engineering, education and enforcement) to guide their safety-related interventions. The three Es of safety focuses on; developing engineering strategies that decrease the probability of an employee engaging in at-risk behaviour. The concept also addresses education and training needs of employees regarding equipment, environmental hazards, policies and procedures. In addition, the Three Es of safety deals with

enforcement of the policies and programmes related to environmental safety, operating equipment, wearing proper PPE and handling specific hazardous substances (Geller, 2005; Blakely, 2009).

The aim of engineering, the first E, is to provide safe environment. Safety environment can be accomplished through provision of appropriate safety facilities, modern equipment or tools for workers (Rajeev, 2010; Potter & Potter, 2010). Education, the second E, is educating or training workers about the use of tools, equipment, facilities, procedures, best practices, guidelines and regulations necessary for safe work. Education or training equips workers with appropriate knowledge, techniques and increases their confidence to work quite safely. The third E, enforcement, is critical to encourage workers to abide by the rules and regulations instituted at workplace. Enforcing workplace safety and health policies and procedures may include supervising workers while they work, punishing defaulters of rules and regulation and rewarding for good consistent safety behaviour (Geller, 2005; Rajeev; Potter & Potter).

The Theoretical Framework

Theories are relevant in laying background for research work (Camp, 2001). Theories in research can be Grand theories, Middle-range theories or Substantive theories such protection motivation theory (PMT) used in this study (Camp; Liehr & Smith, 1999; Rogers, 1985; 1975).

Purposes of theories are to summarize, organize the prevailing ideas in a particular field of study, clarify and provide understanding to previously isolated empirical findings. Theories also provide a provisional explanation for observed events and relationships between the very constructs under investigation. These constructs or variables are derived from existing literature

that provides a map for the study (Liehr, 1992; Liehr & Smith, 2000; 1999; Smith & Liehr, 1999). Thus, the theoretical framework for this study provided a map and a direction by highlighting the interrelationship between the dependent variable (safety practice) and independent variables (safety policy enforcement, safety training/education, PPE and safety facilities).

Protection Motivation Theory (PMT)

Rogers' PMT is normally assumed to be a fear appeal theory (Rogers, 1985; 1975). The theory explains how individuals' health attitudes and behaviour change in response to health risk messages. PMT is considered one of the most influential theories of health behaviour used by many researchers in current times (Cismaru, 2006; Pechmann, Zhao, Goldberg & Reibling, 2003). The PMT states that workers' motivation or intention to protect themselves from injuries and ill health is enhanced by the perception of the severity of the risk, the personal vulnerability to the risk, self-efficacy and the response efficacy of the risk-reduction behaviour (Bender et al., 2006; Rogers, 1985; 1975). In addition, people's intention to protect themselves is weakened by the perceived costs of the risk-reducing behaviour and the perceived benefits of the alternative risk-enhancing behavior (Bender et al; Rogers).

PMT further postulates that people can be provoked to engage in desirable health behaviour or avoid health risks. The knowledge of workers about their susceptibility to injuries/diseases and the perception of the severity to these adverse health conditions may provoke the attitude of conducting businesses safely in safe environment (Pechmann et al., 2003). Therefore, workers (FSSAs) have to believe that they have the knowledge, capability and resources (self-efficacy) to deal with the risk they are faced with daily at work and that the actions they take will evidently reduce the risks (respond

efficacy). In the view of Bender et al. (2006), such believe influences workers positively to take action that will reduce the risks and diseases workers perceive can affect their health negatively.

Protection Motivation Theory in Safety Practices of Workers

Perceived susceptibility to undesirable outcome refers to a worker's subjective believe of the risk of negative event happening to him or her. Such an event could include causing fire while filling unauthorized container or filing containers in the cap of a vehicle or vehicle which engine is not off. It could also be suffocation, cancer as a result of inhalation of petrol or diesel fumes or burnt skin from exposure to fume over a long period of time (Attfield et al., 2012; Hallare et al., 2009; Majumdar et al., 2008; Sudha et al., 2010).

Workers differ vastly in their feelings of personal vulnerability. Moreover, it is expected that the higher the perceived vulnerability to risk or event adverse to health, the higher the intention to follow the recommendations that lead to prevention or reduction of injury (Bender et al., 2006). Thus, higher level of vulnerability would be perceived (Cismaru, 2006) and appropriate safety behaviour taken to minimize injury and ill health if employers provide training prior to and on the job to workers (Health and Safety Executive, 2008). Training FSSAs on the possible hazards associated with service station job is expected to raise their consciousness about personal vulnerability (OSHA, 2010). The increases in knowledge level with the concomitant increase in perceive personal vulnerability is a persona to increasing self-protective behaviour among FSSAs (Cooper & Phillips, 2004; Health and Safety Executive, 2010; 2009).

Perceived severity to negative health event refers to feeling concerning the seriousness of causing an injury to oneself, coworker, anyone at work or contracting an illness such as lung cancer in the future (Attfield et al., 2012; Bender et al., 2006; Rogers, 1985; Cismaru, 2006). Workers' believe of the severity of injuries and illnesses include evaluation of both medical consequences (death, disability and pain) and possible social consequences (effects of the conditions on work, family life and social relations). Like perceived susceptibility, perceived severity also varies from worker to worker (Bender et al.). Thus, it is expected that the higher the perceived severity to a health condition or other negative outcome as a result of work, the higher the intent to pursue the recommendations from management to prevent such events. Perceived severity is cognition that results when a worker's injury such as burns landed him or her at the hospital, prevents him or her from work (Cismaru, 2006). Moreover, if a worker is made to understand the hazards (cancer, respiratory failure) (Shell Australia, 2007) that can result because of working under certain conditions adverse to health or not taking appropriate precautionary measures such a worker is most likely to have high perceive severity (Health and Safety Executive, 2009; 2008).

Perceived response efficacy refers to the worker's belief that the recommended behaviour will be efficient in reducing and/or eliminating the risk. It is expected that the more effective the recommended behaviour, the more positive would be the response from the worker (Cismaru, 2006). In this instance, a recommendation to keep less amount of money while selling especially at night, preventing the use of mobile phones at forecourt, avoiding filling of unapproved containers especially in the cap of vehicle, would

significantly reduce one's vulnerability to risk such as fire and armed robbery. Moreover, preventing inhalation and/or touching fuel would to a greater extent prevent various skin and cardio-respiratory disorders (Dede & Kagbo, 2002; Tu et al., 2004).

It is an unarguable fact that response efficacy would be enhanced if management institutes health and safety policies and enforce them with appropriate supervision (Geller, 2005). Training of workers about the risk or practices adverse to health associated with their jobs could also enforce their remedial efforts (Health and Safety Executive, 2009a; Worksafe-Victoria, 2006). Workers will take charge of their health and safety if management provides the necessary environments with the needed resources (Clarke, 2008; Health and Safety Executive, 2008).

Perceived self-efficacy refers to worker's confidence that he or she has the ability to carry out the recommended behaviour. In the case of FSSAs, that may reduce their exposure to risks such as fire, armed robbery, dermal illnesses and carcinogenic compounds. It is evidenced that the higher a person's belief in his or her ability to performance a task, the more positive the response to carrying out that task (Cismaru, 2006; Pechmann et al., 2003; Rogers, 1985). Furthermore, if an attendant feels that he or she can prevent a customer from using his or her mobile phone or smoking at the forecourt, observing personal hygiene himself, avoiding filling of vehicle tank while the engine is on or even performing first aid, that attendant is most likely to do so (Bender et al., 2006).

Although, it is debatable that self-efficacy is innate, it is cognition characterized by perception which develops or diminishes as an individual goes through life experiences. In other words, for FSSAs to have belief in

their abilities to take precautionary measures to avert injuries and/or ill health now and in the future, it is the responsibility of their employers to help them develop their (FSSA) self-efficacy. The employers have the responsibility to train, educate and provide the necessary PPE for FSSAs. Provision of other essential equipment, facilities and supervising workers would promote safety performance that protects their health and well-being (Health and Safety Executive, 2008; 2009; WHO, 2007).

Perceived cost reflects the barriers (monetary costs and non-monetary such as time, effort, inconvenience, discomfort) people encounter to engaging in the recommended behaviour to avert adverse effect. It is expected that the intention to follow the suggested behaviour would be low or lower when the cost or barriers when engaging in recommended behaviour (health) are higher (Bender et al., 2006). For FSSAs to put on recommended PPE at work such self-protective devices should be provided by the employers/managers. Besides, the policies on the use of appropriate PPE must also be enforced. By providing the PPE, employers removed one barrier to the use of PPE by the attendants who would have used their own money to purchase the devices.

Factors Affecting Health and Safety Practices of Workers

Evidence of industrial safety awareness dates back to the Code of Hammurabi, circa 2000 B.C., that contained clauses interpreted as early forms of workers' compensation (Asogwa, 2000). Early occupational safety and workers' health concerns were also found during the construction of Egyptian pyramids and temples (Goetsch, 2005). Workers' safety concern has again been documented in the Roman engineering projects such as aqueducts, sewage systems and public bath houses. These early safety concerns have put

workers' health and safety issues in the fore front with laws and regulations. The laws and regulations demanded from employers the responsibilities to provide for their employees' health and safety (Asogwa; Jensen, 2005).

It is both the legal and moral duty of employers to provide conducive, safe and healthy working environments for their employees. The provision of conducive working environment promotes health and well-being, reduces injury rate and increases productivity. These culminate into economic growth which is essential to the workers, managers and the organization as a whole (Clarke, 2008; Health and Safety Executive, 2008). At the same time, it is the responsibility of the worker to observe whatever protective measure instituted to prevent and keep him or her healthy.

Safety measures such as instituting occupational health and safety policies, forming workplace safety committee, supervising and/or enforcing compliance of these policies are some core measures needed for the safety of every worker. In addition, providing PPE and training workers in safe work procedures motivate them to protect their health and well-being while at work. These safety measures are interrelated. Providing for one safety measure such as instituting worksite safety policy or providing PPE without enforcing the policy to increase compliance or supervising workers to wear the protective devices, will leave much to be desired. For example, enforcing instituted policies without providing for other workplace safety measures such as training in safety procedures, providing safety facilities, will to a large extent demoralize and reduce safety practices of workers. This can lead to high injuries and ill health rate among the workers. Thus, causing illness absenteeism, low productivity, high cost of health bills, low work force moral and a general economic burden on the worker, the family, the company and

the public (Clarke, 2008; Health and Safety Executive; 2009b; OSHA, 2010). Providing for these safety measures, notwithstanding, grossly affects the way workers behave to protect themselves at their various workplaces (Health and Safety Executive; 2008; Oduro, 2006). The interrelationship between these safety measures and workers safety practices is diagrammatically presented below.



Figure 1: The Conceptual Framework showing the Factors Associated with Health and Safety Practices of Workers at Workplace (Clarke, 2008; Health and Safety Executive, 2008; 2009b)

Safety Policy Enforcement

Preparing a health and safety policy is the first practical step towards providing and maintaining work environment safe with less risk to workers' health (Health and Safety Executive, 2009b). The idea of regulating labour at the international level gradually gained ground in 19th century after the First World War (Jensen, 2005; LaDou, 2003). The regulation of labour in the industries, national and international level called for the introduction of

various workplace policies (Asogwa, 2000). The aim of instituting such policies is to protect the safety and well-being of workers (Health and Safety Executive, 2010). For example, Sawacha, Naoum and Fong (1999) found that organization policy is the most dominant factor influencing workers' safety behaviour in industries.

A successful policy is developed in consultation with senior management, Health and Safety Representatives and employees (Health and Safety Executive, 2009b; 2010). The policy statement includes the company's health and safety policy objectives and the arrangements made to achieving the objectives. The policy may stipulate among other things the allocation of functions and responsibilities. Other issues covered by such documents may include senior management commitment to health and safety of their workers and the integration of that commitment into all organizational activities. For instance, Sawacha et al. (1999) are of the view that provision of safety booklets, safety equipment and appointing trained safety representative on worksite are core components of the safety policy. Furthermore, commitment to set down the functions and duties of all people in the organization for maintaining workplace health and safety are important components of safety policy (Cooper, 2006).

Accountability at all levels of management to workplace health and safety and consultation lead to effective action on safety. In addition, training in and communication of health and safety practices or procedures to all workers, regular monitoring and reviewing of the policy are important to influencing safety behaviour of workers. Moreover, effectiveness of health and safety regulation at workplace are crucial in promoting safety behaviour

or practices among workers (Health and Safety Executive, 2009b; Specht, 2007; Worksafe-Victoria, 2006).

Worksafe-Victoria (2006) suggests that specific health and safety policies differ in every organization and may include specific issues such as smoking, drugs, alcohol and infectious diseases. Such workplace health and safety policies may also outline specific work safety practices which when not observe could cause debilitating health effects to workers. Besides, the policies are not written in a vacuum. The policies should be written in consonance with the organization's general health and safety policy. In addition, the policies must fulfill the requirements of relevant legislation(s). In a like manner, the policies must be enforced to achieve their intent and purposes for the workers. Safety of individual occupants should also be paramount. Therefore, the right of an individual workplace occupant should not supersede the rights to personal safety of other employees in any working environment (Health and Safety Executive, 2009b).

Effective implementation of health and safety policies at workplace is as crucial as formulating them. The effectiveness of health and safety policies implementation depends largely on the development of effective plan. The implementation of this plan involves consultation and cooperation between management and employees with the aim of effectively translating the policy objectives into effective action. Regular monitoring, reviewing and enforcement of the plan and policies by the health and safety committee or any responsible representation promote workers' compliance. Also, effective compliance with safety policies reduces or eliminates injuries or ill health. Companies are required to display a copy of the policy document in a prominent place(s) for all employees to view. However, understanding the

written workplace safety policies is equally important just as implementing them. This calls for educating the workers on the policies and their interpretations (Health and Safety Executive, 2009b; Worksafe-Victoria, 2006).

One of the strategies to control workers' behaviour is instituting health and safety policies. Needless it is to institute occupational health and safety policies without appropriate enforcement that will enhance the achievement of the policy objectives. This requires management commitment to workplace safety. In addition, it emphasizes that workers' behaviour is a key determinant of whatever "good" or "bad" that occurs to their health and safety at their workplaces now or in the future. And that workers behaviours terms mostly from safety or their work environment (Geller, 2005; Lovato, Sabiston, Hadd, Nykiforuk & Campbell, 2006).

According to Steffen, Grøgaard, Moen and Bråtveit (2005) management commitment to safety is a strong factor in determining the use of PPE among workers. Steffen, et al. added that having a health and safety management system, for example at the garage, was a determinant positively affecting the active use of PPE among the employees. In a similar vein, Gershon et al. (2000) and Green-McKenzie, Gershon and Karkashian (2001) are of the view that adoption of infection control practices relates positively with employee's perception about management commitment to safety at workplace. Gershon et al. and Green-McKenzie et al. found that employees who perceived a high level of management support for safety in their organization were more than twice likely to adhere to recommended infection control practices than those employees with low perception about management concerns for workers' safety.

Colley, Lincolne and Neal (2012) found that individuals who perceived that their cooperation emphasize employee well-being and good human relations reported higher levels of safety climate and fewer incidents than their co-workers who perceived their organizations to emphasize productivity and profit over workers well-being. Similarly, in assessing the impact of safety management system on workers attitudes toward safety, Remawi, Bates and Dix (2011) found that there was an increase in safety attitude of workers between pre and posttest. Thus, implementing safety management system such as instituting safety policy, forming safety committee and safety supervision promote positively the safety performance of the workers. Furthermore, Oltedal and McArthur (2011) found that lack of attention to safety by senior personnel significantly relate to low frequency of reporting dangerous work procedures.

An investigation of the death of a 24 year old service station attendant in South Africa revealed that the attendant would not have died if the managers of the station had enforced the safety policy of the station (Skelton, 2006). Apparently, there was a policy at the station requiring customers after 11 o'clock to either pay for their gas/fuel upfront at the service window or by using their credit card. But this policy had not been enforced, leading to the death of the attendant when he was dragged over by a customer's vehicle at about one o'clock in the morning. The customer apparently was running away with the money. The committee again pointed out that the station had no written policy in place to check the well-being of those working at the station. The committee therefore, recommended formulation of appropriate workplace safety policies and put measures in place to enforce the policies. In addition,

the committee tasked management to improve upon training and supervising station workers on the necessary work procedures that enhance their safety.

It is common sense that every worker abides by the policies that protect his or her health and safety at work. OSHA (2010) of united Kingdom entreats all employees to comply with all occupational health and safety standards, rules, regulations and orders issued under the Occupational Health and Safety Legislations or Acts of their nation. Employees should endeavour to prevent injuries by observing all lawful employer safety and health rules and regulations. Complying with health and health rules may involve wearing or using prescribed protective equipment while working. Accordingly, workers as dynamic human beings will best achieve any meaningful health and safety at work if the established policies or regulations are well understood and enforced by the managers and/or their representatives (OSHA, 2005).

In assessing the impact of safety committee on safety practices of workers with a randomized controlled trial, Parker et al. (2009) found that there was a remarkable increase in the machine safety practices among the study samples. Accordingly, businesses with safety committee in place increased in their machine safety practices than those without safety committees. In Parker et al. (2009) view as supported by other authors (Ariyoshi, 2008; Gillen, Baltz, Gassel, Kirsch & Vaccaro, 2002; Parker et al., 2007; Varonen & Mattila, 2000; Samant et al., 2006), safety committee at workplace as an important instrument for improving workers' safety behaviour. Moreover, formation of worksite health and safety committee is one of the first steps towards implementation of an effective safety policy (Health and Safety Executive, 2009b; OSHA, 2005).

Health and safety policy within workplace may work effectively to promote the health behaviour of workers through supervisory actions of superior officers. Zohar and Luria (2003) found that the increased in the supervisory safety-oriented interaction significantly increased the workers' safety behaviour and safety climate scores at the various companies. In agreement with Zohar and Luria, Scholz and Gray (1990) found that 10% increase in the enforcement of workplace safety regulation will decrease by about 1% the rate of injury occurrence among the workers. On the contrary, Rickie and Sieber (2010) found that the presence of written workplace health and safety policy on wearing PPE seemed to make no difference on the percentage of workers wearing hearing protection. The result further revealed that of 41 workers exposed to noise greater than 85 dBA, only 41% were wearing some form of hearing protection. Similarly, Klick and Stratmann (2003) found that more inspections or enforcement of workplace safety regulation was responsible for higher death rates among some workers. According to Klick and Stratmann, increase in worker safety measures induces riskier behaviour on the part of workers.

Conscientiousness to safety and health ought to exist at all levels in an organization. Managers, supervisors and employees should follow all safety rules and know what their roles are to create a safe and healthful working environment. Employees equally must know and understand what they need to do to make the workplace safer for themselves, customers and visitors. All workers must be trained on safe work practices and proper use of engineering controls and PPE. Employees should be coached to correct unsafe behaviour and be disciplined if violations continue. Safety rules need to be enforced by all concerned at work. In addition, supervisors must monitor employees to

assure engineering controls and the appropriate use of PPE especially at work. Supervisors also should be trained to reinforce positive behaviour and correct negative actions and attitudes. However, if workplace rules are not enforced, they cease to have meaning. Enforcement of safe work practices should be fair, consistent throughout the organization and based on established policy. Not only should negative behaviour be discouraged, positive behaviour should be reinforced. Exceptional performance or efforts in workplace safety and health should be recognized by the organization (Minnesota Department of Labor and Industry Occupational Safety and Health Division, 2009a).

Safety Training/Education

Employee safety training or education has been recognized since the era of industrial revolution as an effective instrument in promoting workers' safety practices (Jensen, 2005). Occupational health and safety training embodies instructing workers in recognizing known hazards and assisting them to use available methods for protecting themselves. In addition, worker education prepares one to deal with potential hazards or unforeseen problems at workplaces. Thus, training or education gives guidance in ways to become better or informed worker that takes action(s) aimed at eliminating workplace hazards (Cohen & Colligan, 1998).

Generally, training refers to instruction and practice for acquiring skills and knowledge of rules, concepts or attitudes necessary to function effectively in specified task situations. With regard to OHS, training consists of instructions in hazard recognition and control measures. Workers training also involve learning safe work practices, proper use of PPE, acquiring knowledge of emergency procedures and preventive actions necessary (Geller, 2005; Health and Safety Executive, 2008). In addition, training provides workers

with ways to obtain added information about potential occupational health hazards and how to control hazards (Kitchener & Jorm, 2004). Furthermore, training provides workers with skills to assume a more active role in implementing hazard control programmes or to effect organizational changes that would enhance worksite protection (Burke et al. 2006; Cohen & Colligan, 1998).

OSHA (2010) recommends that employers provide training for their employees on the hazards of their jobs in a language that the workers understand. The workers must be trained after being hired and before they begin their job especially in the jobs perceived to having high risks to health. Therefore, it is necessary that every workplace, whether small or big, in the quest of promoting health and safety, has a well-stocked first aid box with first aider in charge (Health and Safety Executive, 2009a). The availability of first aid facilities with trained person encourages provision of health assistance to injured or ill workers before professional help is sought (Kitchener & Jorm, 2004; Salwa, Abu-Elseoud, Heybah & Azhar, 2010; Takase et al., 2004). Training and intervention efforts designed in whole or in part are also believed to enhance worker knowledge of workplace hazards and affect behaviour change that ensure compliance with safe work practices. Training also prompts other actions aimed at improving workplace safety and health protection and reducing the risk of occupational injury or disease. The conclusion from several studies have shown that most training interventions can lead to positive effects on safety knowledge, adoption of safe work behaviour/practice and safety outcomes at workplaces (Burke & Sarpy, 2003; Cohen & Colligan, 1998; Colligan & Cohen, 2004).

According to Health and Safety Executive (2010), person should not be employed in connection with the storage, conveying or dispensing of petroleum (fuel) until he has received adequate training. Such training should be provided to newly recruited employees. In addition, regular refresher courses are important for all other employees. All staff (FSSAs) who may have a role in dealing with an emergency should receive comprehensive training on the procedures for dealing with such emergency scenarios. Such training involves functions, operations and use of electrical devices for regulating delivery of petrol to underground storage tanks or fuel tanks of vehicles (Health and Safety Executive, 2008). Cooper and Phillips (2004) concluded that training workers in safety techniques of their jobs has a strong influence on the actual levels of their safety behaviour.

Learning and memorizing the correct site address so that workers do not forget it when faced with an emergency is critical part of training programme at the fuel service stations. In addition, training workers may familiarize them with how to raise internal and external alarms, different classes of fire and the suitable fire extinguishers require for each practical experience. Employees should receive training in emergency procedures, safe dispensing procedures or circumstances in which it is not safe to dispense fuel. Safe filling of fuel into appropriate containers, recognizing and reporting faults in equipment and dealing with small spillages at the stations should be incorporated into workers safety training. The aim is to protect live first before property (Health and Safety Executive, 2010).

According to Lingard (2002), first aid training is important to increase workers' knowledge about their likelihood of suffering from work-related injury or illness. In addition, workers willingness to accept the levels of

occupational health and safety risks could be minimized through first aid training. Moreover, first aid training provides workers with the ability to control the workplace risks and also safeguard their well-being (Salwa et al., 2010).

In the relationship between occupational and organizational factors and work related injuries, Gimeno, Felknor, Burau and Delclos (2005) point out that workers exposed to chemicals and physical hazards had higher work related injuries rate ratios than non-exposed workers. In addition, employees reporting lack of safety training had higher work related injuries rate ratios than those who did not report such incidence. Moreover, workers reporting lack of safety training were more exposed to chemical and physical hazards than employees who received safety training (Hope, Kelleher, Holmes & Hennessy, 1999). In the views of Gimeno et al., lack of safety training remains significant risk factors for determining work related injuries. Besides, educating workers is an effective option to increasing their safety practices (Clarke, 2006; Gimeno et al.; Trepka et al., 2008).

The protective capability of the PPE may otherwise be defeated by improper handling, incorrect assembly, maintenance, improper put on and take off procedures. Stress, discomfort and physical hindrance may also weaken performance in the use of PPE. However, acclimatization through training will mitigate these effects and will enhance the compliance with the appropriate use of PPE among the workers. Training workers in the appropriate use of PPE in advance of their need is strongly advised (Glendon & Litherland, 2001; Tsung-Chih, Chi-Hsiang & Chin-Chung, 2007). On-time-training is also likely to provide adequate preparation for groups of workers

requiring the use of specialized PPE during work (Knight & Goodman, 2009; Tompkins & Kerchberger, 2010; Trepka et al.).

Lormphongs et al. (2004) revealed that more than 80% of workers noticed and understood the toxicity of lead when they were trained in occupational health. The workers also understood the importance of protecting themselves against lead exposure after receiving training. Moreover, the trained workers regularly protect themselves by wearing PPE such as long sleeved shirts, trousers and masks while at work. In the opinion of the authors, training also increases understanding of and compliance to safety regulation at work. Therefore, if workers understand the need for the training, they are more likely to comply. The compliance to health and safety procedures helps to protect workers' health and well-being (Kendrick et al., 2008; Vinodkumar & Bhasi, 2010). Similarly, Runyan, Vladutiu, Rauscher and Schulman (2008) added that training workers in the use of PPE is as important as their supply if workers were to make beneficial use of such advices. Thus, to Runyan et al., workers train in the use of self-protective devices would always wear PPE on the job compare with untrained ones. Therefore, occupational health education including safety training, collaboration between workers and their managers are always effective tools to promote safety behavior of workers and reduce the risk of ill health among the workers.

Öz, Özkan and Lajunen (2010) observe that motorists with less safety orientation make higher frequencies of road errors than those with higher orientation. In addition, such motorists with less safety orientation violate more regulations than those motorists with high work orientation. In the views of Öz et al., workplace safety orientation (training) is one major influencing factor in the safety behaviour of drivers. Similarly, van der Molen,

Zwinderman, Sluiter & Frings-Dresen (2011) found that safety training workshop led to the highest reduction in the number of self-reported needle stick injuries among some registered nurses. Also, Oltedal and McArthur (2011) found that enhanced safety training and feedback on reported events relate significantly to higher reporting frequency of unsafe work procedures (Bull, Riise & Moen, 2002).

In contrast with many other studies (Gimeno et al., 2005; Öz et al. (2010); Trepka et al., 2008; Tompkins & Kerchberger, 2010), Parimalam, Kamalamma and Ganguli (2007) found that more than one half of the trained employees were not using PPE regularly. Accordingly, workers in all the sections were aware of the benefits of the regular use of PPE at work. However, the result revealed some what negative attitude of the workers towards the regular use of PPE. Therefore, Parimalam et al., believe a gap exist between the workers' knowledge and practices with respect to using personal protective devices. Parimalam et al. point out that knowledge acquired as a result of training does not necessarily leads to practice of safety behaviour but the attitudes of workers, to a greater extent, may influence practice.

Lipscomb et al. (2008) also found inconsistencies in the principles apprentices have been taught and what they practice at work. Accordingly, participants reported higher knowledge about safety such as identification of residential fall hazards but expose themselves continuously to many hazards at worksite. Lipscomb et al. again revealed that the low safety behaviour of the participants was influenced largely by job insecurity. Therefore, not only the training to increase knowledge but other factors as attitude and insecurity influence the safety behaviour or practices of workers (Parimalam et al., 2007;

Lipscomb et al.). Thus, training in addition to the presence of a strong safety culture, open safety communication and strong leadership skills may produce the desired safe work behaviour necessary for the well-being of workers (Lehmann, Haight & Michael, 2009).

Safety Facilities

The importance of safety facilities to promoting health and safety of workers has been recognized in occupational health and safety since the end of the Second World War (LaDou, 2003). The provision of safety facilities enhances the behaviour of workers to protect and promote their health and well-being (Jensen, 2005; LaDou,). For instance, van der Molen, Zwinderman, Sluiter and Frings-Dresen (2011) believe that provision of needed safety devices and interaction with workers will lead to reduction in the number of self-reported needle stick injuries among public hospital nurses. In addition, Vinodkumar and Bhasi (2010) observe that the attitude of workers towards work and improved personal hygiene such as no smoking at the workplace, washing hands with detergent before drinking water or having lunch and taking a bath after work has changed when they were provided with appropriate facilities.

Safety facilities or equipment are appliances except PPE use by workers in their day-to-day operations. These equipment or facilities facilitate the smooth operation of workers and help prevent injuries and ill health. Such equipment in the fuel service stations may include filled fire extinguishers, fire alarm system, bucket with sand, emergency telephone lines and alarms systems (switches), washing, bathing and toilets facilities, dress storage apartments, well stocked first aid box, food and water (Health and Safety Executive, 2007; 2009b; Olaotse, 2010; Shell Australia, 2007; Worksafe-

Victoria, 2006). Safety facilities may also include proper drainage system, security services, lighting system and adequate materials to deal with fuel spillage. Provision of these safety facilities aimed at giving workers the opportunities to effectively handle situations that adversely affect their health and well-being in their working environment (Health and Safety Executive, 2008; Olaotse).

United State Department of Health and Human Services Food and Drug Administration Center for Food Safety and Applied Nutrition (CFSAN) (1998) in their Guidance for industries, entreat all employers to make more facilities accessible to their employees. CFSAN point out that the more accessible these facilities are, the greater the likelihood that they will be used. The association believes such facilities will help to increase the safety behaviour of workers. CFSAN and Electronic Industry Citizenship Coalition (2009) recommend provision of facilities such as hand washing stations equipped with basins, water, soaps, sanitary hand drying devices (disposable paper towels) and waste container. Additionally, Electronic Industry Citizenship Coalition calls on all employers to provide for their workers hygienic, proper food, storage and eating facilities. These facilities are to be maintained, cleaned and safe for workers' use. Moreover, the association encourages the provision of private facilities such as separate toilet for men and women where necessary. Provision of security and adequate lighting system for example, was emphasized to provide safe and congenial working environment for the workers.

In the guidelines for petrol stations, Health and Safety Executive (2010) suggested that employers provide and clearly describe to their employees the emergency response equipment on site, the functions of each of

these equipment and how to effectively operate them. The employers are encouraged to provide fire fighting or emergency response facilities, safety devices, systems for emergency shutdown of sources of flammable fuels, systems for raising alarm, telephone and mobiles emergency contacts. Furthermore, managers are to provide electrical shutdown on pumps, emergency exits routes and assembly points for staff and clients, fire extinguishers, spill containment systems to the workers at all times. Additionally, alternatively contact details for the nearest medical facility or professional should be provided to the workers at petrol stations.

In assessing the effect of home safety education and the provision of safety equipment on poison-prevention practices, Kendrick et al. (2008) found that home safety education and provision of safety equipment improved poison-prevention practices among some household subjects. According to Kendrick et al., home safety interventions such as safety training and provision of safety facilities or equipment increased safe storage of medicines and (Kendrick et al., 2009) effectively increased thermal injury prevention practices. In addition, possession of syrup and having poison control center numbers accessible were positively correlated with having safety facilities, equipment and training the participants in safety precautions (Health and Safety Executive, 2010; Kendrick et al.). Fang, Chen and Wong (2006) also added that the roles play, influence of fellow workers and safety resources at worksite are major factors associated with safety behaviour of the some workers.

In short, lack of access to safety facilities or equipment is the major hindrance to their use (Mathews et al., 2008). Mathews, et al. believe that the more safety equipment or facilities are provided to the workers, the more the

culture of self-protective attitude will increase among the workers. The use of such safety facilities mitigates the harm caused to workers as a result of negligence or inappropriate behaviour (CFSAN, 1998; Health and Safety Executive, 2008; Mathews et al.). Therefore, it is imperative to supply the necessary devices for the use of FSSAs to protect themselves in time of emergencies, situations more associated with fuel service station work (Olaotse, 2010).

Personal Protective Equipment

PPE is clothing of an approved standard provided by or to and use by a person at work (Health and Safety Executive, 2008; McPherson, 2007; WHO, 2010; 2007; Worksafe-Victoria, 2006). The purpose for provision or acquiring PPE is for protecting an individual worker from any health or safety hazards associated with his or her job (Health and Safety Executive, 2007; Vosanibola, 2003). Therefore, there is the need for provision of appropriate PPE and train work to motivate them to adequately use such devices (Mathews et al. 2008). For example, Strong, Thompson, Koepsell and Meischke (2008) found that workers' safety behaviour was largely determined by the constant provision of PPE by their employers.

The concern for the use of PPE as protective measure at workplace dates back to mid-1500 centuries. The era saw an upsurge of occupational respiratory (Boschetto et al., 2006) and pulmonary diseases among worker specially miners, smelters and metallurgists. The conditions necessitated the provision of ventilation devices to protect the lives of these workers (Asogwa, 2000; Jensen, 2005). Rom and Markowitz, (2007) encourage managers to ensure strict industrial hygiene measures, including provision and use of PPE such as respirators and goggles.

Possible predictive factors on the use of PPE revealed that PPE use across all pesticide classes was poor and that only about 40% of farmers routinely use personal protective devices (Tiramani, Colosio & Colombi, 2007). PPE use appeared to be most strongly associated with their availability, affordability and user comfortability. Accordingly, workers are likely to use regularly the personal protective devices when they are made available as compare with if they are affordable and comfortable on the workers. Moreover, workers who have high knowledge or receive training in the use of personal protective devices observe better self protection than workers who do not benefit from such education. Similarly, Green-McKenzie et al. (2001) found a strong positive relationship between the availability of PPE and infection control practices among some health care workers. According to Green-McKenzie et al., workers are likely to always wear PPE when such devices were made available all the times. Conversely, Carpenter, Lee, Gunderson and Stueland (2002) found in their availability and use of PPE study that in spite of readily accessibility to PPE, there was very minimal use of the devices. According to the authors, the availability of PPE does not necessarily translate into increased utilization of such devices among workers, especially young ones.

In fuel chemicals exposure, Jo-Yu and Stuart (2010) indicate that fuel truck drivers had the highest uptake through inhalation based on the personal measurements. However, those drivers with no use of respiratory protectors had higher uptake rate than those drivers using respirators. In addition, gasoline station attendants were recorded to have had highest uptake through skin exposure. Thus, fuel station attendants using gloves had less exposure through skin than attendants who do not wear gloves. Besides, Jo-

Yu, and Stuart are of the view that gasoline/petrol has the highest permeation rate among the fuels and that the use of the best PPE is the safest means to protect lives.

In self-protective work behaviour, Reed, Browning, Westneat and Kidd (2006) point out that the hearing and respiratory protection devices use was minimal and sporadic among the farm workers. In addition, of participants who operated farm tractors, only half most frequently do so with the use of seat belts. However, there was lack of provision of PPE for the worker. Besides, there was not supervision for the use of PPE even where they were available. Therefore, in the views of Reed et al. and Mathews et al. (2008), workers may be at higher risk of injury as a result of unavailability of personal protective devices and lack of management supervision (Oltedal & McArthur, 2011; Remawi et al., 2011; Steffen et al., 2005).

Deborah, Reed, Browning, Westneat and Kidd (2006) point out that the farms workers perform activities that place them at risk for acute and chronic health conditions. According to the authors, boys engage more frequently in risky behaviours, and therefore, are highly expose to dangers at workplaces as compared to girls. For instance, while girls use PPE more continuously, boys use such self-protective devices sporadically on the job. However, the use of PPE such as hearing and respiratory devices is minimal and sporadic among both boys and girls while on the job. But girls are believed to have fewer injuries on the job than the boys. Deborah et al. are therefore of the view that the use of PPE at work reduces risk of exposure to many workplace hazards and injuries.

In examining the provision and use of PPE, Mathews et al. (2008) found that paramedics in California were provided safety devices more often

than paramedics in the United States as a whole. For each type of device available, there was a 40% increase in the use when the device was always provided compare with when it was not always provided. Mathews et al., Bull, et al. (2002) and Reed et al. (2006) are of the opinion that lack of access to safety equipment is the major barrier to their use. Besides, Mathews et al and Reed et al. suggest that inadequate provision and failure to use self-protective devices may be contributing significantly to the increase rate of injury and illness among the workers.

Safety Practices at Workplace

The importance of worker safety has been documented since the mid 1500 century (Jensen, 2005). The issue of worker safety has become more pronounced during the industrial revolution which saw an up surge in the demand for and number of people employed for industries (Asogwa, 2000; Jensen). Moreover, the industrial revolution has brought the introduction of many labour saving devices and different working methods. However, the working class has little or no experience in the use of these tools. These culminated to the high rate of occupational accidents (injuries) among workers as a result of negligence, inexperience use of working equipment, high work load. This increase in injury rate necessitates more attention to safety behavoiur of workers (Jensen).

Safety is defined as the practice of preventing those situations or conditions that may be inadvertently or by design, cause injury, ill health or death to humans at their working environment. Intensive and comprehensive safety programmes are needed to provide safe and conducive workplace for the employees. These programmes may include instituting safety policies and procedures (safety training/education,

provision of safety equipment and PPE). Besides, achievement of the objectives of these programmes need commitment from both management and employees, especially employees, who are the most beneficiaries of these interventions. In addition, rigorous enforcement of these policies and procedures are very important to prevent their violation (Bastian, 2003). Enforcement of programmes encourages workers to comply; an attitude to preventing workplace injury and ill health (Health and Safety Executive, 2009b; OSHA, 2005).

Workers in petroleum industries are found to be exposing themselves to many carcinogenic compounds (Attfield et al., 2012; Health and Safety Executive, 2008; 2010; Netelson, 2007; Udonwa et al., 2009). Blood lead levels in many workers in fuel service stations are higher than the upper and action limits of lead in the blood for adults. Accordingly, this is as a result of the fact that benzene workers neglect the use of facemasks during work. Workers failure to use the protective equipment such as facemasks may be due to lack of provision of these devices or a share violation of necessary rules. This negligence may account for the significant increases in blood lead levels due to the inhalation of airborne lead (Al-Rudainy, 2010).

Health and Safety Executive (2010) also appeal to workers of petrol service stations to comply with health and safety policies and regulations instituted by their employers. The managers are also entreated to provide guidelines or regulations for their workers and customers about the procedures of fueling vehicle tank. In addition, managers are task to encourage their workers to advice costumers from using unauthorized devices such as mobile phones at the forecourts of the fuel service stations.

Furthermore, attendants are cautioned to prevent over filling of vehicle tank and also observe preventive measures associated with their jobs. Health and Safety Executive is of the view that these preventive strategies were necessary for reducing workplace injuries and/or ill health since they promote safety-worker-behaviour. Contrarily, Specht (2007) notes that people adjust their behaviour in a way that counteracts the intended safety effects. To Specht, when workers are under pressure to deliver or want to get the work done in time, they are likely to neglect safety procedures.

Positive safety behaviour or practice of the workers needs to be recognized and rewarded by the management to encourage repetition of such practices. Recognizing safety practices of workers motivates them to continue and even other workers who may otherwise be lagging behind in their safety behaviour (Scott, 1996). Safety work performance such as effective use of appropriate PPE, observing operational procedures, offering assistance to other workers and reporting hazards to management needs to be judiciously practiced by every worker. These practices without doubt promote health and safety at workplaces. Safety practices of workers may also include complying with safety rules, reporting injuries when they occur, making safety suggestions and participating in safety activities such as on the safety committees (Health and Safety Executive, 2010; Scott).

Men and women differ in their levels of safety practices at workplaces. Men take more risk during the course of their work than women. The difference in the risk taking behaviours of men and women accordingly is as a result of manly gender socialization and social norms that encourage men than women (Mahalik, Burns & Syzdek, 2009). For example, Glanz, Buller and Saraiya, (2007) review within the populations

of outdoor workers revealed that female farmers wore sunscreen more frequently than male farmers. Additionally, California farmers were reported to have showed self-protective strategies more frequently among the females than the males. Furthermore, male farmers in Michigan were found to be less likely to engage in self-protective behaviour than females. Besides, male outdoor workers were also reported to be more likely not to wear sunscreen as compare with their female counterparts in Central European and Malta sample of farm workers.

In self-reported driving behavior, Shinar, Schechtman and Compton (2001) indicate that women take better caution with the use of safety belt use and observing speed limits on the road than their male counterparts. Similarly, on the abstaining from drinking and driving, Shinar et al. are of the notion that women are by far better than men in drinking or using intoxicated substances when driving. Also, Reed et al. (2006) point out that boys engage more frequently in risky behaviour in the farm and are at significantly higher risk of exposure to infections compared to girls. Additionally, Gershon et al. (2004) found that female workers had higher overall compliance scores than their male co-workers.

Education has also been implicated to impact positively on workers safety behaviours (Gyekye & Salminen, 2009). According to Fang et al. (2006), educational level of workers is a significant factor in the way they safely go about their jobs. Accordingly, higher educated workers comply with safety procedures better and record the lowest accident involvement rate than less education employees. Geller (2005) believes that education empowers workers to understand better workplace safety policies and

appreciate their roles in promoting health. To Geller, this appreciation enables such workers to contribute healthier to total workplace safety.

Shinar et al. (2001) also found from self-reported safe driving behaviour study that the use of safety belts increases with education for both men and women. Accordingly, the workers with higher education have better work safety performance rate than those workers with less educational level. Likewise, Gaber and Abdel-Latif (2012) found with a study on pesticides use safety practice that the farmers with formal education practice better safety both during and after pesticides spraying than those farmers who did not receive any formal school. On the contrary, there was no significant difference between the formal educated workers and those without formal education regarding the use of PPE or special clothes during spraying, changing and washing clothing after pesticide application and eating or drinking during pesticide spraying. Thus, Gaber and Abdel-Latif opined that educational attainment alone is not sufficient in promoting the safety behaviour of workers.

The size of a firm is also identified as an influencing factor in the level of safety practices among workers. Baldock, James, Smallbone and Vickers (2006) British enterprises study revealed that employees of large multinational enterprises comply more with safety regulations as compare with their counterparts from small enterprises. According to Baldock et al., regulatory enforcement activity, use of external assistance with respect to health and safety issues, training and experience are factors positively associated with the level of safety practices among the workers. In Thomason and Pozzebon (2002) view, more experienced workers had less workplace injuries than less experienced ones. On the contrary, Gershon et

al. (1999) observed that younger employees comply better with workplace safety regulations than older and more experienced ones.

Evidence also suggests that employees of small enterprises are subject to higher risk than employees of larger enterprises. Small enterprises have difficulty in dealing with risks because they have to cope with severe business constraints to survive. As a result, health and safety of employees becomes secondary. However, the most effective prevention strategies are cost effective and efficient (Hasle & Lomborg, 2006).

Pedersen, Hannerz, Christensen and Tüchsen (2011) also revealed that large enterprises work most actively and effectively towards creating a safe working environment for their workers when compared to small and medium-sized enterprises. Accordingly, data from Canada, Italy and South Korea indicated that the risk of injury among construction workers, for example, decreases with enterprise size, with higher injury rates among small enterprises. One obvious reason for small enterprises to be considered such risky and harmful workplaces is that they typically have fewer financial, human and technological resources available for organization and management of safety and health precautions. Economic survival and economic competition concerns quite often might override basic health and safety concerns to their employees. Moreover, small enterprises often seem to be lacking the ability to perform proactive or high-quality risk management (Behm, 2005; Champoux & Brun, 2003; Gambatese, 2008; Sørensen, Hasle & Bach, 2007; Teo, Ling & Chong, 2005). In addition, the reluctance of the employers towards state regulation of employees' health and safety issues seems to be significant (Hasle, Kines & Andersen, 2009).

Oltedal and McArthur (2011) also found that workers with less than one year work experience had lower reporting frequency of unsafe work situations than more experienced ones. Additionally, Songstad, Moland, Massay and Blystad (2012) indicate that large companies of international reputation have image to protect. Accordingly, such companies join associations which govern their operations. In addition, those companies are obliged to conform to their governing body's standards. Besides, the firms maintain their credibility by putting the necessary safety measures in place for their workers (Geller, 2005; Songstad et al., 2012).

Decrease in the availability of occupational safety services in small companies was also found to be responsible for the high prevalence of injury as compare with large companies (Fabiano, Currò & Pastorino, 2004). According to Fabiano et al., as the size of the company increases, the number of days lost as a result of injuries also decreases. In addition, the occurrence of injury decrease as the firm size increases (Fabiano et al.). Thomason and Pozzebon (2002) also found that large firms have better safety provisions for their employees than small firms. Moreover, the better safety measures put in place by large factories or companies culminates into low rate of injury among their employees.

Summary

Protecting and promoting the health and safety of workers at their workplaces is both legal and moral obligation of the employers (Clarke, 2008; Health and Safety Executive, 2008). Employees equally play a crucial role in promoting their health and well-being as they conform to or comply with health policies put in place by their management (Geller, 2005). The benefit is that workers' well-being is not adversely affected,

that in-turn affects the well-being of their families and the society at large (Health and Safety Executive, 2007). Such health problems raise public health concerns since they affect the work force of the economy and thus, putting economic constraints on the nation (Centers for Disease Control and Prevention, 2011; Schulte et al., 2007; Siriruttanapruk, Ministry of Public Health, Thailand & International Labour Office, Thailand (2006).

Literature suggest that FSSAs and other workers in the petroleum industries or working with petrol products such as vehicle mechanics, refinery workers are constantly expose to harmful organic compounds such as benzene, ethylbenzene, Toluene, Xylene (Majumdar et al., 2008; Natelson, 2007; Udonwa et al., 2009). These gases have both immediate and long term debilitating health effects on the workers if they do not take appropriate preventive measures. In addition, FSSAs on many instances are bedeviled with fire, armed robbery and explosion hazards. However, many a times the attendants react inappropriately leading to more injuries both immediately and in future (Ahmed et al., 2010; Olaotse, 2010). These situations call for vigilance and proper institution of appropriate health and safety measures such as formulation of health and safety policies and forming safety committee. The rest may include providing adequate PPE, training workers to recognize and manage emergencies safely and prompt reporting of accidents/incidences. It would also be equally important to make sure workers observe and practice appropriately any measure put in place for their well-being (Geller, 2005; Health and Safety Executive, 2008).

There is a general lack of literature on the provision of safety measures and their influence on the workers' safety practice specifically in

the area of fuel services industry. Even where such literature exists, most of the studies lack the data to explain the influence the instituted workplace safety measures have on the safe workplace behaviour of the study populations studied. This led the researcher to review related literature across various fields such as agriculture, food industries, other petrochemical industries, factories and home safety. Besides, none of such studies involved FSSAs, especially pump attendants from Ghana and/or conducted in the Sekondi-Takoradi Metropolis. These have created the gap of knowledge for which this study stands to fill.

CHAPTER THREE

METHODOLOGY

The dual purposes of this study were to explore (1) the safety measures put in place by the employers and/or managers of service station attendants and (2) the relationship between the safety measures provided by the OMCs and safety practices of the FSSAs in Sekondi-Takoradi Metropolis. This chapter contains the research design, the population, sample and sampling procedure, instrument used for data collection, data collection procedure, and how data was analyzed.

Research Design

The descriptive cross-sectional survey was used to explore the safety measures provided by the OMCs and/or managers of fuel service stations and the relationship they have on the safety practices of FSSAs. According to Babbie (2007), surveys are useful in describing a large population with accurate representative sample. Surveys are also flexible where many variables and questions can be asked on a topic, making analysis also flexible. In addition, surveys make measurement of opinions, beliefs and attitudes standardized (Nwadinigwe, 2002).

Population

The population for this study was FSSAs from the service stations of Total Petroleum Ghana, Shell Ghana, Goil and Allied Oil in Sekondi-Takoradi Metropolis in the Western Region of Ghana. The total population of FSSAs in the four companies involved in this study was 287. This comprised 135

forecourt attendants, 85 shop attendants and 67 lube bay mechanics (Allied Oil, 2009; Ghana Oil Company, 2006; 2010; Guisefield & Frimpong, 2011). The study however, used 135 forecourt attendants since their exposure to health and safety hazards is greater than that of other workers in the service stations (Eugene, 2007; Rekhadevi et al., 2011). FSSAs are predominantly men except at few stations where ladies are observed.

Attendants are mostly young persons of age 18 to 35 years. Majority of them have secondary education (Olaotse, 2010). The oil companies chosen have long standing experiences and their stated goals have health and safety of their employees as priority. The duties of fuel service attendants involve refueling and washing windshields of vehicles, checking fluid levels and air pressure and replacing parts such as tires, light bulbs and windshield-wiper blades of vehicles (Chilcott, 2007). They also receive payment from customers, perform minor property maintenance duties such as sweeping service station lot, trimming shrubs, scrubbing service bays and opening heavy underground fuel tank cover among others. The attendants also clean the dispenser (machines) on day-to-day basis. Olaotse points out that forecourt attendants normally operate electrically controlled pumps that dispense gasoline (petrol and diesel) to vehicle owners.

Sample and Sampling Procedure

The population for the study comprised 287 FSSAs. However, this research study purposively selected all 135 forecourt attendants. The figure or sample size (135) was considered appropriate for survey. According to Fraenkel and Wallen (2000), in descriptive survey a minimum of sample size of 100 cases are to be considered if any meaningful generalization is to be made.

Allied Oil, Goil Ghana Limited, Shell Ghana Limited and Total Petroleum Ghana Limited were chosen for the study because of their long standing experiences. Total Petroleum Ghana Limited and Shell Ghana Limited (SGL) are multinational OMCs operating in Ghana before independence (GNA, 2006). Goil, on the other hand, is a Ghana government owned company that started its operations as far back in June 1960. Besides, Allied Oil is one of the first indigenous OMCs in Ghana. Allied started its operations in oil marketing in October 1998. These companies also have written goals of which health and safety of their employees are integral components (Allied Oil, 2009; Ghana Oil Company, 2006). The companies engage in education, environmental reengineering, provision of safety equipment and many other measures to promote the health and well-being of the employees.

A total of 114 (18.4% female, 81.6% male) FSSAs from Sekondi-Takoradi Metropolis participated in the survey. Most of the FSSAs had secondary education ($n = 84, 73.7\%$), while few others had basic education ($n = 9, 7.9\%$), vocational education ($n = 13, 11.4\%$) and tertiary education, ($n = 8, 7.0\%$) respectively. The working experiences of the attendants suggest that 48 (42%) of the respondents have been working in their fuel service stations for just about one year, while 66 (58%) have been working in the fuel service station industry between two to 17 years. The analysis also revealed that the participants' age ranged from 19 to 45 ($M = 26.3; SD = 5.74$).

Most of the FSSAs ($n = 106, 93.0\%$) work on 24-hour shift basis while few others ($n = 8, 7.0\%$) work on 8-hour or daily basis. In addition, 86 (75.4%) participants indicated that their companies and/or stations have safety policy. On the contrary, 28 (24.6%) FSSAs revealed that either their

companies or stations do not have safety policy in place at their worksites. Furthermore, the results indicated that there were health damaging incidences occurring at the fuel service stations in the study area. The reported accidents or incidences in the fuel service stations included, fire, 35 (30.7%), armed robbery, 10 (8.8%), oil spillage, 21 (18.4%), vehicular accidents, 21 (18.4%) and customer abuse, 27 (23.7%).

Instrument

A researcher generated questionnaire, Ansah FSSAs Questionnaire (AFSSAQ) was designed to collect data for this study. The 27 item questionnaire contained two sections: A and B. Section A composed of items 1-7. This section collected background information such as age, gender, educational background, number of years working in the fuel service industry, major incidents experienced while working, and availability of safety policy at the stations.

Section B solicited information on safety policies enforcement, safety training/education, safety facilities, PPE and the assessment of the safety practices of the workers. The section comprised items 8-27. The subscale that measured safety policy enforcement composed of items 8-11. Items 12-15 measured provision safety training/education. Similarly, the subscale that measured availability of safety facilities composed of items 16-19. In addition, items 20-23 measured provision of PPE, while items 24-27 measured the extent of safety practices of the attendants. Participants responded to the section B using a five-point-Likert scale of Strongly Agree (5) to Strongly Disagree (1). Questions 24 and 25, the negative items, were scored with a reverse score of Strongly Disagree (5), Disagree (4), No Idea (3), Agree (2) and Strongly Agree (1) (See Appendix A).

AFSSAQ yielded five separate scores for each of the subscales; safety policy enforcement, PPE, safety training or education, safety facility, and safety practices. The scores ranged from low of 4 to high of 20 with the mean of 5 for each subscale. High scores on a subscale reflected maximum performance of a participant (i.e. high provision of a safety measure subscale by the OMCs or high safety practices by the attendants).

Validity of the Instrument

Initial 64 item instrument was given to a senior research assistant (SRA) from the Department of HPER and a lecturer from Science and Mathematics Education Department to assess and make the needed corrections. In addition, two lecturers from the Department of HPER of the University of Cape Coast (UCC) scrutinized the AFSSAQ for its face and content validity. These steps reduced the questionnaire items to 40. The AFSSAQ was further refined to 34 items by the two supervisors of this project.

Fuel service attendants from Cape Coast were also used for the pre-testing of the AFSSAQ. The questionnaire was distributed to six pump attendants, two each from three different fuel service stations, to complete. The attendants were encouraged to make comments about their understanding and/or the suitability of the questionnaire items since the exercise was to ensure that the instrument was appropriate for data collection. The completed questionnaire was collected after five days. On collection of the questionnaire, the researcher discussed with the attendants some of the comments they had indicated and the items left unanswered. These processes led to the reduction of the questionnaire items and also resulted in rewording some of the items

(Creswell, 2009). Further item refinement scaled the questionnaire down to 27 items comprising 7 items for section A and 20 for section B.

Reliability of the Instrument

To establish the reliability of the AFSSAQ, data was collected from 32 randomly selected pump attendants from Cape Coast. The internal consistency reliability (Cronbach Coefficient Alpha) for Section B subscales were calculated using SPSS Version 16.0. The AFSSAQ yielded alpha reliability coefficient value of .81. Additionally, the Section B subscales yielded alpha values ranging from .85 to .64 thus; safety policies enforcement (.78); safety training/education (.85); safety facilities (.64); PPE (.79) and safety practice (.68). The alpha values were considered moderate to high and acceptable for a survey study in line with the exposition by Fraenkel and Wallen (2000). The pilot test was conducted from 23rd to 31st January, 2012. The actual study yielded reliability coefficient alpha of .82. Thus, safety policies enforcement (.80); safety training/education (.84); safety facilities (.67); PPE (.80) and safety practice (.67).

Data Collection Procedure

My supervisors approved the research protocol. An introductory letter from the Department of HPER aided me to obtain permission from the OMCs and the managers of the various fuel stations to contact and also to establish rapport with the respondents (see Appendix B). A cover letter was attached to the questionnaire. The cover letter briefly addressed the purposes of the study and assured the respondents of their confidentiality and voluntary participation in the study. The letter also estimated the time it may take a respondent to complete the survey (Appendix C). In addition, the participants

completed an informed consent form (Appendix D) before taking part in the study.

A trained research assistant from the Department of HPER assisted in the administration of the questionnaire. The assistant was educated on the purposes of the study. In addition, he was trained in the administration of the instrument. At the fuel service stations, the managers and/or supervisors were given the questionnaire to distribute to the respondents (pump attendants). The completed questionnaires were collected after a week (10th to 15th of March 2012). One hundred and fourteen constituting 84% of the total number of distributed questionnaire were retrieved and used for analysis.

Data Analysis

Data cleansing was important to get the collected data into appropriate order before analysis began. The data was coded (SA = 5; A = 4; NI = 3; D = 2 and SD = 1) and statistically analyzed by the researcher. Predictive analysis software of SPSS Windows Version 16.0 was used for the analysis. In addition, the analyses were done research question by research question.

Descriptive statistics of frequencies and percentages were calculated to find out the safety measures the various OMCs or the fuel service station managers provided for FSSAs (Research Question One). Sixteen five-point Likert scale items were used to measure provision of safety measures by the companies. Frequencies and percentages were used to determine the level of safety practice among the FSSAs (Research Question Two). Scores ranging from 4-20 were used to determine the level of performance on safety practice index among the participants in the Sekondi-Takoradi Metropolis. Therefore, a participant scored low on the safety practice index if his or her score fell

between 4 and 12. On the other hand, an attendant scored high on the safety practice index if his or her score fell between 13 and 20.

An Independent Sample t-test was calculated to determine the differences between safety practices of male and female FSSAs in the Sekondi-Takoradi Metropolis (Research Question Three). A One-way analysis of variance (ANOVA) was also calculated to explore the differences in safety practices of FSSAs based on their educational levels (Research Question Four) and to determine whether there were differences in the safety practices of FSSAs from the various OMCs in the Sekondi-Takoradi Metropolis (Research Question Five). Also, Tukey HSD post hoc (multiple comparisons) to determine the practical significant differences between the identified groups, effect size using eta square (η^2) was calculated (Cohen & Cohen, 1983; Huck, 2008).

Furthermore, a One-way between subject ANOVA was calculated to explore the differences between the safety measures provided by the various OMCs in this study (Research Question Six). Moreover, Boferroni post hoc analysis to determine within which groups of companies the significant differences existed. Besides, effect size using eta square (η^2) was calculated to determine the practical significance differences or the magnitude of the differences that existed between the groups (Cohen & Cohen, 1983). The effect size criteria for a One-way ANOVA with eta squared are .01, .06 and .14 as small, medium and large respectively (Huck, 2008). Additionally, Pearson bivariate correlation analysis was calculated to determine the relationship between the safety measures provided by the OMCs and the safety practices of the FSSAs in Sekondi-Takoradi Metropolis (Research Question Seven).

To prevent the inflation of the alpha ($p < .05$), the independent variables were entered each at a time with the groups into the SPSS model. Tables were also used to present the results of the analyses.

CHAPTER FOUR

RESULTS AND DISCUSSION

The dual purposes of this study were to explore (1) the safety measures put in place by the employers and/or managers of fuel service stations attendants and (2) the relationship between the safety measures provided by the OMCs or managers and safety practices or behaviours of the FSSAs in Sekondi-Takoradi Metropolis.

Research Question 1: What Safety Measures are Provided for FSSAs by Oil Marketing Companies in the Sekondi-Takoradi Metropolis?

Frequency and percentage distributions were calculated to determine the worksite health and safety measures put in place by the OMCs (Allied Oil, Goil, Shell and Total Petroleum) for the FSSAs in the Sekondi-Takoradi Metropolis. Frequency data revealed that 77 (68%) participants agreed or strongly agreed that the oil companies provide training/education, while 32 (28%) either disagreed or strongly disagreed. Meanwhile, more than one-half, 68 (60%) of the respondents agreed or strongly agreed that the OMCs institute workplace safety policies and enforce them whereas, 46 (40%) disagreed or strongly disagreed. Regarding provision of safety facilities, 63 (57%) of the participants either agreed or strongly agreed that the OMCs provide safety facilities as a safety measure at the fuel service stations in the Sekondi-Takoradi Metropolis, but 44 (38%) disagreed or strongly disagreed. In addition, only 50 (44%) of the participants agreed or strongly agreed that the OMCs or fuel service station management provide PPE for FSSAs.

Meanwhile, a little more than half 58 (51%) of the attendants disagreed or strongly disagreed that the management of the OMCs or fuel service stations provide PPE for the FSSAs (see Table 1 for details). Therefore, the researcher inferred that the OMCs provide high among of safety measures for their FSSAs in the Sekondi-Takoradi Metropolis.

Table 1: Frequency Data of Safety Measures of the Oil Marketing Companies in the Sekondi-Takoradi Metropolis

Subscales	A		SA		NI		D		SD	
	<i>f.</i>	%	<i>f.</i>	%	<i>f.</i>	%	<i>f.</i>	%	<i>f.</i>	%
Safety Training/Education	43	38	34	30	5	4	14	12	18	16
Safety Policy Enforcement	41	36	27	24	6	5	6	14	24	21
Safety Facilities	30	27	33	30	7	6	22	19	22	19
Personal Protective Equipment	28	25	22	19	6	5	24	21	34	30

A = Agree, SA = Strongly Agree, NI = No Idea, D = Disagree,

SD = Strongly Disagree

Findings of this study indicated that most (68%) of the participants agreed that the OMCs trained or educated the FSSAs on the safety requirements of their job when they were engaged. This may be as a result of the fact that the attendants have been trained or educated on the safety requirement of the fuel service station job. This may be a way of increasing workers knowledge, a component of high safety behaviour.

Clarke (2008) and Geller (2005) indicated that education or training equips workers with appropriate knowledge, techniques and procedures that are important for taking precautionary measures necessary to reduce injury occurrence at work. Accordingly, education also increases workers confidence

to take actions necessary to correct unsafe work operations. These corrective actions contribute meaningfully to improving safety and health of the workers.

In support of this finding, Vinodkumar and Bhasi (2010) also revealed that safety training is one of the most important safety management practices that predicted safety knowledge, safety motivation, safety compliance and safety participation among industry workers. Accordingly, training or educating workers in work safety will not only improve their working conditions but also positively influence their attitudes and behaviours with regard to health and safety. In addition, Lormphongs et al. (2004) concluded that occupational health education was an effective tool to reducing the risk of lead poisoning among workers in a battery manufacturing plant. Lormphongs et al. indicated that between 80.6% and 100.0% of workers understood and protected themselves against lead exposure after receiving training in health and safety. Also, trained workers regularly wore long sleeved shirts, trousers and used the appropriate masks all day long when at work. Therefore, instituting workplace safety policies and enforcing the policies is a major step towards promoting the health and safety of workers. Compliance with worksite safety procedures is critical if safety and well-being of workers are to be promoted (OSHA, 2005; Rickie & Sieber, 2010).

Findings of this study showed that majority (60%) of the attendants perceive that the oil companies/stations institute safety policies and enforce them. A possible explanation to this finding could be that the OMCs or stations are required to provide safety policies in compliance with the law if they want to stay in business. Cole (2002) indicated that employers have a common law duty to provide a safe workplace for their employees. Management is also liable by common law for accidents encountered by their

employees in the course of their jobs. In addition, employers have both legal and moral responsibilities to protect the health and well-being of their employees (Clarke, 2008). Therefore, management should develop effective occupational health and safety policy and ensure its effective implementation within the organisation (Akpan, 2011). Besides, management should establish occupational health and safety organs or units with specific responsibilities and competent leaders.

Clarke (2008) on the other hand concluded that Ghana has no comprehensive occupational health and safety regulations but fragmented once. Akpan (2011) and Clarke added that there is no institution mandated and charged by law to enforce those outdated, fragmented regulations in Ghana, as in most African countries. Therefore the oil companies may not necessarily be complying with any local regulation but promoting their business through good workplace safety.

Instituting safety policies, enforcing the policies and providing workers with PPE or appropriate safety facilities are core mandates of employers (Lovato et al., 2006). These measures nevertheless would motivate workers to appropriately put up safety behaviours at work (Health and Safety Executive, 2008; 2007). The regulation of labour in the industries according to Parker et al. (2009) also calls for the introduction of various workplace policies that help to protect/promote the well-being of the worker. Evidence suggests that workers' safety behaviours or practices are high in all workplaces where good health and safety policies are enforced by the management or supervisors (Skelton, 2006). Thus, having safety policy and implementing it effectively at work is fundamental to promoting and/or protecting the well-being of workers. On the contrary, Klick and Stratmann

(2003) found more inspections or enforcement of workplace safety regulation to be responsible for higher death rates among the workers. They concluded that increased worker safety measures induce riskier behaviours on the part of workers.

Providing workers with adequate safety facilities is a core element of implementing effectively the health and safety policy at workplaces (Akpan, 2011). Putting in place good safety facilities at fuel service stations promotes high standard of safety behaviours among the attendants (Health and Safety Executive, 2008).

The finding of this study indicated that a little more than half (57%) of the pump attendants agreed that the oil companies provide safety facilities at the fuel service stations. The researcher thought the oil companies were providing the facilities as part of effective implementation of their safety policies. In addition, the companies may be complying with their own mission and policy statements. Parker et al. (2009) found that written safety policy at workplace was a good facilitator of management commitment to providing for safety of the workers. Businesses with written safety policies provide more and better quality safety measures and PPE than those businesses without written safety policies. Fabiano et al. (2004) also concluded that decrease in the availability of occupational safety services in some companies was responsible for the high prevalence of injuries. Fabiano et al. observed that firms that have safety of their workers as part of their policy or missions provide higher safety devices than those firms without such component of their policy statement. They also pointed that companies comply with their policies not just for the safety of the workers but most importantly, for economic gains. Thus, compliance with company's policy or mission

statement promotes safety management practices, the result of which is the promotion of the well-being of workers.

Supply of PPE is vital to protecting workers from exposure to workplace hazards especially chemicals or fumes (Health and Safety Executive, 2007). However, the current study found that only 44% of the attendants agreed that the oil companies provide PPE for the attendants. It is a common practice that most OMCs provide attendants with uniform and safety boots (Olaotse, 2010). But the essential health-serving equipment such as respiratory protectors, safety glasses and safety vests, which this study measured were minimally provided. Runyan et al. (2008) recommended that efforts to eradicate exposures to adverse conditions at workplaces need to be complemented by increased provision of PPE. Runyan et al. indicated in their study that two-thirds of respondents were exposed to continuous very loud noise, 55% to thermal hazards and 54% to chemical hazards because there had been less supply of PPE. They concluded that despite the minimal provision of PPE, training workers was important to increase the use of the equipment. Mathews et al. (2008) also concluded that lack of access to safety equipment is the major barrier to their use. The results of their study showed that for each type of device provided there was a 40% increase in use when the device was always provided compared with when it was not always available. This emphasizes the usefulness of providing appropriate PPE to workers at their worksites.

The minimal provision of PPE among all the OMCs may also be because some of the stations are owned and operated by private owners (under the OMCs) (Olaotse, 2010; Shell Australia, 2007). Probably, the private owners due to their small size are not complying with the safety policies of the

OMCs. According to Olaotse (2010), most private owners of fuel service station in South Africa failed to provide for the health and safety of their workers. Olaotse concluded that most service stations had worse and less developed occupational prevention programmes as against that of those OMCs they are affiliated. Similarly, Garcia et al. (2004) revealed that filling stations do not provide appropriate safety devices for their workers, a violation to the health and safety principles of their “mother” companies. Such neglect in the provision of health and well-being will continuous to endanger workers especially FSSAs by exposing them to hazards at their workplaces. Therefore, health and safety of FSSAs may continue to be endangered if these OMCs do not enforce the safety policies at these private fuel service stations in Sekondi-Takoradi Metropolis.

Research Question 2: What is the Level of Safety Practice of FSSAs in the Sekondi-Takoradi Metropolis?

To determine the level of safety practice among FSSAs, frequency and percentage distributions were calculated. A score between 4 and 12 indicated low safety practice while between 13 and 20 indicated high safety practice. These scores were used as categories to determine the level of safety practices among the attendants. The results from Table 2 indicated that most (71%) of the FSSAs scored high on safety practice index. However, 29% of the participants scored low in their safety practice index. The results suggest that FSSAs practice quite a high standard of safety at the fuel service stations. Therefore, FSSAs in the Sekondi-Takoradi Metropolis can be said to observe high standard of safety procedures at their fuel service stations.

Table 2: Frequency Data of the Level of Safety Practice of Fuel Service Station Attendants in the Sekondi-Takoradi Metropolis

Score	<i>f</i>	%
20	8	7.0
19	9	7.9
18	14	12.2
17	9	7.9
16	20	17.5
15	9	7.9
14	6	5.3
13	6	5.3
12	8	7.0
10	7	6.1
11	5	4.4
9	8	7.0
6	2	1.8
8	2	1.8
5	1	.9
Total	114	100.0

Low (5-12); High (13-20)

The findings of this study revealed that many (71%) of the attendants scored high or practice high safety procedures while at work. The probable reason for this finding is that the OMCs provide high amount of safety measures such as safety training/education, safety policy, and safety facilities. This finding is supported by the results of several studies (Geller, 2005; Gimeno et al., 2005; Lovato et al., 2006; Zohar & Luria, 2003) that provision of appropriate safety measures at workplaces culminate into high safety behaviours of workers. Kendrick et al. (2009) found that home safety education especially with the provision of safety equipment or facilities is effective in increasing some thermal injury prevention practices among some households in Dhahran, Saudi Arabia. Likewise, Vinodkumar and Bhasi

(2010) found that safety training predicted safety knowledge, safety compliance and safety participation among industry workers in Kerala, India. In addition, safety training correlated positively high with safety compliance and safety participation among the workers. Thus, providing adequate safety measures do not only improve working conditions of the workers but also positively influence their attitudes and behaviours with regard to safety.

Enforcing instituted health and safety policies within workplaces may also work effectively in promoting the health and safety behaviour of workers. Zohar and Luria (2003) concluded that increase in the supervisory safety-oriented interactions such as regulation enforcement between management and workers significantly increased the latter's safety behaviour scores at the various companies. Therefore, the high provision of safety training/education, safety policy enforcement and safety facilities may account for the high score in the level of safety practice among FSSAs in the Sekondi-Takoradi Metropolis.

Although, OMCs provided high safety measures (Table 1), a considerable percentage (29%) of the FSSAs scored low in their safety practice index (Table 1). The low score is perhaps due to high work demand, insecurity, negative attitude towards safety and inadequate information flow. In support of the findings, Parimalam et al. (2007) revealed that about one half of the workers in their study were aware of the benefits of using PPE at work, but almost 40% of the were not using PPE. Accordingly, there exist a gap between knowledge or what workers acquire and what they practice at work due to other workplace factors.

Lipscomb et al. (2008) also concluded that apprentices often do not apply the safety principles they have been taught in school in the actual

working environment. They found that job insecurity in the work environment influenced workers' behaviours even when apprentices reported high knowledge of safe procedures. Therefore, not only the training to increase knowledge but other factors such as attitude and insecurity influence the safety behaviours or practices of workers (Lipscomb et al.; Parimalam et al., 2007). Similarly, training coupled with the presence of a strong safety management practices such as open safety communication and supervisors with strong leadership skills may produce the desired safe work behaviours (Lehmann et al., 2009). This conclusion suggests that empowering workers through training alone or providing only physical safety measures (as measured in this study) can fall short. Hence, as training or education is intensified, provision of appropriate PPE and enforcing attendants to comply with using the devices is equally essential.

Attendants may also score low in their safety practice because 42% of them had only about one year working experience. Employee's experience at workplace has been found as a key factor in determining the injury rate, a consequence of unsafe work practice, of workers in some U. S. factories. Thomason and Pozzebon (2002) found that the more experienced workers had less workplace injuries than the less experienced workers. And that increase in injury rate was predominantly as a consequence of poor worksite safety behaviours which are mostly attributed to inexperience at work, and low or lack of knowledge about the operation guidelines (Geller, 2005; Parimalam et al., 2007).

The low score recorded by some of the attendants in their safety practice index was also probably as a result of inadequate provision of PPE (Table 1). Mathews et al. (2008) concluded that lack of access to safety

equipment was a major barrier to their use. Mathew et al. found that paramedics in California were provided safety devices more often than paramedics in the United States as a whole. For each type of safety device provided, there was at least a 40% resultant increase in its usage when the device was always provided as compared with when it was not always provided. Similarly, Green-McKenzie et al. (2001) concluded that availability of PPE is crucial to help ensure their use in high-risk working environment. Green-McKenzie et al. also found a strong positive correlation between the availability of PPE and infection control practices of the workers. Therefore, provision of appropriate safety devices or PPE is pre-requisite for increased safety performance of workers.

Research Question 3: Do Male and Female FSSAs in the Sekondi-Takoradi Metropolis differ in their Safety Practices?

Independent-sample t-test was calculated to determine whether there was any difference in the safety practices of male and female FSSAs in Sekondi-Takoradi Metropolis. The results revealed no statistically significant difference in the mean safety practice scores between males and females FSSAs, $t(112) = 1.25, p > .05$. Therefore, males ($M = 14.93, SD = 3.55$) and females ($M = 13.81, SD = 4.26$) FSSAs in the Sekondi-Takoradi Metropolis do not differ markedly in the way they practice safety at their various fuel service stations. Hence, the hypothesis which stated that male and female FSSAs will differ in their safety practices has been rejected.

The researcher is of the opinion that the result turned out this way because of the male dominance in the study. Contrary to this finding, Mahalik et al. (2009) found that men, due to masculine gender socialization and social norms, put their health at risk than women do at their working environments. However, Glanz et al. (2007) concluded that male outdoor workers were more

likely not to wear sunscreen protection than their female counterparts in Central European and Malta sample of farm workers. In addition, California farmers were found to show primary prevention strategies more frequently among the females than the younger males (Glanz et al.). Additionally, a result of self-reported safe driving behaviours study indicated that women reported higher observance rates of belt use, observing speed limits and abstaining from drinking and driving than their male counterparts (Shinar, Schechtman & Compton, 2001).

A high level of safety training/education reported in this research study may be provided equally to both sexes. This may also explain the gender similarities in the level of safety practice scores recorded by the FSSAs. Many empirical studies (Gimeno et al., 2005; Kendrick et al., 2008; Lingard, 2002; Tompkins & Kerchberger, 2010; Trepka et al. 2008; Vinodkumar & Bhasi, 2010) support this finding. Gimeno et al.; Tompkins & Kerchberger; Vinodkumar & Bhasi, concluded that safety training and education were mediating factors in improving safety behaviours or practices of employees. In addition, Lingard and Trepka et al. found that training or education, provision of safety facilities, supply of PPE and institution of safety policies for workers has no gender bases since the aim is for the protection of all workers. Thus, measures put in place for the safety of workers in the fuel service station would consider all workers instead of males or females only.

The roles of more experienced colleague workers may also positively influence how the FSSAs collectively observe safety at their workplaces. This is supported by Fang et al. (2006) who found that experienced co-workers perform their work more safely than the less experienced workers. Accordingly, these more experienced workers, in most instances, influence

how their less experienced or new employed co-workers go about their duties. In the present study the researcher found that about 58% of the FSSAs have working experience of between two and seventeen years. Therefore, it is probable that the few less experienced attendants are being positive influenced by their more experienced workers.

Research Question 4: Does Educational Level Influence Safety Practices of FSSAs in the Sekondi-Takoradi Metropolis?

The results from Table 3 presents a One-way analysis of variance (ANOVA) conducted to explore the influence of educational attainments on the safety practices of the FSSAs in Sekondi-Takoradi Metropolis. The ANOVA analysis showed no statistically significance difference in the safety practices based on the educational levels of the FSSAs, $F(3, 110) = .603, p > .05$. The data indicated that FSSAs with basic education ($M = 13.33, SD = 4.12$), vocational education ($M = 14.38, SD = 3.33$), secondary education ($M = 14.85, SD = 3.81$) and tertiary education ($M = 15.50, SD = 2.45$) did not differ significantly in their safety practices. Therefore, observing safety procedures at fuel service stations was independent of the educational attainment of the FSSAs in the Sekondi-Takoradi Metropolis.

Table 3: A One-way ANOVA Calculating the Differences in Safety Practice as a Result of Educational Levels of Fuel Service Station Attendants

Groups	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>F</i>	<i>Sig.</i>
Basic Education	9	13.33	4.12			
Vocational Education	13	14.38	3.33			
				3	.60	.61
Secondary Education	84	14.85	3.81			
Tertiary Education	8	15.50	2.45			

$P > .05; N = 114$

The results of this study show that observing safety procedures at fuel service stations in Sekondi-Takoradi Metropolis was independent of educational attainments of the attendants. Educational attainments of the FSSAs in this study suggest that more than 92.1% had secondary and tertiary education. Moreover, 68% of the FSSAs also indicated they had safety training or education at their workplaces. The high educational level of the participants may be responsible for the non-significance difference observed in the safety practices of the attendants as a result of their educational levels.

Contrary to this finding, Fang et al. (2006) and Gyekye and Salminen (2009) in separate studies found that educational attainment accounted for some small but statistically insignificant differences in the safety behaviours of some workers. In addition, higher educated workers recorded the best perceptions on safety. Also, higher educated workers were most compliant with safety procedures and recorded the lowest accident involvement rate. Thus, the workers with high educational attainment have high safety knowledge than those with less education. This high-low knowledge normally translates into the workers safety behaviours at work. Additionally, Nurhan (2007) found a significant difference in the selected interviewed householders concerning attitude towards food safety and knowledge based on their education levels. Accordingly, householders with educational attainment of 12 years and above had higher attitude toward food safety and knowledge than those householders with nine or less years in education. Moreover, Shinar et al. (2001) concluded from self-reported safe driving behaviours study that the use of safety belts increases with education for both men and women. Thus, the higher the educational level of a worker, the more likely he or she will

comply with workplace safety measures or policies. This may lead to performing work safer than the worker with low level of education.

Research Question 5: Are there any Differences in Safety Practice of FSSAs of different Oil Marketing Companies in the Sekondi-Takoradi Metropolis?

A One-way analysis of variance (ANOVA) was calculated to determine if there were any significant differences between FSSAs of the various oil companies in their safety practice. Tukey HSD post hoc (multiple comparisons) analysis was also calculated to determine where the differences existed among the oil companies. The results revealed that overall, there were statistically significant differences $F(3, 110) = 5.40, p < .05$ in the safety practice of the attendants from the OMCs. In addition, the post hoc analysis revealed that the mean score safety practice for Allied Oil attendants ($M = 17.00, SD = 1.93$) was significantly different from that of Goil attendants ($M = 13.19, SD = 3.77$) and of Total Petroleum attendants ($M = 14.43, SD = 3.90$). However, Shell service station attendants safety practice mean score ($M = 14.90; SD = 3.69$) did not differ significantly from that of any other OMCs. Additionally, Goil attendants' safety practice mean score ($M = 13.19, SD = 3.77$) was not significantly different from that of Total Petroleum attendants' ($M = 14.43, SD = 3.90$) (see Table 4 for data). Medium effect size was found between Allied Oil and Goil ($\eta^2 = .13$) (Cohen & Cohen, 1983; Huck, 2008). However, the effect size found between Allied Oil and Total Petroleum was low ($\eta^2 = .02$) (Cohen & Cohen; Huck). Therefore, FSSAs from Allied Oil Company can be said to be performing their jobs with more safety consciousness than their counterparts from Goil and Total Petroleum companies but not those from Shell Oil Marketing Company.

Table 4: A One Way ANOVA Calculating the Differences in Safety Practice of FSSAs

Groups	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>F</i>	<i>Sig.</i>
Allied	23	17.00*	1.93			
Goil	32	13.19 *	3.77			
				3	5.40	.002
Shell	29	14.90	3.69			
Total	30	14.43	3.90			

* $P < .05$; $\eta^2 = .13$; $\eta^2 = .02$; $N = 114$

The data in this study showed that smaller national company workers (Allied Oil attendants) performed better in their safety practice than attendants from large companies like Goil and Total Petroleum. The medium practical significant difference in the safety practices found among the participants may be due to the sizes of the companies involved in this study. Firm size was identified as an influencing factor in the level of safety practices among workers, with workers from large companies performing their work safer than workers from smaller companies (Baldock et al., 2006; Fabiano et al., 2004). In contrast to the finding of this study, Baldock et al. revealed that employees of larger multinational enterprises complied more with safety regulations of their companies as compared to their counterparts from small enterprises. Fabiano et al. also concluded that decrease in the availability of occupational safety services in small companies was responsible for the high prevalence of injury compared with large companies. They observed that rise in injury rate among workers is mostly attributed to non-compliance with safety principles at workplaces.

The result also showed that Allied Oil attendants scored better on safety policy enforcement than Goil and Total Petroleum attendants. The difference in the safety practice scores may be accounted for by the better performance of Allied Oil in safety policy enforcement and provision of PPE. This result is similar to Zohar and Luria (2003) who found that the increased in the supervisory safety-oriented interactions significantly increase the workers' safety behaviour and safety climate scores at the various companies. Additionally, Health and Safety Executive (2009b), Specht (2007) and Worksafe-Victoria (2006) pointed out that effective health and safety regulations at workplace were crucial in promoting safety behaviours or practices that could reduce workplace injuries and ill health specifically among workers. Moreover, enforcement is a key to the success of every policies or regulation.

Research Question 6: Are there any Differences in the Safety Measures Provided by the Oil Marketing Companies for their FSSAs in the Sekondi-Takoradi Metropolis?

Management safety measures studied in this research included institution of workplace safety policy and enforcing them, provision of PPE, safety training/education and provision of safety facilities. To explore the differences in the management safety measures provided by the OMCs of fuel services station managers, a One-way analysis of variance (ANOVA) was calculated. Results of the ANOVA showed a statistically significant difference between the companies in their safety policy enforcement, $F(3, 110) = 6.78, p < .05$.

Post hoc data revealed that Shell ($M = 14.83, SD = 4.50$) has a higher safety policy enforcement practices as a safety measure than Goil ($M = 10.50, SD = 4.17$). In addition, safety policy enforcement practices of Total

Petroleum ($M = 14.53$, $SD = 3.75$) was significantly higher than that of Goil ($M = 10.50$, $SD = 4.17$). Large effect sizes were found between Shell and Goil ($\eta^2 = .16$) and between Total Petroleum and Goil ($\eta^2 = .15$) (Cohen & Cohen, 1983; Huck, 2005).

Furthermore, One-way ANOVA analysis revealed a statistically significant difference among the oil companies in the provision of PPE to their FSSAs, $F(3, 110) = 4.71$, $p < .05$. A Bonferroni post-hoc analysis showed that Total Petroleum ($M = 12.97$, $SD = 3.49$) provided more and/or better PPE to their FSSAs than Goil ($M = 8.97$, $SD = 4.22$). Eta Square effect size ($\eta^2 = .11$) was medium (Cohen & Cohen, 1983; Huck, 2005). However, Allied Oil did not differ significantly from any of the other companies on their provision of safety facilities ($M = 12.81$, $SD = 3.31$), safety policy enforcement ($M = 12.43$, $SD = 4.83$), safety training/education ($M = 14.00$, $SD = 3.32$) and the provision of PPE ($M = 11.26$, $SD = 4.49$). Besides, there was no statistically significant difference between the OMCs in any of the remaining safety measures (safety facilities and safety training/education) (see Table 5 for data). Therefore, it can be inferred that the OMCs in this provide different levels of workplace safety measures for their FSSAs in the Sekondi-Takoradi Metropolis.

Table 5: Means and Standard Deviations of Safety Measures of Oil Marketing Companies in the Sekondi-Takoradi Metropolis

		SF	SPE	ST/E	PPE
	M	12.83	12.43	14.00	11.26
ALLIED					
	SD	3.31	4.83	3.32	4.49
	M	13.78	10.50*	13.25	8.97*
GOIL					
	SD	3.41	4.17	4.41	4.22
	M	13.93	14.83*	15.41	11.20
SHELL					
	SD	3.90	4.50	4.42	4.62
	M	12.43	14.53*	13.97	12.97*
TOTAL					
	SD	3.02	3.75	4.13	3.49

* $P < .05$; $N = 114$

SF = Safety Facilities; SPE = Safety Policy Enforcement; ST/E = Safety Training/Education; PPE = PPE; SP = Safety Practice

The results of a One-way ANOVA revealed that Shell and Total companies performed better in instituting safety policy and enforcing them than Goil. Shell and Total Oil Marketing Companies are large multinational companies, than Goil. Even though the health and safety of workers is enshrined in the missions and policy statements of all the companies (Allied Oil, 2009; Ghana Oil Company, 2006), the multinational companies are more

likely to comply with international health and safety regulations or policies by which they conduct their businesses. Being multinational companies, Shell and Total may be complying with international health and safety regulations or standards (Cooper, 2006). Therefore, it is not surprising to find that Shell and Total Petroleum OMCs are protecting the health and safety of their workers better than Goil in the Sekondi-Takoradi Metropolis.

The finding of this study indicate that multinational companies emphasize regulatory enforcement activities such as the use of external assistance with respect to health and safety issues, training, experience and membership of business associations than small companies. Shell and Total Petroleum provide more or better safety measures such as safety policy enforcement and PPE than Goil to the FSSAs. A plausible explanation to this finding might be due to Shell and Total Petroleum large sizes, the protection of its international image, and hence the better institution of safety policy. In addition, Kotey and Folker (2007) revealed a prevalence of informal training with the provision of safety devices and an increase in adoption of formal, structured and development-oriented training with increasing firm size. Accordingly, large firms supply more and adequate safety devices such as PPE to their workers than small growing companies.

Research Question 7: What is the Relationship between the Safety Measures of Oil Marketing Companies and the Safety Practices of FSSAs in the Sekondi-Takoradi Metropolis?

Pearson bivariate correlation analysis was calculated to determine the relationship between the safety measures (provided by the OMCs) and the safety practice of FSSAs in Sekondi-Takoradi Metropolis. The results from Table 6 revealed that there was a positive moderate correlation between safety policy enforcement and safety practice (.59). Moreover, the correlation

between provision of PPE and safety practice of the attendants was positively low (.39). In addition, provision of safety facilities correlated positively low with attendants' safety practice (.19). However, there was moderate correlation found between safety training/education and attendants' safety practice (-.54). Therefore, there is positive relationship between attendants' safety practices at workplace and safety measures provided by the management of the fuel services stations in the Sekondi-Takoradi Metropolis. Hence, the researcher failed to reject the hypothesis that stated that there will be positive relationship between the safety measures and attendants' safety practices in the Sekondi-Takoradi Metropolis.

Table 6: Correlation between Safety Practice (SP) and Safety Measures

Measures	Safety practices (<i>r</i>)	<i>R</i> ²
Safety Policy Enforcement	.59	.35
Personal Protective Equipment	.39	.15
Safety Training/Education	-.54	.29
Safety Facilities	.19	.03

p < 0.01; *N* = 114

Safety policy enforcement contributed highest with the coefficient of determination $R^2 = .35$. Thus, safety policy enforcement contributed 35% to the variance in safety practice score of FSSAs in this study. Safety policy is the panacea to all other safety measures companies provide for their workers. Therefore, the formulation and enforcement of health and safety policies promote workers' safety behaviour or practices in their working environment (Gimeno et al., 2005; Health and Safety Executive, 2008; Skelton, 2006; Smith & Wadsworth, 2009; Worksafe-Victoria, 2006). According to Zohar

and Luria (2003), written health and safety policy within workplaces is an effective way to promoting the health behaviour of workers. Zohar and Luria indicated that through supervisory actions of superior officers, workers behaviours towards safety would improve. In addition, the increase in supervisory safety-oriented interaction significantly increased the workers' safety behaviour scores at the various companies. Thus, safety policy enforcement accounts for over 40% of workers' safety practice scores.

Rogers' PMT also states that workers' motivation or intention to protect themselves are enhanced by their knowledge of the severity of the risk, the personal vulnerability to the risk, self-efficacy and the response efficacy of the risk-reduction behaviour (Bender et al., 2006; Rogers, 1985; 1975). The theory suggests that workers can be provoked to engage in desirable health behaviours to avoid health risks. The workers knowledge about their susceptibility and severity to events adverse to health and well-being may be provoked to conduct business safely (Pechmann, Zhao, Goldberg & Reibling, 2003). The acquisition of knowledge by workers is a product of safety measures which include safety training, continuous education and provision of appropriate safety facilities. These measures are core components of workplace safety policies (Cooper, 2006; Health and Safety Executive, 2009b; Specht, 2007; Worksafe-Victoria, 2006).

The importance of providing PPE contributed 15% to the variance in the safety practice of the participants. This result highlights the importance of providing PPE to workers although there was a generally low provision among the companies in this study. Provision of appropriate PPE has been found to be a major influencing mediator in safety practices of workers (Deborah et al., 2006; Macfarlane et al., 2008; Mathews et al., 2008; Runyan

et al., 2008; Strong et al., 2008; Tiramani et al., 2007; Vinodkumar & Bhasi, 2010).

Macfarlane et al. (2008) found that only about 40% of their study participants frequently used PPE. According to Macfarlane et al., PPE use was strongly associated with younger age and farm chemical training. Even though PPE use across all pesticide classes was poor, training was found to be an important intervention to reducing farmers' pesticide exposure. Therefore, not only should provision of PPE be paramount in the protection of health of workers but more importantly training them to appropriate use the devices.

However, ST/E correlated moderately positive ($r = .62$) with PPE in this study (Appendix E). Besides, provision of PPE as a safety measure was generally low among the OMCs. Thus, provision of appropriate PPE may not necessarily be effective in controlling workers' exposure to workplace hazards but safety training/education form an essential component (Tiramani et al., 2007). A moderate inverse correlation was also found between safety training/education and safety practice of FSSAs. Thus, low level of providing safety training/education associated with high levels of attendants' safety practice at the fuel service stations. In other words, a unit increase in ST/E, contributes 29% proportionate decrease in safety practice of the workers.

The results also revealed high positive association between ST/E and SPE ($r = .7$). In addition, moderate positive correlation was found between ST/E and PPE ($r = .62$) and ST/E and SF ($r = .40$) (Appendix E). Therefore, the inverse relationship found in the present study could be explained as a knowledge gap existing among the FSSAs. In support of this finding, Lipscomb et al. (2008) found that apprentices often do not apply safety principles they have been taught in the actual work environment. Similarly,

Parimalam et al. (2007) found that there exist gap between knowledge and practice, in safety, of some industry workers. Parimalam et al. concluded that empowering workers through training alone can fall short as they may need self-protective devices to put to use their acquired knowledge. Contrarily, many authors (Gimeno et al., 2005; Kendrick et al., 2008; Knight & Goodman, 2009; Tompkins & Kerchberger, 2010; Tsung-Chih et al., 2007; Vinodkumar & Bhasi, 2010) found that training workers in safety work procedures positively influence the safe modes of job performance on daily basis. However, safety training/education correlated positively with other independent variables such as safety policy enforcement, PPE and safety facilities. This underscores the importance of safety training/education to the contribution of workers' safety behaviours at workplace.

Safety facility was the least contributor ($R^2 = .19$) to the variance in the safety practice of FSSAs. Safety facility explained only 19% of the variations in the safety practice score of the attendants. Besides, safety facility correlated low with other independent variables; safety policy enforcement ($r = .35$), PPE ($r = .31$) and safety training/education ($r = .40$) (Appendix E). This finding suggests that providing safety facilities alone is not enough to influence safety performance of workers at workplace. Available research indicates home safety interventions such as safety training and provision of safety facilities increased safe storage of medicines and cleaning products, the possession of syrup and having poison control center numbers accessible (Kendrick et al., 2008). Thus, providing safety facilities without safety policy enforcement and safety training/education is not enough to motivate attendants to take necessary actions protect themselves while at work.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The dual purposes of this study were to explore (1) the safety measures put in place by the OMCs and/or managers of fuel service stations and (2) the relationship between the safety measures provided by the oil companies and safety practices/behaviours of the FSSAs in Sekondi-Takoradi Metropolis. This chapter is composed of the summary, conclusions and recommendations drawn based on the findings of the study, and recommendations for further research.

Summary

Occupational or workplace health and safety is essential provision that gives a safe working environment in which employees can work with no or minimal risk to their health. On-the-job accidents are the major causes of injuries and illnesses that lead to permanent disabilities or even death. Annually, an estimated 160 million non-fatal work related diseases occur worldwide. Of this figure, 58 million workers experience at least four days of absent from work.

Ghana, over the years has been plagued with numerous workplace accidents in both formal and informal sectors of the economy. The recent oil find in Ghana seems to have resulted in the proliferation of fuel service stations in the country. One can see fuel service stations springing up everywhere all over the country especially in the big cities. This increase of

fuel service stations comes with increase employment of young energetic men and women whose health and well-being needed to be protected.

The workers of fuel service stations are bedeviled with many conditions that adversely impact on their health. Conditions such as armed robberies, exposure to carcinogenic petroleum fumes are dangerous to their health. These ill health conditions at fuel service stations demand that employers institute safety measures that will help protect and promote the well-being of the workers.

As employers make efforts to safeguard the life of workers, it is the responsibility of the workers to observe these safety measures. Compliance with workplace safety measures contribute immensely to the reduction of injuries and absence from work. The observation of safety measures normally manifests in the workers' safety practices or behaviours. Safety behaviours of fuel service station attendant especially forecourt attendants may be demonstrated through changing into house attire after work before going home, controlling customers from unauthorized behaviour and preventing fuel from touching the body.

Research suggests that employers can protect and promote workers' health and safety through various means such as training workers in workplace hazard recognition and first aid, providing safety facilities and equipment, instituting workplace safety policies and enforcing them and providing PPE (Clarke, 2008; Health and Safety Executive, 2008; 2009b; Oduro, 2006). For workers' safety practices to be increased, employers have to institute good health and safety policies and enforce these policies. Educating attendants on the workplace hazard recognition and appropriate emergency responses influence safety practices. In addition, providing the

workers with adequate safety facilities and PPE will not only provide convenient places or tools to work with but also opportunities to engage in self-protecting behaviours.

The framework for this study was in five phases, with each phase summarized in one chapter. Chapter one outlined the incidences that expose FSSAs to health hazards at their fuel service stations. The chapter also summarized some safety management practices/measures that promote safety practices of the FSSAs. In addition, the chapter highlighted the PMT as the theoretical base for this study. A hypothesis and seven research questions were formulated to guide the study.

Literature related to the study was theoretically and empirically reviewed in chapter two. Related literature was reviewed under subtopics such as overview of fuel service station industry in Ghana, hazards associated with fuel service station work, the three “E”s of safety, theoretical framework and factors affecting health and safety practices of workers. This research studied safety policy enforcement, safety training or education, safety facilities and PPE as the safety management practices or safety measures affecting workers’ safety practices or behaviour. Literature was also reviewed under safety practices of workers.

This study used a cross-sectional survey design. Purposive sampling procedure was used to select 135 FSSAs from four OMCs; Allied Oil, Goil, Shell and Total in Sekondi-Takoradi Metropolis in the Western Region of Ghana. A researcher generated questionnaire (AFSSAQ) was used to collect data. The 27 item questionnaire comprised two sections; A and B. Section A solicited participants’ background information such as gender, age, educational level and the number of years working in the fuel service station

industry. Section B measured four variables such as safety policy enforcement, PPE, safety training or education and safety facilities on a five-point-Likert scale. The questionnaire was pretested with FSSAs in Cape Coast. The pilot test of AFSSAQ yielded a high alpha reliability co-efficient of .81. However, the data for the actual study yielded relatively a higher coefficient alpha (.82).

Frequencies, percentages, means and standard deviations were used to analyze participants' background information. Additionally, means, standard deviations, independent sample t-test, ANOVA and Pearson's bivariate correlation were calculated to analyze research questions three, four, five, six and seven. Moreover, Tukey and Bonferroni post hoc analyses (multiple comparisons) were calculated to determine where, among the groups, the differences existed. Also, effect size using eta square (η^2) was calculated to determine the practical significance or the magnitude of the differences among the groups with statistically significant differences.

Findings

The following findings were derived from the study;

1. OMCs in this study provided safety policy enforcement, safety training/education and safety facilities for the most of the FSSAs.
2. Goil did not provide much safety measures for their FSSAs in Sekondi-Takoradi Metropolis.
3. On average, FSSAs in Sekondi-Takoradi Metropolis scored high on their safety practice index.
4. No statistically significance difference was found in the safety practice scores between males and females FSSAs in Sekondi-Takoradi Metropolis.

5. No statistically significance difference was found in the safety practice scores as a function of educational levels of the attendants in Sekondi-Takoradi Metropolis.
6. Allied Oil attendants' safety practice score was significantly difference from that of Goil and Total attendants' scores. However, Shell attendants' safety practice score did not differ significantly from those of the other companies.
7. Overall, there was a medium practical difference in the safety practice scores of the attendants from Allied Oil, Goil, Shell Ghana and Total Petroleum Limited.
8. There was generally a large practical significant difference in safety measures provided by the OMCs. The companies differ significantly in the provision of safety policy enforcement and provision of PPE.
9. The finding also indicates that while Allied Oil Company did not differ significantly from other OMCs in the provision of the safety measures, Goil significantly differed from Shell and Total in instituting workplace safety policies and enforcing them. Again, Goil significantly differed from Total in the provision of PPE to the FSSAs in the Sekondi-Takoradi Metropolis.
10. The finding indicates a moderate inverse relationship between safety training/education and safety practice of the attendants in Sekondi-Takoradi Metropolis.
11. There were low to moderate positive correlation between safety practices of the attendants and the rest of safety measures (safety policy enforcement, PPE and safety facilities) provided by the OMCs in Sekondi-Takoradi Metropolis.

Conclusions

There was generally a high provision of safety measures for FSSAs in Sekondi-Takoradi Metropolis by the four OMCs. However, FSSAs may be exposing themselves to hazardous carcinogenic fuel due to inadequate provision of PPE. Multinational OMCs provide better and wider safety measures for their FSSAs than some of the local OMCs.

There was a positive relationship between the safety measures provided by the OMCs and the safety practice of the FSSAs in the Sekondi-Takoradi Metropolis. Moreover, FSSAs in the Sekondi-Takoradi Metropolis practice high standard of safety at work. Provision of appropriate safety measures especially safety policy, enforcing them and training the FSSAs could improve their safety behaviours while at work.

Recommendations

Based on the conclusion of the study the following recommendations were drawn;

1. The four companies are encouraged to increase the provision of PPE, especially respiratory protectors such as nose and mouth guards, safety suits/vests, safety glasses and gloves in the Sekondi-Takoradi Metropolis.
2. Goil is much entreated to increase provision of safety measures for the FSSAs in the Sekondi-Takoradi Metropolis.
3. The fuel service station managers should see to it that the safety measures at the stations are enforced to encourage much higher safety behaviours among the attendants in the Sekondi-Takoradi Metropolis.
4. The OMCs should also introduce 8 or 10 hour working schedule to reduce the long hours of exposure to petroleum fumes that might result from 24 hours of working.

Suggestions for Further Studies

1. A study is needed to explore the safety practices or behaviours holistically among the various sections of the FSSAs in the Sekondi-Takoradi Metropolis.
2. A study is also needed to investigate management safety practices or safety measures in all the OMCs in the Sekondi-Takoradi Metropolis.
3. A study is also needed to investigate the health status of both formal and current workers of fuel service stations attendants in the Sekondi-Takoradi Metropolis.
4. A research into the prevalence of various accidents or incidences occurring in the fuel service station industry is also needed.

REFERENCES

- Adie, D., & Kunfaa, E. Y. (2007). Occupational health and safety policy in the operations of the processing industry in Kumasi, Ghana. *Journal of Science and Technology*, 27(2), 164–176.
- Ahmed, M. M., Kutty, S. R. M., Khamidi, M. F., & Azmi, M. S. (2005). Mitigation strategies to improve safety conditions at fuel at stations. *International Journal of Occupational Safety and Ergonomics*, 10(4), 303–315.
- Akpan, E. I. (2011). Effective safety and health management policy for improved performance of organizations in Africa. *International Journal of Business and Management*, 6(3), 159–165.
- Allied Oil. (2009a). *Corporate goals and value*. Retrieved April 13, 2011, from http://www.alliedoilghana.com/dynamic/en.nsf/V_S_OPM/AC8EBD3A86DC8F98C12573A3004A73BF?OpenDocument
- Allied Oil. (2009b). *Our history*. Retrieved February 19, 2012 from <http://www.alliedoilghana.com/dynamic/en/?pg=117&pp=108>
- Al-Rudainy, L. A. (2010). Blood lead level among fuel station workers. *Oman Medical Journal*, 25(3), 208–211.
- American Conference of Governmental Industrial Hygienists. (2001). Hydrogen cyanide and cyanide salts. Documentation of the threshold limit values and biological exposure indices. (Electronic version). *American Conference of Governmental Industrial Hygienists, Cincinnati, OH*. 7, Retrieved 27, 2011, from <http://www.nap.edu/openbook.ph>

- Ariyoshi, H. (2008). A case report of anti-smoking measures at a Japanese small-scale Worksite. *Asia-Pacific Journal of Public Health/Asia-Pacific Academic Consortium for Public Health*, 20(2), 18–22.
- Attfield, M. D., Schleiff, P. L., Lubin, J. H., Blair, A., Stewart, P. A., Vermeulen, R., Coble, J. B., & Silverman, D. T. (2012). The diesel exhaust in miners study: A cohort mortality study with emphasis on lung cancer. *Journal of National Cancer Institute*, 104, 1–15.
- Asogwa, S. E. (2000). *A guide to occupational health practice in developing countries* (2nd ed.). Enugu: Snaap Press Ltd.
- Association of Oil Marketing Companies of Ghana. (2011). *Association's history*. Retrieved February 19, 2012 from <http://aomcs.org/about/mission-vision>
- Association of Oil Marketing Companies. (2011). *List of our members*. Retrieved May 25, 2011 from <http://89.145.160/~aomcsor/admission-of-members-fees-and-subscription>
- Babbie, E. (2007). *The practice of social research*. (11th ed). Belmont: Wadworth Cengage Learning.
- Badgley, C. (2011). *Welcome to oil city*. Retrieved May 25, 2011 from <http://pulitzercenter.org/article/ghana-sekondi-takoradi-welcome-oil-city>
- Baldock, R., James, P., Smallbone, D., & Vickers, I. (2006). Influences on small-firm compliance-related behaviour: The case of workplace health and safety. *Environment and Planning: Government and Policy*, 24(6), 827–846.
- Bass, A. (2007). The effect of standing in the workplace and the development of chronic venous insufficiency. *Harefuah*, 146(9), 734–745.

- Bastian, D. L. (2003). Ethics and safety. *Flight Safety Information Journal*, (Special Edition), 19–25. Retrieved June 21, 2011, from http://safety.sv.net/pdf/fsi_essays.pdf
- Behm, M. (2005). Linking construction fatalities to the design for construction safety concept. *Safety Science*, 43, 589-611.
- Bender, H., Ingrid, M. M., & Raish, C. (2006). *Wildfire and fuels management: Risk and human reaction; What motivates home owners to protect themselves from wildfire risks in the WUI?* California: Bellflower Blvd.
- Blakely, C. P. J. (2009). *Improving occupational safety and health interventions –A comparison of safety self-efficacy & safety stages of change*. Doctorial Dissertation, Virginia Polytechnic Institute & State University.
- Boschetto, P., Quintavalle, S., Miotto, D., Cascio, N. L., Zeni E., & Mapp, C. E. (2006). Chronic obstructive pulmonary disease (COPD) and occupational exposures (Electronic version). *Journal of Occupational Medicine and Toxicology*, 1(11) doi:10.1186/1745-6673-1-11. Retrieved July 28, 2012 from: <http://www.occup-med.com/content/1/1/11>
- Bull, N., Riise, T., & Moen, B. E. (2002). Work-related injuries and occupational health and safety factors in smaller enterprises—A prospective study. *Journal of Occupational Medicine (Oxford, England)*, 52(2), 70–74.

- Burke, M. J., Sarpy, S. A. (2003). Improving safety and health through interventions. In D. E. Hoffman, & L. Tetrick, (Eds.), *Health and safety in organizations: A multilevel perspective*, (pp. 56-90). San Francisco, Calif: Jossey-Bass Publishers.
- Burke, M. J., Sarpy, S. A., Smith-Crowe, K., Chan-Serafin, S., Rommel O. Salvador, R. O., & Islam, G. (2006). Relative effectiveness of worker safety and health training methods. *American Journal of Public Health, 96*(2), 315–324.
- Camp, W. G. (2001). Formulating and evaluating theoretical frameworks for career and technical education research. *Journal of Vocational Education Research, 26*(1), 4-25.
- Centers for Disease Control and Prevention. (2011). *Public health strategic framework for COPD prevention*. Atlanta, GA: Author. Retrieved 3 July, 2012 from <http://www.cdc.gov/copd>
- Champoux, D., & Brun, J. (2003). Occupational health and safety management in small size enterprises: an overview of the situation and avenues for intervention and research. *Safety Science, 41*, 301-318.
- Chawla, A., & Lavania, A. K. (2008). Air pollution and fuel vapour induced changes in lung functions: are fuel handlers safe? *Indian Journal of Physiology and Pharmacology, 52*(3), 255–261.
- Chilcott, R. P. (2007). Petrol toxicological overview: Key points petroltoxicological overview. *CHAPD HQ, HPA Version, 2*, 1–16.
- Cismaru, M. (2006). *Using protection motivation theory to increase the persuasiveness of public service communications*. Public Policy Paper Series 40, Saskatchewan Institute of Public Policy. Retrieved September 16, 2011, from <http://www.uregina.ca/sip>

- Clarke, E. (2008). Do occupational health services really exist in Ghana? A special focus on the agricultural and informal sectors. *Journal of Science and Technology*, 27(3), 86–95.
- Clarke, S. (2006). The Relationship between Safety Climate and Safety Performance: A Meta-Analytic Review. *Journal of Occupational Health Psychology*, 11(4), 315–327.
- Cohen, J., & Cohen, P. (1983). Applied multiple regression/correlation analysis for the behaviour sciences (2nd ed.). New York: Lawrence Erlbaum Associates.
- Cohen, A., & Colligan, M. J. (1998). Assessing occupational safety and health training: A literature review (Electronic version). *National Institute for Occupational Safety and Health*, 98–145. Retrieved September 12, 2011 from <http://www.cdc.gov/niosh>
- Cole, G. A. (2002). *Personnel and Human resource management*. (5th ed.). London: Biddles Limited.
- Colley, S. K., Lincolne, J., & Neal, A. (2012). An examination of the relationship amongst profiles of perceived organizational values, safety climate and safety outcomes. *Safety Science*, 51(1), 69–76.
- Colligan, M. J., & Cohen, A. (2004). The role of training in promoting workplace safety and health. In J. Barling, & M. R. Frone, (Eds.), *The psychology of workplace safety*, (pp. 223–248) Washington, DC: American Psychological Association.
- CONCAWE, (2009). *Additional human exposure information for gasoline substance risk assessment (period 2002-2007)*. Report no. 5/09. Brussels: CONCAWE.

- Cooper, D. (2006). *The management's commitment to employee behavior: A field study*. American Society of Safety Engineers, Middle East Chapter, 7th Professional Development Conference & Exhibition. Kingdom of Bahrain March 18-22. Retrieved February 19, 2012, from http://www.behavioralsafety.com/articles/Impact_of_Management_Cmitment.pdf
- Cooper, M. D., & Phillips, R. A. (2004). Exploratory analysis of the safety climate and safety behavior relationship. *Journal of Safety Research*, 35, 497– 512.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*, (3rd ed.). California: Sage Publications, Inc.
- Deborah, B., Reed, R. N., Browning, S. R., Westneat, S. C., & Kidd, P. S. (2006). PPE use and safety behaviors among farm adolescents: Gender differences and predictors of work Practices. *The Journal of Rural Health*, 22(4), 314–320.
- Dede, E. B., & Kagbo, H. D. (2002). A study on the acute toxicological effects of commercial diesel fuel in Nigeria in rats (*Ratus Ratus*) using hematological parameters, *Journal of Applied Sciences and Environmental Management*, 6(1), 84–86.
- de Glanville, H., Schilling, R. S. F., & Wood, C. H. (1992). *Occupational health: A manual for health workers in developing countries*. Nairobi: African Medical and Research Foundation.
- Electronic Industry Citizenship Coalition. (2009). *Electronic industry code of conduct*. Version con 3.0.

- Eugene, S. (2007). Proportionate mortality ratio analysis of automobile mechanics and gasoline service station workers in New Hampshire. *American Journal of Industrial Medicine*, 12(1), 91–99.
- Fabiano, B., Currò, F., & Pastorino, R. (2004). A study of the relationship between occupational injuries and firm size and type in the Italian industry. *Safety Science*, 42(7), 587–600.
- Fang, D., Chen, Y., & Wong, L. (2006). Safety climate in construction industry: A case study in Hong Kong. *Journal of Construction Engineer Management*, 132(6), 573–584.
- Fraenkel, J. R., & Wallen, N. E. (2000). *How to design and evaluate research in education*. (4th ed.). Boston: McGraw Hill.
- Gaber, S., & Abdel-Latif, S. H. (2012). Effect of education and health locus of control on safe use of pesticides: a cross sectional random study (Electronic version). *Journal of Occupational Medicine and Toxicology*, 7(3). Retrieved July 2012, from <http://www.occup-med.com/content/7/1/3>
- Gambatese, J. A. (2008). Design's role in construction accident causality and prevention: Perspectives from an expert panel. *Safety Science*, 46, 675-691.
- Gamperiene, M., Nygård, J. F., Sandange, I., Lau, B., & Bruusgaard, D. (2008). Self-reported work ability of Norwegian women in relation to physical and mental health, and to the work environment (Electronic version). *Journal of Occupational Medicine and Toxicology*, 3(8), doi:10.1186/1745-6673-3-8. Retrieved July 28, 2012 from <http://www.occup-med.com/content/3/1/8>

- Garcia, A. M., Boix, P., & Canosa, C. (2004). Why do workers behave unsafely at work? Determinants of safe work practices in industrial workers. *Journal of Occupational and Environmental Medicine*, *61*(3), 239–246.
- Geller, E. S. (2005). Behavior-based safety and occupational risk management. *Journal of Behavior Modification*, *29*(3), 539–561.
- Gershon, R. R. M., Karkashian, D. C., Grosch, J. W., Murphy, L. R., Escamilla-Cejudo, A., Flanagan, A. P., Bernacki, E., Kasting, C., & Martin, L. (2000). Hospital safety climate and its relationship with safe work practices and workplace exposure incidents. *American Journal of Infection Control*, *28*(3), 211–221.
- Gershon, R. R. M., Karkashian, C. D., Vlahov, D., Kummer, L. R. N., Kasting, C., Green-McKenzie, J., Escamilla-Cejudo, J. A., Kendig, N., Swetz, A., & Martin, L. (1999). Compliance with universal precautions in correctional health care facilities. *Journal of Occupational and Environmental Medicine*, *41*(3), 181-189.
- Gershon, R. R. M., Vlahov, D., Felknor, S. A., Vesley, D., Johnson, P. C., Delcios, G. I., & Murphy, L. R. (2004). Compliance with universal precautions among health care workers at three regional hospitals. *American Journal of Infection Control*, *23*(4), 225–236.
- Ghana News Agency. (2004). *Armed robbers attacked filling station at Agona Swedru*. Retrieved October 25, 2011, from <http://www.Modernghana.com/news/52213/1/armed-robbers-attacked-filling-station-at-agona-sw.html>

- Ghana News Agency. (2006). *Total petroleum Ghana and total Ghana merger*. *Business and Finance News*. Sunday 29th October, 2006. Retrieved April, 13, 2011, from <http://www.modernghana.com/news>
- Ghana News Agency. (2007b). *Fire service orders gas and petrol stations to have extinguishers*. *Regional News* of Friday, 5 October 2007 Retrieved March 23, 2011, from <http://ghanaweb.com/ID=13192>.
- Ghana News Agency. (2007a). *Two die from gas accident*. Retrieved October 25, 2011, from <http://www.ghanaweb.com/GhanaHomePage/NewsArch>
- Ghana News Agency. (2009). *Nigerian armed robbery gang busted*. Retrieved October 25, 2011, from <http://www.ghanavillage.com/showthread.php>
- Ghana News Agency. (2010). *Gas explosion hits Sunyani*. Retrieved October 25, 2011, from <http://www.modernghana.com/news//gas-explosionhitSunyani.htm>
- Ghana News Agency. (2011a). *Armed group attacks two Tema filling stations*. Retrieved October 25, 2011, from <http://www.ghanavillage.com/showthread.php>
- Ghana News Agency. (2011b). *Armed robbers attack and rob Shell filling station*. Retrieved October 25, 2011, from [Ghana homepage/armed-robbers-attack-rob-shell-fillingstation](http://www.ghanahomepage.com/armed-robbers-attack-rob-shell-fillingstation)
- Ghana News Agency. (2011c). *EPA to descend on petrol and gas filling stations*. *Regional News*, Sunday, 27 March 2011. Retrieved April, 2, 2011, from <http://www.allnewsghana.com/ghananewsbusiness>
- Ghana News Agency. (2011d). *Oil Marketing Companies named 2011 accredited members*. Retrieved February 19, 2012 from <http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php>

- Ghana Oil Company. (2010). *About us: Our mission and vision*. Retrieved April 13, 2011, from <http://www.goionline.com>
- Ghana Oil Company. (2006). *Management: Ghana Oil Company limited*. Retrieved April 13, 2011, from <http://www.goionline.com>
- 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(1), 33–51.
- Gimeno, D., Felknor, S., Burau, K. D., & Delclos, G. L. (2005). Organizational and occupational risk factors associated with work related injuries among public hospital employees in Costa Rica. *Journal of Occupational and Environmental Medicine*, 62, 337–343.
- Glanz, K., Buller, D. B., & Saraiya, M. (2007). Reducing ultraviolet radiation exposure among outdoor workers: State of the evidence and recommendations. *Journal of Environmental Health*, 6(2), 1–11.
- Glendon, A. I., & Litherland, D. K. (2001). Safety climate factors, group differences and safety behaviour in road construction. *Safety Science*, 39(3), 157–188.
- Goetsch, D. L. (2005). *Occupational safety and health for technologists, engineers, and managers*. (5th ed.). Upper Saddle River: N. J. Prentice Hall.
- Green-McKenzie, J., Gershon, R. R. M., & Karkashian, C. (2001). Infection control practices among correctional healthcare workers: Effect of management attitudes and availability of protective equipment and engineering controls. *Infection Control and Hospital Epidemiology*, 22(9), 555-559.

- Groves, J., & Cain, J. R. (2000). A survey of exposure to diesel engine exhaust emissions in the workplace. *Annals of Occupational Hygiene*, 44(6), 435–447.
- Gwynn, M. (2005). When people become words. *Ozwords (Australian National Dictionary Centre)*. Retrieved February 18, 2012, from http://www.en.wikipedia.org/wiki/Bowser_%28tanker%29
- Gyekye, S. A., & Salminen, S. (2009). Educational status and organizational safety climate: Does educational attainment influence workers' perceptions of workplace safety? *Safety Science*, 47(1), 20–28.
- Hallare, A. V., Gervasio, M. K., Gervasio, P. L., & Acacio-Claro, P. J. (2009). Monitoring genotoxicity among gasoline station attendants and traffic enforcers in the city of Manila using the micronucleus assay with exfoliated epithelial cells. *Environmental Monitoring and Assessment*, 156(1-4), 331–341.
- Hasle, P., Kines, P., & Andersen, L. P. (2009). Small enterprise owners' injury attribution and injury prevention. *Safety Science*, 47, 9-19.
- Hasle, P., & Lomborg, H. J. (2006). A review of the literature on preventive occupational and safety activities in small enterprises. *Industrial Health*, 44, 6-12.
- Health and Safety Executive. (2007). *Welfare at work: Guidance for employers on welfare provisions*. Retrieved April 16, 2011, from <http://www.hse.gov.uk>
- Health and Safety Executive. (2008). Safety in petrol filling stations (Electronic version). *Health and Safety Executive HS (G) 146*. Retrieved February, 2010, from <http://www.colerainebc.gov.uk>

- Health and Safety Executive. (2009a). *First aid at work: Your questions and answered*. Retrieved April 21, 2011, from <http://www.hse.gov.uk/pubns/-indg-320.pdf>
- Health and Safety Executive. (2009b). *Working alone, health and safety guidance on the risks of lone working*. Retrieved July 19, 2011 from <http://www.hse.gov-.uk/pubns/indg73.pdf>
- Health and Safety Executive. (2010). *Emergency respond plan for petrol station: Fact sheet*. Retrieved July 19, 2011 from <http://www.hse.gov-uk/pubns/indg>
- Hoffmann, E. (2004). International statistical comparisons of occupational and social structures: Problems, possibilities and the role of Isco-88. *International Standard Classification of Occupations, Bureau of Statistics, ILO*. Retrieved April 2, 2011, from <http://www.ilo.org/public/english/support/lib/century-/index.htm>
- Huck, S. W. (2008). *Reading statistics and research* (5th ed.). United State of America: Pearson Education, Inc.
- International Labour Organisation. (2011). ILO between the two world wars 1919. (Electronic version). *Inform Bureau of Library and Information Services, Department of Communication and Public Information, 5*. Retrieved April 2, 2011, from <http://www.ilo.org/public/english/support/lib/century /index. htm>
- Jensen, E. A. (2005). *An assessment of safety/risk management practices/ perspectives among high/middle school technology education instructors and business/industry professionals*. Retrieved May 5, 2011 from <http:// www2uwstout.edu/content/lib/thesis/2005/2005jense>

- Jo-Yu, C., & Stuart, A. B. (2010). Permeation of gasoline, diesel, bioethanol (e85), and biodiesel (b20) fuels through six glove materials. *Journal of Occupational and Environmental Hygiene*, 7(7), 417–428.
- Kathryn, M., Lorraine, H., Michael, T. F., & Lois, E. T., (2009). Investment in workforce health: Exploring the implications for workforce safety climate and commitment. *Journal of Accident Analysis & Prevention*, 42(5), 1445–1454.
- Kendrick, D., Smith, S., Sutton, A. J., Watson, M., Coupland, C., Mulvaney, C., & Mason-Jones, A. (2009). Effect of education and home safety equipment on childhood thermal injury prevention: Meta-Analysis and Meta-Regression. *Journal of Injury Prevention*, 15, 197–204.
- Kendrick, D., Smith, S., Sutton, A. J., Watson, M., Coupland, C., Mulvaney, C., & Mason-Jones, A. (2008). Effect of education and safety equipment on poisoning-prevention practices and poisoning: Systematic review, meta-analysis and meta-regression. *Archives of Disease in Childhood*, 93(7), 599–608.
- Kitchener, B. A., & Jorm, A. F. (2004). Mental health first aid training in a workplace setting: A randomized controlled trial (Electronic version). *BMC Psychiatry*, 4(23). Retrieved 20 July, 2012, from <http://www.biomedcentral.com/1471-244X/4/23>
- Klick, J., & Stratmann, T. (2003). Offsetting behavior in the workplace. *George Mason Law & Economics Research Paper*, No. 03-19. Retrieved 30 July, 2012, from www.ssrn.com/abstract=397822
- Knight, V., & Goodman, H. (2009). Personal safety provision, services and training for service providers users in Leicester City. *Journal of Safer Communities*, 4(1), 20–32.

- Kotey, B., & Folker, C. (2007). Employee training in SMEs: Effect of size and firm type—family and nonfamily. *Journal of Small Business Management, 45*(2), 214–238.
- LaDou, J. (2003). International occupational health. *International Journal of Hygiene and Environmental Health, 206*(4-5), 303–313.
- Lehmann, C. C., Haight, J. M., & Michael, J. H. (2009). Effects of safety training on risk tolerance: an examination of male workers in the surface mining industry. *Journal of Safety, Health & Environmental Research, 4*(3), 1–22.
- Liehr, P. (1992). Prelude to research. *Nursing Science Quarterly, 5*(3), 102-103.
- Liehr, P., & Smith, M. J. (2000). Using story to guide nursing practice. *International Journal of Human Caring, 4*(2), 13-18.
- Liehr, P., & Smith, M. J. (1999). Middle range theory: Spinning research and practice to create knowledge for the new millennium. *Advances in Nursing Science, 21*(4), 81-91.
- Lingard, H. (2002). The effect of first aid training on Australian construction workers' occupational health and safety motivation and risk control behavior. *Journal of Safety Research, 33*(2), 209–230.
- Lipscomb, H. J., Dale, A. M., Kaskutas, V., Sherman-Voellinger, R., & Evanoff, B. (2008). Challenges in residential fall prevention: Insight from apprentice carpenters. *American Journal of Industrial Medicine, 51*(1), 60–68.

- Lormphongs, S., Morioka, I., Miyai, N., Yamamoto, H., Chaikittiporn, C., Thiramanus, T., & Miyashita, K. (2004). Occupational health education and collaboration for reducing the risk of lead poisoning of workers in a battery manufacturing plant in Thailand. *Industrial Health, 42*(4), 440–445.
- Lovato, C. Y., Sabiston, C. M. V., Hadd, V., Nykiforuk, C. I. J., & Campbell, H. S. (2006). The impact of school smoking policies and student perceptions of enforcement on school smoking prevalence and location of smoking. *Health Education Research, 22*(6), 782–793.
- Macfarlane, E., Chapman, A., Benke, G., Meaklim, J., Sim, M., & McNeil, J. (2008). Training and other predictors of PPE use in Australian grain farmers using pesticides. *Journal of Occupational and Environmental Medicine, 65*(2), 141–146.
- Mahalik, J. R., Burns, S., & Syzdek, M. (2009). Masculinity and perceived normative health behaviors as predictors of men's health behaviors. *Social Science and Medicine, 64*(11), 2201–2209.
- Majumdar, D., Dutta, C., Mukherjee, A. K., & Sen, S. (2008). Source apportionment of VOCs at the petrol pumps in Kolkata, India; Exposure of workers and assessment of associated health risk. *Journal of Transport and Environment, 13*(8), 524–530.
- Mathews, R., Leiss, L. K., Lyden, J. T., Sousa, S., Ratcliffe, J. M., & Jagger, J. (2008). Provision and use of PPE and safety devices in the national study to prevent blood exposure in paramedics. *American Journal of Infection Control, 36*(10), 743–749.

- McPherson, D. (2007). Fusing form and function: Selecting protective apparel for comfort and protection protective clothing must protect workers, yet still be comfortable enough that they want to wear it. *Journal of Occupational Hazards*, 69(9), 29-32.
- Minnesota Department of Labor and Industry Occupational Safety and Health Division. (2009). *An employer's guide to developing a workplace accident and injury reduction (AWAIR) programme*. Retrieved September 12, 2011, from <http://www.doli.state.mn.us/OSHA/PDF/awair.pdf>
- Natelson, E. A. (2007). Benzene-induced acute myeloid leukemia: A clinician's perspective. *American Journal of Hematology*, 82(9), 826–830.
- NT WorkSafe. (2010). *Putting safety first: Dangerous goods – gas service station safety*. Retrieved April, 2011 from <http://www.worksafe.nt.gov>.
- Nurhan, U. (2007). Consumer food safety knowledge and practices in the home in Turkey. *Journal of Food Control*, 18(1), 45–51.
- Nwadinigwe, I. P. (2002). *Foundations at research methods and statistics*. Lagos. Vitaman Educational Books and Publishers.
- Occupational Safety and Health Administration. (2010). *General health and safety information for the gulf oil spill*. OSHA, U.S. Department of Labor. Retrieved April 23, 2011, from <http://www.osha.gov>
- Occupational Safety and Health Administration. (2005). *Employee workplace rights*. OSHA, U.S. Department of Labor. Retrieved September 12, 2011, from <http://www.osha.gov>

- Oduro, B. (2006). Enhancing public safety by combating robbery and violent crimes-the police perspective. *Workshop Report on Public Safety: The Role of the Security Agencies. Volta Hotel, Akosombo; 13th to 15th October 2006*. Konrad Adenauer Foundation, Ghana.
- Ofori, R., & Dampson, D. G. (2011). *Research methods and statistics using SPSS*. Amakom-Kumasi: Payless Publication Limited.
- Olaotse, J. K. (2010). *An examination of security measures for the protection of petrol stations: An analysis of case studies in Gauteng*. Unpublished Dissertation Submitted in Fulfillment of the Requirements for the Magistrate Technologiae, Security Management. University of South Africa.
- Olstedal, H. A., & McArthur, D. P. (2011). Reporting practices in merchant shipping, and the identification of influencing factors. *Safety Science*, 49(2), 331–338.
- Öz, B., Özkan, T., & Lajunen, T. (2010). An investigation of the relationship between organizational climate and professional drivers' driver behaviours. *Safety Science*, 48(8), 1484–1489.
- Parimalam, P., Kamalamma, N., & Ganguli, A. K. (2007). Knowledge, attitude and practices related to occupational health problems among garment workers in Tamil Nadu, India. *Journal of Occupational Health*, 49(6), 528–534.
- Parker, D. L., Brosseau, L. M., Samant, Y., Xi, M., Pan, W. Haugan, D., & Study Advisory Board, (2009). A randomized, controlled intervention of machine guarding and related safety programs in small metal-fabrication businesses, *Public Health Report*, 124(1), 90–100.

- Parker, D. L., Brosseau, L. M., Samant, Y., Xi, M., Pan, W. Haugan, D., & Study Advisory Board, (2007). A comparison of the perceptions and beliefs of workers and owners with regard to workplace safety in small metal fabrication businesses. *American Journal of Industrial Medicine*, 50(12), 999–1009.
- Pechmann, C., Zhao, G., Goldberg, M. E., & Reibling, E. T. (2003). What to convey in antismoking advertisements for adolescents: The use of protection motivation theory to identify effective message themes. *Journal of Marketing*, 67(4), 1–18.
- Pedersen, B. H., Hannerz, H., Christensen, U., & Tüchsen, F. (2011). Enterprise size and risk of hospital treated injuries among manual construction workers in Denmark: A study protocol (Electronic version). *Journal of Occupational Medicine and Toxicology*, 6, 11. Retrieved July 28, 2011, <http://www.occupmed.com/content/6/1/11>
- Potter, C., & Potter, D. (2010). Getting to Know the Three E's of Safety. *OSP Magazine*. Retrieved 22, May 2012, from <http://www.ospmag.com/issue/article/getting-know-three-safety>
- Prempeh, O. L. (2010). *An overview of Ghana's petroleum downstream sector, the implications for the upstream oil discovery and recommendations for the structural reorganization of the oil and gas industry*. Retrieved February 19, 2012, from <http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=187641>
- Rajeev, L. S. (2010). 3 Es of road safety engineering, education and enforcement. Retrieved 22, May 2012, from <http://www.parkheavens.blogspot.com/2010/06/3-es-of-road-safety-engineering.html>

- Ratard, R., & McFarland, L. (1993). Injuries to international petroleum drilling workers, 1988–1990. *Journal of Occupational Medicine*, 29(2), 119–125.
- Reed, D. B., Browning, S. R., Westneat, S. C., & Kidd, P. S. (2006). Personal protective use and safety behaviors among farm adolescents: Gender differences and predictors of work practices. *The Journal of Rural Health: Official Journal of the American Rural Health Association and the National Rural Health Care Association*, 22(4), 314–320.
- Rekhadevi, P. V., Rahman, M. F., Mahboob, M., & Graove, P. (2010). Genotoxicity in filling station attendants expose to petroleum hydrocarbons. *Annals of Occupational Hygiene*, 54(8), 944–954.
- Remawi, H., Bates, P., & Dix, I. (2011). The relationship between the implementation of a Safety Management System and the attitudes of employees towards unsafe acts in aviation. *Safety Science*, 49(5), 625–632.
- Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A Review of the Literature. *Journal of Applied Psychology*, 87(4), 698–714.
- Rickie, R. D., & Sieber, W. K. (2010). Hearing protector use in noise-exposed workers: A retrospective look at 1983. *AIHA Journal*, 63(2), 199–204.
- Rogers, R. W. (1985). Attitude change and information integration in fear appeals. *Psychological Reports*, 56, 179–182.
- Rogers, R. W. (1975). A protection motivation theory of fear appeals and attitude change. *Journal of Psychology*, 91, 93–114.

- Rom, W. N., & Markowitz, S. B. (2007). *Environmental and occupational medicine*. (4th ed.). Philadelphia: Lippincott Williams and Wilkins Wolters Kluwer Business.
- Runyan, C. W., Vladutiu, C. J., Rauscher, K. L., & Schulman, M. (2008). Teen workers' exposures to occupational hazards and use of PPE. *American Journal of Industrial Medicine*, 51(10), 735–740.
- Rustemli, A., & Karanci, N. A. (1999). Correlates of earthquake cognitions and preparedness behavior in victimized populations, *Journal of Social Psychology*, 11(4), 767–780.
- SafeWork BC. (2008). *How to implement a formal occupational health and safety programme*. Retrieved 12 December, 2011, from <http://www.Worksafebc>
- Salwa, A. A., Abu-Elseoud, A. R., Heybah, S. M., & Azhar, A. M. (2010). Implementation of an educational training program in first aid for newly graduated nursery school teachers at Zagazig city. *Zagazig Journal of Occupational Health and Safety*, 3(1), 20-29.
- Samant, O., Parker, D., Brosseau, L., Pan, W., Xi, M., & Haugan, D. (2006). Profile of machine safety in small metal fabrication businesses. *American Journal of Industrial Medicine*, 49(5), 352–359.
- Sawacha, E., Naoum, S., & Fong, D. (1999). Factors affecting safety performance on construction sites. *International Journal of Project Management*, 17(5), 309–315.
- Scholz, J. S., & Gray, W. B. (1990). OSHA enforcement and workplace injuries: A behavioral approach to risk assessment. *Journal of Risk and Uncertainty*, 3(3), 283-305.

- Schulte, P. A., Wagner, G. R., Ostry, A., Blanciforti, L. A., Cutlip, R. G., Krajinak, K. M., Luster, M., Munson, A. E., O'Callaghan, J. P., Parks, C. G., Simeonova, P. P., & Miller, D. B. (2007). Work, obesity, and occupational safety and health. *American Journal of Public Health, 97*, 428–436.
- Scott, G. E. (1996). *The psychology of safety: How to improve behaviors and attitudes on the job*. Radnor, PA: Chilton Book Co.
- Shell Australia. (2007). *Safety data sheet: Classified as hazardous according to criteria of NOHSC*. Shell Company of Australia Ltd. Hawthorn East. Retrieved April 23, 2011, from <https://www.sgsci.acohs.co.au/msds/msds-view.asp?SynonymCode=ACNNG00&Incaller=&P>
- Shinar, D., Schechtman, E., & Compton, R. (2001). Self-reports of safe driving behaviors in relationship to sex, age, education and income in the US adult driving population. *Accident Analysis & Prevention, 33*(1), 111–116.
- Siriruttanapruk, S., Ministry of Public Health, Thailand, & International Labour Office, Thailand, (2006). *Integrating occupational health services into public health systems: A model developed with Thailand's Primary Care Units*. Bangkok: International Labour Office.
- Skelton, C. (2006). *Probe finds gas station attendant died because policy was not enforced*. The Vancouver Sun, WorkSafety Committee Report.

- Smith, A. P., & Wadsworth, E. J. K. (2009). *Safety culture, advice and performance: the associations between safety culture and safety performance, health and wellbeing at an individual level, and safety culture, competent occupational safety and health advice, and safety performance at a corporate level*. Report submitted to the IOSH research committee. Leicestershire: Paradigm Prints (UK) Ltd.
- Smith, M. J., & Liehr, P. (1999). Attentively embracing story: A middle range theory with practice and research implications. *Scholarly Inquiry for Nursing Practice, 13*(3), 3-27.
- Smith, S. S., Wellman, H. M., Sorock, G. S., Warner, M., Courtney, T. K., Pransky, G. S., Mocc, H., & Fingerhut, A. L. (2005). Injuries at work in the US adult population: Contribution to the total injury burden. *American Journal of Public Health, 95*(7), 1213–1219.
- Specht, P. G. (2007). The Peltzman effect: Do safety regulations increase unsafe behavior? *Journal of Safety, Health & Environmental Research, 4*(3), 1–12.
- Songstad, N. G., Moland, K. M., Massay, D. A., & Blystad, A. (2012). Why do health workers in rural Tanzania prefer public sector employment? *BMC Health Services Research, 12*(92), 1–21.
- Sørensen, O., Hasle, P., & Bach, E. (2007). Working in small enterprises - Is there a special risk? *Safety Science, 45*, 1044-1059.
- Steffen, T., Grøgaard, J. B., Moen, B. E., & Bråtveit, M. (2005). The impact of social and organizational factors on workers' use of PPE: A multilevel approach. *Journal of Occupational & Environmental Medicine, 47*(8), 829-837.

- Strong, L. L., Thompson, B., Koepsell, T. D., & Meischke, H. (2008). Factors associated with pesticide safety practices in farm workers. *American Journal of Industrial Medicine*, *51*(1), 69–81.
- Sudha, S., Bindhya, S., Athena, F., & Sabari, G. V. (2010). Evaluation of genotoxicity in petrol station workers in South India using micronucleus assay. *Journal of Industrial Health*, *48*, 852–856.
- Takase, I., Kono, K., Tamura, A., Nishio, H., Dote, T., & Suzuki, K. (2004). Fatality due to acute fluoride poisoning in the workplace. *Legal Medicine*, *6*(3), 197–200.
- Teo, E. A. L., Ling, F. Y. Y., & Chong, A. F. W. (2005). Framework for project managers to manage construction safety. *International Journal of Project Management*, *23*, 329–341.
- Thomason, T., & Pozzebon, S. (2002). Determinants of firm workers health and safety and claim management practices. *Industrial and Labor Relation Review*, *55*(2), 286–307.
- Tiramani, M., Colosio, C., & Colombi, A. (2007). The impact of PPE in reducing risk for operators exposed to pesticides: From theory to practice. *G Ital Med Lav Ergon*. *29*(3), 376–379.
- Tompkins, B. M., & Kerchberger, J. P. (2010). Special article: PPE for care of pandemic influenza patients: A training workshop for the powered air purifying respirator. *Anesthesia and Analgesia*, *111*(4), 933–945.
- Total Petroleum Ghana. (2010). *Service stations*. Retrieved February 19, 2012 from <http://www.total-ghana.com/os/osghana>

- Trepka, M. J., Newman, F. L., Davila, E. P., Matthew, K. J., Dixon, Z., & Huffman, F. G. (2008). Randomized controlled trial to determine the effectiveness of an interactive multimedia food safety education program for clients of the special supplemental nutrition program for women, infants, and children. *Journal of the American Dietetic Association, 108*(6), 978–984.
- Tsung-Chih, W., Chi-Hsiang, C., & Chin-Chung, L. (2007). A Correlation among safety leadership, safety climate and safety performance. *Journal of Loss Prevention in the Process Industries, 21*(3), 307–318.
- Tu, R. H., Mitchell, C. S., Kay, G. G., & Risby, T. H. (2004). Human exposure to the jet fuel, JP-8. *Aviation, Space, and Environmental Medicine, 75*(1), 49–59.
- Udonwa, N. E., Uko, E. K., Ikpeme, B. M., Ibanga, I. A., & Okon, B. O. (2009). Exposure of petrol station attendants and auto mechanics to premium motor sprit fumes in Calabar, Nigeria (Electronic version). *Journal of Environmental and Public Health, 7*. Retrieved July 28, 2011, from [http:// www.pubmedcentral.nih.gov/articlerender.fcgi?artid](http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid)
- United State Department of Health and Human Services Food and Drug Administration Center for Food Safety and Applied Nutrition. (1998). *Guidance for industry: Guide to minimize microbial food safety hazards for fresh fruits and vegetables*. Washington, DC 20204, 200 C Street S.W.
- van der Molen, H. F., Zwinderman, K. A. H., Sluiter, J. K., & Frings-Dresen, M. H. W. (2011). Better effect of the use of a needle safety device in combination with an interactive workshop to prevent needle stick injuries. *Safety Science, 49*(8-9), 1180–1186.

- van Mark, A., Spallek, M., Kessel, R., & Brinkmann, E. (2006). Shift work and pathological conditions. *Journal of Occupational Medicine and Toxicology*, *1*(25), 1-25.
- Varonen, U., & Mattila, M. (2000). The safety climate and its relationship to safety practices, safety of the work environment and occupational accidents in eight wood-processing companies. *Accident Analysis and Prevention*, *32*(6), 761–769.
- Veltri, A., Pagell, M., Behm, M., & Das, A. (2007). A data-based evaluation of the relationship between occupational safety and operating performance. *Journal of Safety, Health and Environmental Research*, *4*(1), 1–22.
- Vinodkumar, M. N., & Bhasi, M. (2010). Safety management practices and safety behaviour: assessing the mediating role of safety knowledge and motivation. *Accident Analysis and Prevention*, *42*(6), 2082–2093.
- Vosanibola, J. B. (2003). Health and safety at work (general workplace condition) regulation. *Legal Notice No. 25, Industrial Relations & Productivity*, *3*, 56–68.
- Wang, S. M., Shih, T. S., Huang, Y. S., Chueh, M. R., Chou, J. S., & Chang, H. Y. (2006). Evaluation of the effectiveness of PPE against occupational exposure to N, N-dimethylformamide. *Journal of Hazardous Materials*, *138*(3), 518–525.
- Wheatley, A. D., & Sadhra, S. (2004). Occupational exposure to diesel exhaust fumes. *Annals of Occupational Hygiene*, *48*(4), 369–376.
- WHO. (2007). Global Plan of Action on Workers' Health 2008–2017. *Sixtieth World Health Assembly. Eleventh plenary meeting, 23 May 2007 committee fifth report*. Geneva.

- WHO. (2010). Preventing disease through healthy environments, exposure to benzene: A major public health concern. *Public Health and Environment, World Health Organization Bulletin*, 20, 12–27.
- Worksafe-Victoria. (2006). *Officewise—A guide to health & safety in the office* (5th ed). Retrieved September 7, 2011, from <http://www.worksafe.au/wps/wcm/connect/Officewiseweb.pdf?MOD=AJPERES>
- York University. (2009). *Occupational health and safety management system: department of occupational health and safety*. New York: Author.
- Zimmer, S. (2008). *Global cycle on challenges posed by occupational disease conference paper*. Moscow: The International Social Security Association. Retrieved February 2010, from <http://www.issa.int>
Resources
- Zohar, Z., & Luria, G. (2003). The use of supervisory practices as leverage to improve safety behavior: A cross-level intervention model. A cross-level intervention model. *Journal of Safety Research*, 34(5), 567–577.

APPENDICES

Appendix A

UNIVERSITY OF CAPE COAST

FACULTY OF EDUCATION

DEPARTMENT OF HEALTH, PHYSICAL EDUCATION AND

RECREATION

QUESTIONNAIRE FOR FSSAS

Dear Service Station Attendant

SECTION A: Background Information

Instruction: Mark [] the box corresponding to your choice concerning each statement below.

1. Gender:
 - a. Male []
 - b. Female []
2. How old are you?.....
3. Educational background of respondents
 - a. No Formal Education []
 - b. Basic Education []
 - c. Vocational Training []
 - d. Secondary Education []
 - e. Tertiary Education []
4. How long have you been working at filling station?
5. Do you work on shift bases?
 - Yes []
 - No []

6. Which of these accidents or hazards ever occurred at your station?

Tick as many as applied.

- a. Fire
- b. Armed robbery
- c. Major oil spillage
- d. Vehicle accident
- e. Customer abuse

7. Do you have a safety policy in this station?

Yes

No

SECTION B: Instruction: Please respond to the following statements by marking [√] the column that most accurately represents your opinion of the extent to which you agree or disagree to these statements. There are no ‘correct’ or ‘wrong’ responses; it is your own views that are important.

		Strongly Agree (SA)				
		Agree (A)				
		No Idea (NI)				
		Disagree (D)				
		Strongly Disagree (SD)				
1	All workers get access to the safety policy at the station					
2	There is health and safety committee at the station I work.					
3	The management meets frequently with the workers to discuss safety issues at the station.					
4	There is a safety supervisor in the station I work.					
5	I have been provided with at least two set of safety boots/shoes for work.					
6	I have been provided with rain coat by management.					
7	I have been provided with safety glasses (goggles) for eye protection at work.					

8	I have been provided with protective clothing (vests/safety suits) at work.					
9	I had training in the usage of fire extinguishers to fight fire.					
10	I had first aid training when I was employed.					
11	I was given instructions on the safety requirements of the job when I was employed.					
12	I had enough training to deal safely with emergency situations at work.					
13	The automatic switch button is at the forecourt.					
14	Fire and Police services' numbers are written at open places for workers to see.					
15	There are separate toilets for men and women.					
16	The station has security officers at post all the time.					
17	Sometimes I ignore safety rules to get the work done quickly.					
18	I sometimes intentionally allow fuel to touch my body (mouth, hands, etc).					
19	I always change into my house dress before going home.					
20	I always observe the safety rules when working					

Appendix B

COVER LETTER

My name is Edward Ansah, an M.Phil (Health Education) student at the Department of HPER, UCC. I am contacting you to participate in a research study on: **“The Relationship between Safety Measures of Oil Marketing Companies and Safety Practices of Fuel Service Attendants in Sekondi-Takoradi Metropolis”**.

Your participation will require you to complete a 27 item survey which will take 20-25 minutes of your time. You were selected among a poll of participants and your responses will be analyzed as a group. No information that will identify you is required.

For any information contact my supervisors **Professor Joseph K. Mintah (0202464739)** or **Dr. S. L. Lamptey (024-4384199)**.

Yours Sincerely

.....

Edward Wilson Ansah

(0247703379)

Appendix C

INFORMED CONSENT FORM

My name is Edward Ansah, an M.Phil (Health Education) student at the Department of HPER, UCC. I am contacting you to participate in a research study on: **“The Relationship between Safety Measures of Oil Marketing Companies and Safety Practices of Fuel Service Attendants in Sekondi-Takoradi Metropolis”**.

Please complete the attached form before you respond to the survey.

I fully understand my participation in this study. I hereby willingly agree to participate.

Attendant Name.....

Signature.....

Date.....

Appendix D

Results of Correlation Analysis

Table 6: Correlation among Safety Practice (SP) and Safety Measures

Measures	PPE	ST/E	SF	SP	R^2
Safety Policy Enforcement	.627	.715	.349	.594	.35
PPE		.619	.314	.386	.15
Safety Training/Education			.400	-.541	.29
Safety Facilities				.185	.03

$p < 0.01; N = 114$