UNIVERSITY OF CAPE COAST

HEALTH AND SAFETY PRACTICES IN THE DOWNSTREAM PETROLEUM SECTOR: A CASE STUDY OF FUEL RETAIL OUTLETS IN THE SEKONDI-TAKORADI METROPOLIS

BY

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DECLARATION

Candidate Declaration

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

Candidate Signature ……. Date …….

Name: Irene Baaba Asankomah Arthur

Supervisor's Declaration

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

Supervisor's Signature …… Date …….....

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ABSTRACT

Health and safety is of great concern in the oil and gas industry. The downstream petroleum sector in Ghana has become very competitive, hence, the need to provide workers with the needed structured safety environment with functional policies to operate. The main objective of the study was to assess compliance of health and safety practices among attendants of fuel retail outlets in the Sekondi- Takoradi Metropolis (STMA). Based on exploratory research design, the study was guided by the pragmatic philosophy to intorregate 177 respondents using self-administered questionnaires, scheduled interviews and personal observations to coalate data. Field data was analysed and processed using Statistical package for social science (SPSS, Version 22) and Microsoft office package suite, 2019. The results indicate that all fuelling outlets assessed had adequate safety measures in place to aid attendants' operations and were familiar with the use of all safety measures in place. The respondents also agreed that to ensure sustainability of the safety environment, regulators, managers and fuel retail outlet attendents, all had roles to play. However, inadequate safety trainning and periodic medical examination on the part of attendants were rated relatively low among the variables examined. The study concludes that adherence to health and safety practices is central to the the oil marketing players in the industry. Ensuring safety environment sustainability at the retail outlets is also deemed critical. Thus, safety concerns among fuel retail attendants identified must be addressed. In recommendation, deliberate effort must be taken by operators to ensure routine safety trainings and periodic medical check-ups for workers of fuel retail outlets.

KEY WORDS

Emergency Response

Fuel Retail Attendants

Fuel Retail Outlets

Health and Safety Practices

Petroleum Sector

Regulators

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DEDICATION

To my dearest mother Mrs. Victoria Arthur and my father Mr. Abotar Arthur Mensah.

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LIST OF ACRONYMS

EFW	Environment, Facilities and Workers
EPA	Environmental Protection Agency
FEV1	Forced Expiratory Volume in 1 Second
FVC	Forced Vital Capacity
GDP	Gross Domestic Product
GPS	Global Positioning System
HAR	Hazards, Accidents and Risk
ICOH	International Commission on Occupational Health
NOSDRA	National Oil Spill Detection and Response Agency
NPA	National Petroleum Authority
PIB	Petroleum Industry Bill
PPP	Personal Protective Equipment
STMA	Sekondi-Takoradi Metropolis
UNEP	United Nations Environment Programme
VOC	Volatile Organic Compound

CHAPTER ONE

INTRODUCTION

Background to the Study

The promotion and maintenance of the highest level of physical, mental, and social well-being of workers in all occupations is referred to as occupational health (ILO, 1995). The ILO definition moved from the traditional view of health as merely a physical attribute to include 'mental' and 'social' well-being. The ILO clarifies health and safety issues by stating, among their goals, to include; “advance basic human rights, improve working and living circumstances, and expand employment possibilities”.

The first Factory Act was passed in 1833 in the United Kingdom, and it served as the foundation for a several future updates and changes, as well as highlighting the need for worker safety (Health Management, 2018). Productivity will not be sustainable until the well-being of workers is taken into account. As a result, workplace health and safety are required.

According to Eddington (2006), Australia's government recognized the need to take action against the tremendous trauma that occurred in the factories throughout the industrial revolution. The law emphasized the importance of duty of care and the abolition of the master-slave mentality in the workplace. According to Xue and Tang (2019), globalization, rapid innovation, critical improvements in transport and communication can all result in hazards.

Furthermore, because employment is such an important component of livelihood, many people spend practically all of their time at work. The World Health Organization (WHO) has established that most illness recorded in

countries are work related (WHO 2010). As a result, employees must work in a healthy and safe atmosphere. In the early 1900s, the growth of silicosis and tuberculosis in South Africa prompted the establishment of a compensation plan for workers (including Africans and Whites) who contracted these diseases. Industry owners' neglect in protecting employees' health and safety resulted in a large number of deaths in South Africa's mining sector, forcing the government to intervene and establish legislation, at least in part, in response to the demands of white ordinary laborers and residents (Zwi et al., 1988).

Morgan (2002) contends that the importance of health and safety in developing countries is recognized both locally and nationally. He goes on to say that the good impact of health and safety services can be evident in reduced bleakness and business-related wounds, as well as less calamities for managers and specialists due to reduced pay miseries and remuneration costs.

Employee health and safety are just as crucial as the petroleum industry's expansion. Employee health is critical to the success and well-being of both the industry and the country. In industries, health and safety is concerned with the well-being of employees hence, employees are safeguarded in terms of their well-being, health, and safety. To safeguard the interests of employees in terms of their health and safety, laws and regulations have been put in place. As a result, the government of Ghana is very concerned about the health and safety of its residents, regardless of the sort of organization in which they may be employed.

According to Act 651 Section 9a of the Ghana Labour Act of 2003, employers must also give their staff the proper raw materials, machinery,

equipment and tools. The Labour Act also mandates that employers take all reasonable precautions to ensure that employees are not exposed to the danger of physical injury or harm to their health while working for the employer or when lawfully on the company's premises. Regardless of knowledge with occupational health and safety concepts, enterprises across diverse segments continue to record substantial losses and inefficiencies due to the high occurrence of job-related illnesses and injuries (Liu et al., 2020).

In Ghana's petroleum industry, health and safety procedures have received minimal attention (Liu et al., 2020). Health and safety risks are pervasive in many developing nations, including Ghana, and they are made worse by governments' unbalancedly aggressive economic programs, the absence of legislation and inspection, the inclusion of little to no legislation and inspection, the lack of infrastructure for monitoring and services, and a global shortage of expert manpower and institutions for occupational health (Amponsah-Tawiah & Dartey-Baah, 2016). As the petroleum industry exposes workers to numerous hazards and daily dangers, workplace safety must be a top priority for all stakeholders. Considering the job of a pump attendant at a fuel retail outlet, they are continually at risk since they are constantly near pump devices, and no one can predict when anything will go wrong. Furthermore, the death or incapacitation of a worker through occupational dangers has the potential to disrupt families' and countries' social and economic lives. These workers may be the breadwinners for their families, and they together comprise a country's workforce. As a result, the working group's strength reflects the state of the economy. When a life is lost, it cannot be replaced, and not every injury done to the worker, the workplace, or the

environment can be paid for. For this and many innumerable reasons, safety and health concerns must be prioritized by firms and organizations.

Statement of the Problem

Despite increased consent or awareness of safety measures in the downstream petroleum sector, accidents still do occur with fatalities. It has been noticed that contributing factors such as ignorance, negligence, inconsistent supervision and monitoring play a significant part in the risk involved in the downstream sector of the petroleum industry's health and safety. The rampant explosions at fuel retail outlets and private residences require prompt action. For example, the Atomic Junction gas explosion that happened on October 7, 2017, at Atomic Junction in Accra resulted in a several fatalities, with seven persons killed and 192 injured. Also, on June 3rd, 2015, an explosion at a Goil fuel retail outlet in Ghana killed over 150 people, affecting individuals and vehicles in the Kwame Nkrumah Interchange surroundings (UNCT, 2015). Environmental harm resulting from the accident is a concern that must be addressed.

The incident on June 3rd is said to have been caused by a smoker dropping a burning cigarette butt into oily water (Shaban, 2015). This situation could have been sustained if policies were strictly enforced on smoking of cigarette at the forecourt of the fuel retail outlet. Again, the Atomic Gas explosion was said to have happened when a tanker delivering natural gas caught fire (BBC, 2017). If inspections were done properly on the tank as well as the delivering process of the natural gas, such accidents could have been prevented.

The number of individuals killed and injured as a result of explosions and fuel disasters is enormous. Ghana is proven to be the developing country with the highest estimated accident rate of 15,702 per 100,000 workers and fatal accidents at 1,852 per 100,000 workers, with a mortality rate of 20.6 per 100,000 workers across industries (Liu et al., 2020).

Fuel retail outlet disasters in Ghana have an impact not just on the environment, but also on human life and livestock. Yirenkyi (2016), confirmed a need to broaden knowledge and information on:

i. Awareness of hazards and safety measures among fuel retail outlets.
ii. Current safety management practices in fuel retail outlets.
iii. Fuel retail outlets' compliance with requirements for their settings.

In addition, Ansah and Mintah (2012) examined petrol stations in Ghana's Central and Western regions for health and safety policies. Their study confirmed that, “Fuel service station personnel may be exposed to harmful carcinogenic substances due to lack of personal protective equipment (PPE)”.

In sentence where health and safety management practices were observed, they raised some concerns as to the level of compliance and how these practices are being enforced. For this purpose, the researcher aims to determine the degree of adherence to the current health and safety practices at the various fuel retail outlets, as well as the attendants' awareness of these practices and the measure to ensure a functional health and safety management system. The researcher focused the study in Sekondi-Takoradi Metropolis because it was possible to capture all fuel retail outlets within the metropolis.

Purpose of the Study

The study's main aim was to assess the health and safety practices of fuel retail outlets in the Sekondi-Takoradi Metropolis (STMA).

The study's specific objectives were to:

i. Examine health and safety practices among fuel retail outlets in Sekondi-Takoradi Metropolis to know the level of compliance.
ii. Determine the level of awareness of health and safety practices among fuel retail attendants in STMA.
iii. Identify measures to ensure a funtional health and safety management system.

Research Questions

The study was guided by the following research questions:

i. What are the health and safety practices among fuel retail outlets in Sekondi-Takoradi Metropolis (STMA)?
ii. What is the level of awareness among fuel retail attendants on health and safety practices?
iii. How can a functional health and safety management system be achieved?

Significance of the Study

The study's goal was to raise awareness of the value of health and safety procedures in the downstream petroleum industry, fuel retail outlets to be precise. When both employers and employees learn about the consequences of not adhering to established standards on health and safety measures, they are more likely to be cautious in whatever task they undertake on the job.

The study aimed to provide long-term solutions for ensuring functional health and safety standards. This will help minimize or mitigate workplace injuries, as well as save employees' lives. The results from the study would also be used in promoting employee effectiveness and efficiency, as well as increasing input to deliver higher output and quality service at these fuel retail outlets in the Sekondi-Takoradi Metropolis. It would also assist fuel retail outlets in adopting health and safety standards and improving on existing regulations in order to save not only the company but also the working force. In a nutshell, the study would contribute to scientific knowledge in the downstream petroleum sector.

Delimitations

Punch (2013) explains the importance of delimiting the studies to allow for proper management and understanding of the topic. The study sought to focus on the fuel retail outlets in the Sekondi-Takoradi Metropolis. It will not be impossible to look at other parts of the country which is the major reason why the researcher decided to cover all fuel retail outlets in STMA. The findings from the study can be inferred to the downstream petroleum sector of the industry as a whole. However, the study can also look at other aspects of the industry, such as corruption in the downstream sector. The study's participants were confined to fuel attendants, EPA personnel, and management of the selected fuel retail outlets.

Limitations

The study had various limitations, even though it had its own strengths. One of these drawbacks was a lack of time and resources, which may have hampered the study's quality. Scheduling of interviews and getting the needed people to be present was a challenge mostly due to their work schedules. It may be preferable to have more time and resources to conduct a thorough study and collect additional data from the participants.

Financial limitation to get additional hands in data collection, transportation needs and equipment was difficult. Nothwitstanding, the researcher took the necessary measures to ensure that these limitations were curtailed to ensure the objectiveness of the research outcome. Also, other fuel retail outlets had closed down for renovation purposes and some were also locked down by regulatory bodies during collection of data.

Organization of the Study

The first chapter, which also introduces the study, covers the background information, problem statement, purpose, research questions, significance, delimitation, limitation and chapter organization.

The second chapter's primary subject was a review of related literature. It examined the conceptual framework that guided the investigation, the empirical review, and the theoretical review, which includes theories that support the study.

Chapter three covers the following topics: research methodology, study area, target population, sample size, sampling procedures, data sources and tools, data collection processes, data processing and analysis, validity and reliability, and ethics.

Chapter four analysed and discussed the results that was obtained from the field with the use of frequency and percentages.

The final chapter, Chapter five, gives a summary of the study's key findings, conclusions drawn from the discussion and data analysis, and suggestions for further study.

CHAPTER TWO

LITERATURE REVIEW

Overview

Examining occupational health and safety practices, as well as the contributions of academic researchers, policymakers, global organizations, and governments, this section evaluates pertinent literature on the topic at hand.

According to Alli (2008), the fatality rate per 100,000 workers in Sub Saharan Africa is 21, while the accident rate is 16,000. This corresponds to 54,000 workplace fatalities annually and 42 million events at work requiring at least three days off. Furthermore, occupational diseases and injuries are responsible for nearly 2 million deaths each year. All of these are critical realities that stakeholders in a variety of businesses, not just the petroleum sector, must take into account. In today's technological world, where machines and chemicals play a vital part in the workplace, workers are still required to operate these devices and ensure that they function properly. There is still a space for people to be actively involved in a variety of job activities.

As a result, this chapter discusses the varied opinions of scholars and authors on workplace health and safety procedures, with a focus on the downstream petroleum sector. The review meticulously highlights many views and ideas pertinent to the current study, one that resonates with petroleum sector safety practices and reflects reasons why more research is needed.

Theoretical Review

Behavioural Approach

Heinrich et al (1980) used occupational injury data to develop a basic idea, finding that health and safety risks in the workplace directly affect

operating costs. The important point here is that if occupational health and safety are not ensured, the company or workplace will incur higher expenditures than usual. The theory was based on four points:

a. The potential for injury is due to an accident.
b. Incidents occur only because of personal unsafe conduct or hazards.
c. Human error is to blame for the existence of hazards, and
d. People's flaws are a result of their social surroundings.

Theorists use this apprach to reflect the idea that employers' and employees' behaviour, that is, the activities workers may engage within the workplace is extremely important in ensuring that the health and safety guidelines are followed to the latter. As a result, this shows that a high controlled workplace behaviour will lower the likelihood of workplace accidents and dangers while also saving employers money.

Risk Analysis Approach

The risk analysis approach is another concept worth considering. This method allows for the discovery of technology solutions for improving and expanding environmental protection. In order to provide safe ways for their services to be conducted while maintaining environmental safety, the oil and gas industry, whether it be the downstream petroleum sector or the upstream petroleum sector, would benefit from this strategy.

A risk analysis is a method for detecting and addressing potential hazards that could disrupt a workplace's cycle. Nieminen (2005) notes that, risk analyses are less error-prone than life cycle assessments of service station facilities and operations. Risk analysis is systematic and useful for finding probable causes. Accidents are reduced when these sources of release are

identified and preventive technology solutions are applied. Risk analysis is therefore critical in guaranteeing occupational health and safety since it is a proactive method of identifying risks ahead of time, assessing their severity, and determining how to mitigate them. Risk analysis would serve as a robust theoretical framework in examining if the downstream petroleum sector has been consistent with some of the propositions of the risk analysis approach in this study of the health and safety practices within the downstream petroleum sector in Ghana.

Best Available Technique (BAT)

BAT was introduced around 1960 and was first used as an international concept for all types of industrial facilities in the 1992 OSPAR Convention on Marine Environmental Protection in the North Atlantic (Bajpai, 2017). The best technology available is state-of-the-art industrial pollution control and control technology developed to the extent that it can be implemented under technically and economically viable conditions (Bajpai, 2017). The collaborative, evidence-based BAT process provides a recognized best practice model for reducing emissions from industrial processes that can harm health and the environment in a way that supports innovation and long-term investment (HM Government, 2022).

Nieminen (2005) furthur experiments with another theoretical approach to occupational health and safety. When assessing BAT, it's also important to take into account factors like the surrounding environment, location size, and longevity. In some particular environmental settings, this may even necessitate costly remedies (Nieminen, 2005). In Ghana, no BAT report has been prepared for fuel retail establishments. However, some

regulatory bodies, like the EPA, offer expert advice on different environmental management and health and safety procedures.

Legislative-Engineering Approach

When implementing industry health and safety management standards, this technique searches for gaps in legal frameworks that are specific to engineering. To stop and lessen future job-related accidents, high-quality construction work is necessary for the upkeep of facilities like filling stations. Environmental, health, and safety regulations must be taken into consideration during the design phase. This is done in the hopes of lowering future accident costs (Obese, 2010).

As a result, the strategy is based on the legal instruments used by regulatory bodies to require industries to adhere to standards when building facilities. There are numerous legislative mechanisms in Ghana that regulate the site of facilities such as fuel retail outlets for oil marketing corporations. These include:

i. The National Petroleum Service Act 2005 (Act 691) provides that the building or operation of a petroleum product service station cannot begin without the Authority's prior written consent.
ii. The Town and Country Planning Department assesses whether the developer's proposed activities are compliant with the current zoning regulations in the area, and
iii. The Environmental Protection Agency (EPA) does additional assessments of the project site's proposed development locations and

methods, and depending on the findings, the application may be approved or subject to more scrutiny.

Empirical Review

This component of the empirical study looks at the literature on health and safety practices in fuel retail outlets.

Health and Safety Practices among Fuel Retail Outlets

Concern for health and safety is legitimate in every context of human enterprise (Jonathan, 2016). All organizations have a duty of care to ensure that employees and other persons who may be affected by the company's undertakings remain safe at all times (Idubor & Oisamoje, 2013). Now, Moturi and Makindi (2019), identified that organizations have a legal and social responsibility to ensure the safety of their employees, all those legally present at the workplace, and the surrounding community. This necessitates the establishment of protocols and a routing process to identify, eliminate, limit, and controlling work-related hazards and risks. They also propounded that Occupational Safety and Health Management Systems (OSHMS) must be integrated into the organization's safety policy and objectives to be effective. Mutungi (2020) identified that there has been a massive increase in the number of fuel retail outlets to refuel ever-increasing automobiles, to this I strongly agree.

A study conducted by Ansah (2017), in Accra, indicated that the forecourt attendants had considerably higher risk perception than lube bay attendants. The environment of a fuel retail outlet poses a major health and safety hazard to attendants' overall well-being. Therefore I proposed that themanagement of the retail outlets must give strong safety leadership in all

situations involving the attendants' well-being. Then again, supervisors are also advised to provide more assistance to the attendants. A study conducted among fuel pump workers in Kaduna faces a variety of dangers at the pump. This is the most serious threat to their employment survival (Kakwi, 2020). The study's findings indicated that there was a high degree of compliance with safe procedures in terms of fire extinguisher use. Other safe procedures, on the other hand, were overlooked (Kakwi, 2020). The study pre-supposed that pump attendants have a strong understanding of safe practices and a positive outlook on them, but it also suggests that pump attendant education and training should be prioritized to improve the low compliance rate. To increase compliance, I propose that both managers and pump attendants, and the Department of Petroleum Resources (DPR) should enforce the adoption of safety requirements.

Similar to Abualrejal (2017), Chauhan (2013) had already given a suggsestion about how to best improve health and safety measures in the oil and gas sector. He adds that, given the perilous nature of the oil and gas business, the adoption of an efficient workplace Safety and Health Management System is crucial for increasing safety and health performance.

To maintain a safe and healthy workplace, workers and supervisors must be taught to keep a health and safety mindset (Jonathan, 2016). The study found that while employers have a duty to design and maintain safe and healthy work systems, employees' concurrent duty is to behave in a manner that protects their health and that of their colleagues (Jonathan, 2016). Then again, Idubor and Osiamoje (2013) asserted that a lack of social control of OSH regulations render individuals non-compliance to OSH regulations. It's

worth emphasizing the enforcement of OSH so that countries can testify to the benefits of health and safety regulations.

Ford and Stephens (2018) study surveyed US oil refinery employees to assess the impact of both personal and organizational factors on risk-taking behaviour such as having safety conversations at work, possessing self efficacy and being willing to respond appropraitely to risks. They developed an integrated model of risk responsiveness using the 5 Likert scale.

An integrated risk response model shows that the individual factors and perceptions of the organizational norms surrounding the information retrieval process significantly predict all three elements of risk response: risk information retrieval, self-esteem, and risk knowledge. In addition, their findings suggest that an organization's communication efforts may increase risk-taking among its workforce. Employee behaviour regarding risk exposure and risk management depends on general knowledge of workplace hazards and the mechanisms and processes implemented to protect employee health and safety. While it is possible for an organization to influence employee information-seeking behaviour through well-defined and communicated norms, these efforts are futile if employees are not positive about risk information-seeking.

Achaw and Boateng (2014) conclude that while there are various legal instruments covering safety aspects in the oil, gas and related energy industries, there are no laws that specifically address relevant industry-specific safety procedures. The provisions of the Factories, Shops, and Offices Act were also found to be insufficient in setting standards for protecting the health and safety of the industry. To buttress this, apart from the Petroleum

(Exploration and Production) Law, 1984 which mandates companies in the oil production sector to adopt international best practices in their operations, no legislative body has been identified to cater uniquely to occupational health and safety practices in the oil, gas and related energy industries. Rather, several legislative instruments have been identified whose area of coverage included aspects of safety practices of the industries (Achaw & Boateng, 2012). Since commercial production began in 2010, oil and gas, as well as related industries, have taken on renewed national importance in Ghana. Safety and health issues are present at all stages of the business including production projects, facility operations, maintenance, building, transportation, storage, and the application of oil-derived goods (Kamakura, 2016).

Kamakura (2016) goes on to say that some oil and gas production has resulted in serious mishaps, with the costs to oil and gas corporations including both direct economic expenses and reputational damage. The Impact of Gender on Occupational Health and Safety Practices was exacerbated by (Kamakura, 2016). Workers in the oil and gas business, he claims, are exposed to toxic compounds and biological agents, putting their health and safety at risk. Women of reproductive age require special attention in terms of health and safety. A wide strategy for improving women workers' safety and health must be included in an occupational health and safety policy for health promotion strategies to be effective for both men and women. Notably, it was also observed in a research among selected companies in the Nigerian petroleum industry that, Organizational Safety Policy was perceived as the most dominant safety practice most often practiced as compared to other safety practices (Obiorah et al., 2019).

In a globalized business environment, cross-language interactions are becoming a normal part of everyday life (Lauring, 2008). Lauring (2008) argued that, the relationship between language and social identity is negotiated in interaction. His empirical analysis focused on meeting expatriates and local employees at a Danish subsidiary in the United Kingdom. The author argues that the ethnographic fieldwork approach can provide insight into the relationship between microdynamics of cross-cultural encounters and identity formation. Ethnographic fieldwork allows researchers to understand the underlying social dialectics that link the use of language to national or ethnically structured identity formation. Language disparities are the primary cause of misperception and miscommunication amongst employees. This linguistic disparity has also been considered as ineffective, particularly in communication. When employees do not share or speak the same language, it can be a huge issue because efficient communication is impossible.

In another work by Oe and Qm (2018), petrol station attendants face many dangers and health difficulties while working. The purpose of this investigation was to determine the work dangers, health issues, and safety practices of petrol station attendants in Uyo, Nigeria. According to the results, inhalation of petrol fumes was reported by most people, confrontation from customers and noise were also reported. Headache, low back pain, eye irritation, dizziness, cough, and nausea were among the health issues mentioned in the study. There was a statistically significant link between headache, nausea, cough, and petrol vapour inhalation.

Level of Awareness of Health and Safety Practices among Fuel Retail Attendants

Awareness creation and training are the keys to influence attitude developments. These create grounds for spontaneous participation in safe activities (Idubor & Oisamoje, 2013). Awareness is all about communication, thus communication but not simply transfering of information but also making sure that the environmnent within the organization is properly designed to communicate the impression that people are responsible (Anderson et al., 2012).

Umugwaneza et al (2019) set out to determine the effects of workplace safety and health procedures on employees' commitment and performance in Rwandan steel manufacturing enterprises. The findings of the survey show that most workers are aware of the dangers of workplace occupational health and safety. Furthermore, the study discovered that, despite being aware of occupational health and safety risks, employees fail to put on Personal Protective Equipment (PPE) because it is too hot. According to the findings, workplace health and safety have a major impact on employee commitment and performance. To reduce workplace injuries and accidents, this study suggests that management insure workers and supply them with personal protective equipment. The study also suggests that management provides frequent education and training on workplace health and safety issues to prevent workplace injuries and thereby increase productivity.

Monney et al (2015) found that the top three occupational hazards for petrol station attendants at petrol stations (FSS) in Ghana were exposure to extreme weather conditions, inhalation of vehicle exhaust fumes and petrol

fumes and fire outbreaks. Musculoskeletal diseases, low-back pain, headaches and dizziness were the most common illnesses experienced by pump attendants. Logistic analysis combining age, sex, and job experience as risk factors for MSDs, LBPs, and headaches revealed a significant link between LBP and the age of pump attendants. But no link between MSDs and headaches. The attendants' post-employment medical examination habits were poor, presumably due to a lack of awareness of the health hazards and the fact that the associated expenditures are self-borne. Even though all stations have firefighting equipment training, the use of the equipment was strongly linked to the job experience of pump attendants; most newly hired attendants (with less than three years of experience) are not trained in its use. Taking everything into account, FSS pump attendants are predisposed to serious health risks as a result of their working conditions, and they demand immediate protection.

Despite the foregoing, Olusegun et al (2011) hypothesized that in many countries, urban growth has outpaced governments' ability to build key infrastructures; implement and enforce the legislation required to keep life in cities safe, fulfilling, and healthy. The study's goal was to determine the level of awareness of risks and safety precautions among filling station attendants, as well as to examine the current safety practices in Ile-Ife's stations.

According to the study's findings, respondents have great knowledge of safety precautions, with fire extinguishers being the most common safety precaution. According to the report, the most common hazard was fire. Niskanen (2017) conducted another survey to assess the safe environment in the work organization of road maintenance work. An important positive

starting point for improving safety motivation is the self-regulation of road maintenance work and the fact that workers can determine their work practices (Niskanen, 2017). Employee attitudes, judgments and attention had avery significant statistical impact on their attitudes. Managers attitudes, employee attitudes, and educational styles had a very significant statistical impact on performance feedback. Managers need to promote a supportive leadership style. Supervisors need to increase the amount of positive feedback they give to their employees after the work is completed.

According to the International Labour Organization (2013), the oil and gas sector is dominated by dangers and accidents that cause significant harm to human life, property, and the environment if prospective hazards are not properly handled. Abualrejal (2017) showed a statistically significant association between headache, nausea and inhalation of petrol vapour. There was also a strong link between nausea, coughing, and the inhalation of petrol fumes. In this study, petrol station attendants were exposed to a variety of dangers and health issues. PPE awareness and use were quite poor. After gaining a better grasp of the risks involved, he suggested that stakeholders work together to guarantee that filling station owners take responsibility for the health and safety of their employees (Abualrejal, 2017).

The goal of the study was to find out how well fuel pump attendants in Benin City, Nigeria, were aware of health risks and how they used personal protective equipment (PPE). Both linked favourably with awareness of health dangers and use of PPE. Because there are no acceptable limits of exposure to certain of the components of hydrocarbons, these employees must adhere to all

safety precautions. It is critical to enforce the use of personal protective equipment (PPE) and to develop ways to reduce worker exposure.

The purpose of the study on the level of adherence to occupational health and safety regulations at fuel service stations in Harare was to discover the principal causes of occupational health hazards and the types of illnesses suffered by fuel attendants as a result of their work (Chibwe & Khan, 2021). The study also looked at how often equipment needs to be maintained, the leading causes of accidents, the importance of staff training, and the role management plays in supporting training. Personal Knowledge and Awareness; Training and Development; Workplace Environment; Occupational Health and Safety Regulation; and Public Media Information were found to be predictors of increased compliance with occupational health and safety standards. The other three predictors, Peer to Peer Discussion, Personal Discoveries and Experiences, and Personal Protective Equipment, all revealed that they would reduce adherence to OSHA regulations. The findings of the study suggest that fuel service stations in Harare do not follow health and safety regulations. Within the industry, there was a lack of registration and inspection by regulatory authorities. Employees were also found to be uninformed of the health and safety regulations they were meant to follow, according to the report.

Şenik and Uzun (2022) analyze open green spaces using a holistic approach based on qualitative, quantitative, connectivity, and site selection criteria, and multidimensional based on ecological, recreational, and disaster criteria. In their study, they found out that there is a need for planning sufficient and safely open green spaces which provide emergency assembling

and temporary shelter during emergencies. The focus of research on open spaces and open space systems for specific questions indicated the need for a more comprehensive approach to open spaces in a multidimensional, multifunctional conceptual framework.

Psychological and social risks are now widely recognized as an important issue in occupational safety across Europe (Lavicoli et al., 2011). There is, however, a considerable deal of contention between experts and the general public regarding the nature and relevance of psychosocial risks, which seems to have implications for policymaking and implementation in this area. Their findings reveal that the level of application of health and safety policy is as equally related to the level of awareness of such policies by employees. Education about the availability and applicability of health and safety policies lowers risk and hazards in the workplace. Awareness of psychosocial risks has a potential impact on the prioritization of these risks and thus the development and implementation of occupational health and safety policies.

Petrol station attendants, according to Okafoagu (2017), are a high-risk group who are exposed to occupational dangers and have little influence over the length and frequency of safety regulations. Okafoagu (2017) focused his research on petrol station attendants' understanding of the workplace hazards they face and the safety methods they adopt to avoid them. The study was a descriptive cross-sectional study that took place in the Nigerian city of Sokoto. Most respondents had inadequate knowledge, while just few of them had a negative attitude. For instance respondents were aware that volatile organic compounds (VOCs) were damaging to their health, and a large proportion were aware of workplace safety procedures such as not smoking cigarettes.

Some respondents said they always used hand gloves and wore an apron. The lack of knowledge about VOCs and the fact that few of them have implemented workplace safety practices highlights the need for employers in this industry to identify workplace hazards, implement safety measures to mitigate them, train new employees and retrain existing employees on safety measures, and provide personal protective equipment (PPE) for daily use.

Measures to Ensure Functional Health and Safety Management System

For an organization to remain sustainable throughout its operations, there is the need to strive to balance the people, the planet (environment) and the profit they make from the business. This means that the organization will not attain sustainability without protecting the health, safety and the wellness of the most vital resources (workers) (OSHA, 2016). Sustainability is most often important because it brings about protection, preserves our natural resources and imporves the quality of lives for generations. Every organization tries to put measures in place to remain sustainable. Some of these may include: training of their employees, giving employees the right tools for work and the implementating saftey protocols right from the start of work.

The study conducted by Heijnen et al (2013) aimed to analyze workers' attitudes on occupational safety and health administration (OSHA) procedures implemented at work in Mtwara Municipality, Tanzania. Workers' understanding of OSHA measures at OLAM and Wentworth Resource Limited, common health problems at OLAM and Wentworth Resource Limited, workers' level of vigilance in securing their safety and health in the workplace, and OLAM and Wentworth Resources Limited compliance with OSHA stipulations were all expected to be examined as part of the study. The

study included 60 respondents from two companies in Mtwara Municipality, OLAM and Wentworth Resources, who shared their thoughts on the study issue.

According to the study, workers at the organization have a high level of understanding of OSHA measures thus:

- Employee training and empowerment.
- Safety culture.
- Focus on compliance.
- Hazard identification and controls.
- Continuous improvement.

Occupational health and safety are enshrined in the Rio Declaration on Environment and Development (1992) in terms of sustainability. Human beings are at the center of concerns for long-term development, according to the report. They have the right to a long, healthy, and successful life in the natural world. A key element of a bright future is the ability to work in a secure and healthy environment. As the world becomes more industrialized, occupational health dangers are becoming more widespread. People face a variety of hazards at work, almost as many as the different types of jobs. Globally, it is reported that there are over 2.9 billion workers who are exposed to hazardous risks at their work places (Meswani, 2008).

To ensure health and safety practices in the workplace function properly, organizations must hold people accountable, and then they must establish a strong and active safety department which would have daily safety inspections so that hazards identified can be dealt with. The department must also keep employees informed about the safety inspections. The organization

can set for itself a predetermined goal/target which will indicate if the company exceeds or fall below the targets.

The Case of the Occupational Health and Safety Management in the Downstream Petroleum Sector

African countries lacked health, safety, and environmental legislation or regulations before the late 2000s (Nwagbaraocha, 2011). However, as African countries attempt to strengthen their environmental, health, and safety regulatory frameworks, this pattern has recently shifted (Nwagbaraocha, 2011). The following are some of the countries making efforts to improve health, safety and environmental regulatory systems:

- Ghana has created an Environmental Performance Rating and Public Disclosure (EPRD) showing how companies are pursuing environmental goals without prioritizing worker health and safety.
- The Democratic Republic of the Congo Parliament has established the National Environmental Protection Agency and enacted environmental legislation requiring the preparation of environmental impact statements required for specific businesses.
- Algeria has issued a decree setting standards and conditions for issuing wastewater discharge permits, while Morocco has agreed to set up an agency to monitor workplace health and safety standards.

Employees of fuel retail outlets are among the most vulnerable groups of workers in the downstream petroleum business, as they are exposed to hazardous conditions such as harsh petroleum fuel and/or fumes containing carcinogens on a daily basis (WHO, 2010). The United States Government Council and Industrial Hygienist proposed an occupational exposure limit of

23 mg/m^3 for VOCs for service station workers who work 10 hours per day, 40 hours per week.

On the other hand, compared to the normal 40 hours per week, Ghanaian gas station employees are exposed to gasoline fumes for far longer (Udonwa et al., 2009). Many ailments could be triggered by exposure to these substances. Petrol vapour is unpleasant to the eyes, respiratory system, skin, and neurocognitive function at low chronic doses (Tu et al., 2004). The central nervous (CNS) system can be activated by prolonged exposure to petroleum gas at high concentrations that contains benzene and other hazardous chemicals. Symptoms include unsteady gait, slurred speech and confusion, and cancer (WHO, 2010). Instant unconsciousness and death may result from respiratory failure, renal dysfunction, lipid breakdown, and other clinical signs (Tu et al., 2004). As a result, workers' health is jeopardized by frequent exposure to petroleum products (WHO, 2010). Despite this, there are numerous filling station safety regulations designed to enhance the general well-being of the attendants and other staff members (Ansah & Mintah, 2012).

In a similar line, Ambituuni et al (2014) evaluated the provisions of various environmental and petroleum legislation, as well as the institutional systems for monitoring and enforcement in the Nigeria petroleum sector, to determine their suitability for assuring downstream safety and good environmental management. The assessment showed the framework's flaws, such as inconsistent rules, overlaps, duplications, and regulatory functions that conflicted. Furthermore, the report looked beyond the various regulatory frameworks to analyze elements within the larger socio-political and governance context that contribute to the regulatory framework's lack of

efficacy. Poor governance, a rent-seeking culture, and insufficient money have all been highlighted as major contributors to the implementation deficit. However, the researchers discovered that provisions in Nigeria's Petroleum Industry Bill (Draft) and National Oil Spill Detection and Response Agency (NOSDRA) Amendment Bill gives some hope for addressing some of the framework's shortcomings.

Effects of Occupational Health and Safety Hazards on the Downstream Petroleum Sector

Singhal et al (2007) opined that numerous occupational exposures to petrol/diesel vapours have been shown to influence the functioning of many physiological systems. As a result, many workers in the downstream petroleum sector may be threatened. Their study looked at the pulmonary functions of petrol pump attendants (filling attendants) who are constantly exposed to fuel/diesel vapours during their shift. The study group consisted of thirty healthy non-smoking males who had worked at a gas station for more than a year, while the control group consisted of thirty healthy non-smoking male hospital staff. A computerized spirometer was used to test lung function. In the study group, both the inspiratory and expiratory flow rates were reduced. These findings point towards adverse effects of petrol/diesel fumes mainly on lower airways with a restrictive pattern of disease. Thus, there was an indication that these workers who were more exposed to petroleum products, being staff of fuel retail outlets, were really in danger in terms of their health.

Furthermore, Hulke et al (2012) discovered that occupational exposure to petroleum products and their exhaust was creating serious health problems

in petrol pump personnel. The study looked into how these workers' lungs functioned based on the length of time they have been employed at a petrol station. The research featured a cross-sectional survey of 119 petrol pump workers who were responsible for filling the gas or fuel tanks. The FEV1 (forced expiratory volume in 1 second) and FVC (forced vital capacity) of fuel pump personnel exposed for more than 5 years were shown to be significantly reduced. This showed how sensitive these fuel pump workers are to developing restrictive lung disease, especially those who work in the industry for a long time (more than 5 years) collaborating with the research of Singhal et al (2007).

Adeniyi (2014) looked at exposures to petrol vapours and explained how these exposures have been shown to impair the functioning of several physiological systems. The study's key finding was that when compared to age and sex-matched controls, exposure to petrol fumes by petrol pump personnel may result in insignificantly worse lung function.

Rather than affecting the health and well-being of these individuals, the downstream petroleum industry's occupational health and safety dangers have harmed both workers and the general public. Not only were petrol pump attendants and other staff at fuel retail outlets affected in the June 3 Disaster and the Atomic Junction Gas Explosion, but also the general people who had sought refuge at the station during the explosion or were simply passing by. The effects of these hazards were as fatal as death and serious injuries that have scared people for life. Neighboring houses near the fuel retail outlet were also damaged by the June 3 calamity, with homes and other properties

being burnt to ashes. This raises the question of how risky it is for fuel stations to be located near residential areas.

The Role of Regulation and Regulators in Downstream Petroleum Sector in Ghana

According to Ambituuni et al (2014), the rise in global petroleum product consumption has obvious repercussions for the petroleum industry's operations in many nations including Ghana, both upstream and downstream. The petroleum sector is one of the riskiest industries to operate in as it harbours hazards and threats to the natural environment as well as human safety.

Although upstream and downstream activities are interconnected and interdependent from an economic and technological standpoint, the actual actions carried out in either of these stages, as well as their specific safety and environmental concerns, differ (Ambituuni et al., 2014). Regardless of the stage, this is a highly delicate situation, and safety is paramount. Several activities in the upstream and downstream sectors are dangerous to human health, safety, and the environment, and any government's problem is to balance these concerns with national economic development and energy security goals. This is accomplished through establishing an effective regulatory framework, which includes laws and regulations with rights, obligations, procedures, and standards, as well as regulatory institutions responsible with monitoring compliance (Principle 11, Rio Declaration, 1992). The National Petroleum Authority (NPA) and the Environmental Protection Agency (EPA) of Ghana are the two main regulatory bodies in Ghana that uphold the rights, obligations, practices, and standards of the

petroleum industry in the delivery of their services. These two organizations are the regulatory agencies in charge of upholding the occupational health and safety standards that apply to both upstream and downstream businesses and employees in the petroleum industry.

The Environmental Protection Agency (EPA)

The Environmental Protection Agency (EPA) Ghana, is an agency of the Ministry of Environment, Science, Technology, and Innovation, and was founded through EPA Act 490 (1994) (Ayee, 2019). The EPA is made up of three divisions namely: Operations, Technical Services and General Services (EPA, 2019). The EPA of Ghana is committed to enhancing, conserving, and promoting Ghana's environment, as well as pursuing ecologically sustainable development through smart, efficient resource management that takes into account social and equity concerns. It is in charge of overseeing the implementation of the National Environment Policy. The mission of EPA Ghana is to manage, maintain, and improve the country's environment while also looking for shared solutions to global environmental issues (EPA, 2014). Its mission will be accomplished through an integrated environmental planning and management system that includes broad public participation, efficient implementation of appropriate programs and technical services, environmental problem advice, and effective, consistent enforcement of environmental laws and regulations. EPA Ghana is a regulatory organization that also catalyzes change in the direction of good environmental management. The agency was founded during a period of rising concern about environmental threats posed by reckless human activity, motivating the United Nations to organize an environmental conference in Stockholm in June 1972.

At the meeting, action plans were agreed upon, including the creation of the United Nations Environment Programme (UNEP). The Stockholm Conference's suggestions directly influenced the decision to form the Environment Protection Council. Ghana was elected to the Governing Council of the UNEP by the General Assembly prior to this decision. The Governing Council is made up of 58 states who oversee the UNEP's operations.

The EPA's job is likely more important than ever, especially in light of Ghana's oil and gas development. This has to do with the rising concerns about oil and gas management, as well as the rapid expansion of gas stations around the country. According to the agency's report, in their quest to administer their duty, especially within the oil and gas industry, the agency conducted an environmental audit exercise on zeal environmental technology facility to assess the waste company on how they receive, store, treat and dispose collected waste (Agency, 2014). As a result, as a regulatory authority, it is critical to ensure that the environment, including its people, is kept safe as the oil and gas industry expands both upstream and downstream. Again, there has been an establishment of an action plan to operationalize the National Oil Spill Contingency Plan (NOSCP) (Agency, 2014). The aim is to take responsibility of the NOSCP and advice the agency accordingly. The EPA has nineteen (19) main functions according to EPA (2019), which are meant to ensure safe environment and are as follows:

1. to provide advice to relevant ministries regarding the creation of environmental policies and suggestions for environmental protection;
2. to coordinate the activities of agencies concerned with technical or practical aspects of the environment and acts as a communication

channel between these agencies and the Ministry of Environment, Science and Technology;

3. coordinating the actions of the relevant authorities in order to regulate the production, handling, storage, movement, and disposal of industrial waste;
4. to manage and prevent trash discharge into the environment and to safeguard and improve environmental quality, either alone or in collaboration with other people and organizations;
5. for the purposes of this Act, collaborating or coordinating with foreign and international organizations;
6. to issue notices of pollution abatement and environmental permits to control the quantity, type, composition and impact of waste emissions, emissions, sediments, or other pollutants and substances that are harmful or potentially harmful to the quality of the environment or any part of the environment;
7. issuing notice in the form of guidelines, directions, or cautions to others or entities to control the volume, intensity, and quality of ambient noise;
8. to establish standards and guidelines for all other forms of pollution, including disposal of air, water, soil, and waste and management of toxic substances;
9. ensuring compliance with established environmental impact assessment procedures in the planning and execution of development projects, including compliance in relation to existing projects;

10. to act in liaison and work with government agencies, district councils and all other organizations and agencies to control pollution and protect the environment in general;
11. to conduct an investigation into environmental issues and advise the Minister on these issues;
12. to promote studies, research, surveys and analysis aimed at improving and protecting the environment and maintaining a healthy ecosystem in the Republic;
13. to develop and carry out official and informal educational initiatives to increase public understanding of the environment and its significance to the nation's economy and social structure;
14. encouraging efficient planning for environmental management;
15. to compile and make accessible a thorough database on the environment and environmental protection;
16. putting together seminars and training sessions, gathering and publishing environmental reports and data;
17. to charge environmental fees and collect them in line with this Act and this Regulation;
18. to control the manufacture, distribution, sale, and use of pesticides, as well as their import and export; and
19. to perform all other tasks assigned to them under this Act or any other statute.

In conclusion, the Environmental Protection Agency of Ghana enforces its laws to protect the environment that sustains citizens' lives. The Ghanaian Environmental Protection Agency (EPA) is in charge of enforcing

the country's environmental regulations. The Environmental Protection Agency (EPA) ensures that oil exploration and development are done in an environmentally friendly manner. From their list of laws, it's clear that the oil and gas industry will go to great lengths to guarantee that their operations do not threaten the environment. Without their oversight of potentially harmful industries like the oil and gas industry, a lot may go wrong in a short period. As a result, the EPA Ghana functions as a major regulatory authority to ensure that these industries services do not harm or damage the environment or the people of Ghana.

The National Petroleum Authority (NPA)

The National Petroleum Authority (NPA) functions similarly to the EPA Ghana, but with more particular responsibilities. The National Petroleum Authority (NPA) was created by an Act of Parliament (NPA Act 2005, ACT 691) to govern Ghana's downstream petroleum industry (Petrolplaza, 2018). The agency's principal objective is to regulate, control, and monitor Ghana's downstream petroleum industry for efficiency, growth, and stakeholder satisfaction. The authority's role as a regulator is to guarantee that the industry is efficient, profitable, and fair, making sure that customers receive good value for their money. In carrying out these duties, the NPA is also in charge of making sure that these laws cover workplace health and safety for both employers and workers in the downstream petroleum industry.

The downstream petroleum industry in Ghana activities includes importing and refining crude oil, as well as in selling, marketing, and distributing petroleum products domestically (Petrolplaza, 2018). Importation, exportation, re-exportation, shipment, transportation, processing, refining,

storage, distribution, marketing, and sale of petroleum products are among the industry's different commercial activities. This is a huge market with thousands of Ghanaians employed. According to the NPA, Ghana's downstream industry is an important subsector and a significant contributor to the country's Gross Domestic Product (GDP). According to estimates from 2014, it employs more than 5,000 service providers and generates annual sales of over GHS 12 billion (US$ 4.01 billion), or close to 10% of the country's GDP. To supply around 80% of petroleum products now consumed in the country, the sector works closely with international suppliers such as BP, Glencore, Vitol, Trafigura, and others. As a result, the downstream petroleum sector is a critical component of the country's economy, and it requires special care.

Since its inception in 2005, the National Petroleum Authority has overseen the acceleration of the petroleum downstream deregulation process by facilitating the removal of restrictions on the establishment and operation of facilities, as well as the importation of crude oil and petroleum products. The Authority completed the final part of the deregulation process, Price Liberalization, in June 2015. This approach entails the government relinquishing complete control over petroleum product prices. Without government action, private importers, distributors, and retailers can establish ex-refinery and ex-pump pricing.

Ghana's location along West Africa's coast, as well as the country's democratic credentials, security, and stability, the downstream industry is well positioned to efficiently store strategic petroleum products and act as a trustworthy hub for exporters to nearby landlocked nations. This is reflected in

the rising rate of petroleum product exports out of the country, highlighting the need for further research into the downstream petroleum sector's occupational health and safety cultures. Hence, the researcher aim to assess the health and safety practices of fuel retail outlets in the Sekondi-Takoradi Metropolis.

Conceptual Review

The Conceptual Framework

To reduce and regulate Hazards, Accidents and Risk (HAR) with the health and safety of its employees, the environment, and facilities, it is the regulators' (EPA, NPA, Station Managers) responsibility. The regulators among other functions ensure policies and legal regulations are made to govern the activities of fuel retail outlets. The efforts made by these regulators to a large extent determine the impact on the environment, facilities, and workers (EFW). In a situation where the policies are effective at mitigating and controlling HAR, it has a positive effect on EFW and thereby ensures sustainability. On the other hand, when the control and mitigation or health and safety policies are not effective, the negative consequences affect the EFW which threatens sustainability of EFW. In such a situation, the regulators must review the policies to ensure that it is effective at mitigating and controlling HAR at the fuel retail outlets. In the long run, effective legal documents and regulations will go a long way to ensuring that EFWs are protected sustainably. The model below graphically depicts the conceptual framework as applied to the study.

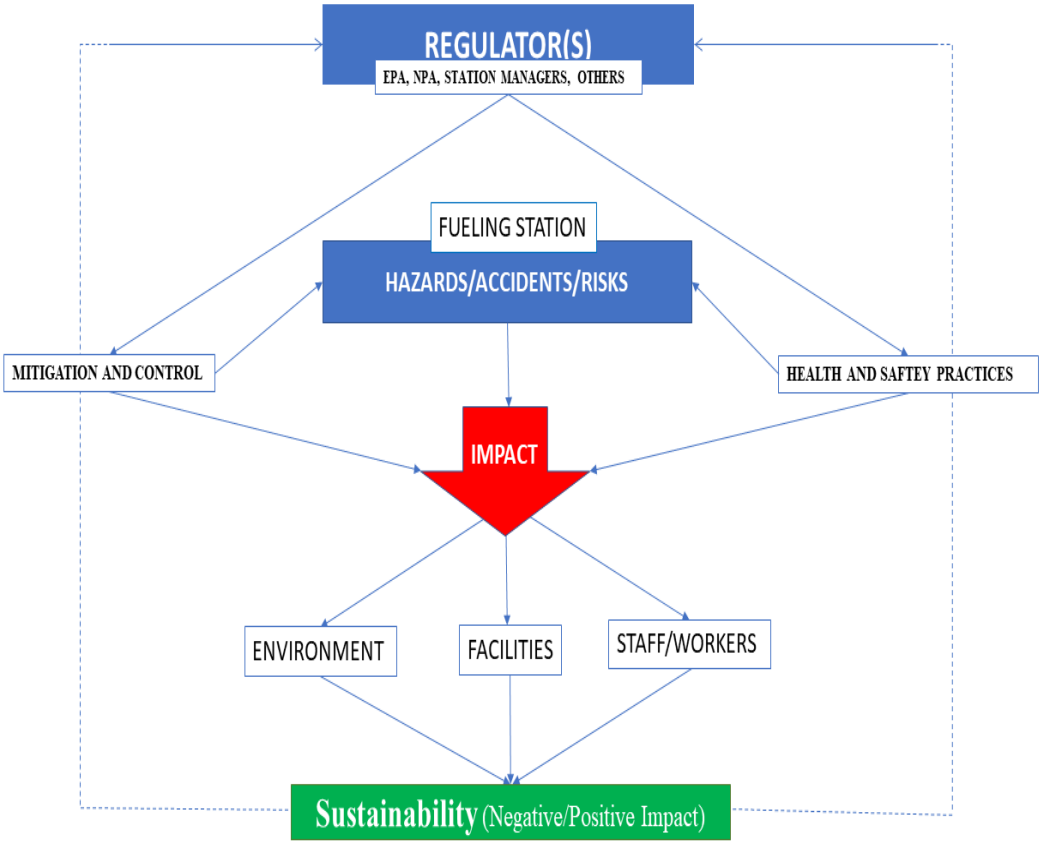


***Figure 1*: Conceptual Framework for understanding Health and Safety**

Source: Author's construct (2021)

Defining a Safe Working Environment

It is ideal for the workplace to be "incident free" and calamities to be avoided. Even in a tightly monitored and controlled setting, there remains a chance that a disaster will occur. To this end, Abualrejal (2017) asserts that a safe and healthy workplace is one that is devoid of injuries and illnesses. Employees will be more motivated and productive if they work in a comfortable and ergonomic environment. Though it may appear utopian, this is an ideal state that every company and firm should strive for. In the event of an accident, the overarching purpose is to ensure that less harm is done to people, facilities, and the surrounding environment. As a result, the term

"work safety" refers to a group of procedures that can evaluate risks and identify them, as well as put safety measures in place to avoid accidents. It is the collective responsibility of all stakeholders within and outside an organization to ensure a safe working environment.

In its centennial declaration in Milan, the International Commission on Occupational Health (ICOH) stated that, despite significant progress in improving workplace health, safety, and social conditions, the need for occupational health and safety in industrialized countries remains as acute as it was 100 years ago. The old dangers, particularly the new challenges of work life, still require a great deal of specialist knowledge, study, training, and information to be regulated, managed, and prevented, although the nature of the problems, hazards, and 31 risks has changed (ICOH, 2006). The assertion encapsulates the frustrations of health and safety specialists and other researchers working to find a cure for workplace health and safety issues in underdeveloped countries. This problem may have arisen as a result of the developing world's rapid industrialization and globalization. The globalization process has not succeeded in equating working conditions; on the contrary, the disparities are widening (Stiglitz, 2001).

Safety, health, poor social and working conditions, illiteracy, inadequate education, limited access to health facilities, and little or no social protection are all directly related to poverty, inequality, and underdevelopment. As a result, occupational health and safety management is more challenging than ever due to globalization and the evolving nature of work. Many developing nations make insufficient investments in research, leaving many issues unresolved, especially in the fields of occupational health

and safety and the evolving nature of work. This explains the difficulty in gathering accurate data and assessing the effects of workplace changes. Given that almost 75% of the world's labour force, or nearly 2400 million people, reside and work in developing nations, the situation is rather alarming (WHO, 1994). An exploratory study of occupational health and safety, quality of life, and worker well-being in the informal small-scale private sector are possible in developing nations like Ghana, which are industrializing, especially in the mining and minerals sectors, which are categorized as hazardous industries (Gyekye, 2003). Because occupational health and safety have become a global issue, it's important to understand how international organizations like the ILO and WHO view it.

Occupational Health and Safety

Kofi Annan (UN secretary general from 1997-2006) once said "safety and health of workers is part and parcel of human security. Safe Work is not only sound economic policy; it is a basic human right".

The quotation from Kofi Annan emphasizes the importance of focusing on occupational health and safety. The concept of health includes not only physical capabilities but also social and personal advantages. It is described as the capacity for goal-setting and achieving, attending to one's own needs, and dealing with problems that arise regularly (Nutbeam, 1990).

Health can be defined as a condition of complete physical, mental, social, and spiritual well-being. It refers to a person's overall and complete well-being, regardless of when or where they are. In recent years, the definition of health has been broadened to incorporate the idea that health is the ability to live a socially and economically useful life. For the average

person, being healthy may simply imply eating the correct foods, avoiding various ailments, and maintaining a clean environment. Meanwhile, other factors mentioned in the definitions above help to support this health mentality. Furthermore, health is more than just a personal issue; it is also industry related. Indeed, we must ensure our health everywhere we go.

Similarly, safety, which is linked to people's health, is a far larger idea than most people think it is. Safety is a situation in which numerous threats and conditions that can cause bodily, psychological, or material harm are kept under tight control so that people's health and well-being are protected. As a result, safety attempts to reduce the likelihood of risk, harm, loss, or hazard to people, property, or the environment. This is linked to health in that both aim to ensure the well-being of communities and individuals at all times. Over the years, the two approaches have been combined in industrial settings to create a few regulations and codes of ethics to protect workers. Occupational health and safety is the name given to these ethics, which researchers have studied extensively.

Occupational health and safety is a multidisciplinary concept that focuses on the promotion of the safety, health, and welfare of those who work or are employed (Bhagawati, 2015). It is seen as one of the most crucial components of the functioning of an organization since it ensures that employees are adequately cared for while providing whatever service they are supposed to provide. According to Amponsah-Tawiah and Dartey-Baah (2016), occupational health and safety encompass the worker's mental, emotional, and physical well-being in relation to his work and, as a result, is a critical topic of interest that positively impacts the attainment of

organizational goals. Occupational health is defined by the International Labour Organization (ILO, 1995) as "the promotion and maintenance of the highest level of physical, mental, and social well-being of workers in all occupations." The purpose of health and safety regulation, enforcement actions, and workplace initiatives should be to prevent worker injury, disease, and death.

Vinodkumar (2010) indicates that, occupational safety and health practices are the strategies, policies, actions, and procedures that an organization can use to ensure the safety of its employees. Adequate health and safety practices in an organization can increase its resistance or robustness and lower risk of accidents and through policies, strategies, procedures, and activities implemented or followed by the management of an organization targeting the safety of their employees and efficient management and safety of an organization an organization could be assured (Razali, 2018). To put it another way, Alli (2008) defined occupational safety and health as the science of anticipating, recognizing, evaluating, and controlling hazards that may arise in or from the workplace and jeopardize workers' health and well-being, while also considering the potential impact on surrounding communities and the general environment. The focus appears to be on the science of and ability to detect potential danger/harm in advance, as well as putting in place mitigation techniques to limit the potential impact on employees and the environment.

Without doubts, the scope of organizational health and safety has undergone tremendous changes due to many factors not limited to:

a. Globalization and its associated impact on the liberalization of world economies.

b. Technological progress.

c. Enhanced transport systems.

d. Shifting patterns of employment and the continuous rise of women in employment.

e. Migration.

At modern occupational health and safety debate venues, these and other aspects are given top priority. "It is no coincidence that the protection of workers against sickness, disease, and injury related to the working environment, as embodied in the Preamble to the ILO Constitution, has been a central issue for the Organization since its creation in 1919, and continues to be so today," (Alli, 2008).

Work, on the other hand, is still dangerous in many places throughout the world. In the United States, the Occupational Health and Safety Administration and similar state and local occupational health and safety protection agencies are underfunded, cannot enforce regulations or even promulgate regulations, and are generally prevented from engaging in sufficient workplace health protection activities (Silverstein, 2008; McQuinston et al., 1998).

Occupational health should aim at:

i. The promotion and maintenance of the highest degree of physical, mental, and social well-being of workers in all occupations.

ii. The prevention among workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health.

iii. The placement and maintenance of workers in an occupational environment adapted to the workers' needs," according to WHO (1994).

Indeed, these laws are strictly enforced by employers in any workplace setting. The situation in Africa is no different, as many workers continue to push for safer working conditions from their employers. Many government institutions, for example, offer the weakest working conditions, which could be dangerous to Ghanaian workers. Some have the most outdated structures and furniture, while some industrial enterprises do not provide the best possible safety measures for their employees. Meanwhile, the employer owns the workplace and has the authority (and legal obligation) to provide a healthy and safe environment. When employers fail to strongly support the removal and reduction of workplace dangers, workers who cannot effect these changes are left to face the direct health and safety risks, as well as morbidity and mortality implications, such as accidents and other major hazards.

The personal, social, and economic costs of workplace accidents, injuries, and diseases, as well as catastrophic industrial disasters, have long been a source of worry at all levels, from the individual workplace to national and international levels (Alli, 2008). In response to technological and economic changes, countermeasures and strategies are developed and continuously implemented to avoid, control, reduce or eliminate workplace hazards and risks.

Occupational accidents and diseases, however, continue to be too common and expensive in terms of human suffering and economic burden, despite the incremental advances. Occupational safety and health risk

management aims to detect and assess workplace safety and health concerns, as well as develop suitable control and retrieval procedures (Chauhan, 2013).

With time, more people are researching in detail the need for occupational health and safety, thus, pushing for governments and industries to enforce laws, regulations, and procedures to ensure the safety and security of workers.

Chapter Summary

There remains a gap in proper occupational health and safety culture within the downstream petroleum sector. Although, there is the evident work of the Environmental Protection Agency (EPA) and the National Petroleum Authority (NPA) in Ghana, there is still a major challenge as to keeping these employees and the environment safe and healthy while conducting good business in the context of the downstream petroleum sector. This makes it expedient for more studies to be conducted to discover how the downstream petroleum sector manages occupational health and safety, how it complies with regulatory bodies and how best they ensure that the environment within which they operate is equally safe despite the hazards their operations pose to the public.

With basis from theoretical perspectives like the best available technique, the risk analysis approach, the behavioural approach and the legislative-engineering approach, the current study focuses on the downstream petroleum sector Sekondi-Takoradi Metropolis, discussing the legalities surrounding these fuel retail outlets, existing health and safety practices these fuel retail outlets may be using and how best these outlets can further ensure a functional occupational health and safety culture.

CHAPTER THREE

METHODOLOGY

Introduction

The various data collection techniques used for the study are covered in this chapter. Included were the research philosophy, study area, research design, target population, sample size and sampling methods, research instrument, data collecting and analysis procedures, validity and reliability procedures, ethical considerations, and a chapter summary.

The Research Philosophy and Justification

The research philosophy employed in this study was pragmatism. The application of pragmatic research as a philosophy was motivated by the fact that the weaknesses of one approach are mitigated by the strengths of the other. To describe the phenomenon under investigation, pragmatic philosophy integrates positivist and interpretivist notions. According to Tran (2017), pragmatism may transform observations into theories, which can subsequently be assessed through action. That is, the researcher primarily uses the abductive approach and sequentially blends qualitative and quantitative methods. The study aims to recognize the whole dialectics of knowledge and action (Goldkuhl, 2004). He goes on to say that pragmatism is interested not just in what ‘is,’ but also in what ‘might be.’ Statistical approaches were used to analyze the first and second objectives. On the other hand, objective three, which aimed to identify measures to ensure a funtional health and safety management system was studied utilizing a qualitative research approach.

Research Approach

The research included qualitative and quantitative methods because the work is pragmatic. Qualitative research is an interpretive strategy that helps to acquire insight into the specific meanings and behaviours experienced in a social phenomenon through the subjective experiences of the participants (Palmer & Bolderston, 2006). The interpretivist was used because it aids in the discovery of significance in order to gain a better grasp of the issues involved in objective three.

The quantitative method allows researchers to use statistical data for study descriptions and analysis, the time and effort spent by the researcher in describing outcomes is reduced (Daniel, 2016). According to Muijs (2004), unlike qualitative research, which asserts that no prior reality exists, quantitative research in its most extreme form assumes that there is only one single fact regarding a social event that is unaffected by inquiry. Quantitative research is characterized by the use and analysis of numerical data using specific statistical approaches to answer questions such as who, how much, what, where, when, how many, and how (Apuke, 2017). One of the foundational assumptions of quantitative research is the philosophical belief that our reality is moderately consistent and uniform, allowing us to quantify and analyze it as well as speculate widely about it (Sage, 2009). Quantitative research allows the researcher to remain as detached from the investigation as possible under the circumstances, and to employ tactics that increase objectivity and restrict the analyst's involvement in the investigation (Muijs, 2004). Statistical approaches and quantitative analysis, according to ACAPS

(2012), can help confirm or deny assumptions concerning the impact of a disaster and the resulting requirements of the impacted people.

Research Design

In order to collect and analyze data, the study used both descriptive and exploratory approaches. According to Leedy and Ormrod (2005), descriptive research design is the analysis and collection of data from or about groups of persons in order to portray their replies. The descriptive design ensures a high level of objectivity in the investigation.

Exploratory research strategies are not confined to a single paradigm and can follow both qualitative and quantitative approaches. The exploratory research design was also used in this study. Boru (2018) defines exploratory research as "research undertaken when little is known about a phenomena or when a topic is not well defined." They necessitate in-depth comprehension and cannot be quantified in any other way. Saunders et al (2007) explains exploratory design as a method of determining what is going on to gain a more in-depth understanding, which allows them to ask questions and evaluate a phenomenon in a new light. As a result, the exploratory design can be utilized to achieve a wide range of research goals.

Study Area

The research was conducted in the Sekondi-Takoradi Metropolis, which is located in Ghana's Western Region. There are a total of 30 fuel retail outlets located within the STMA. Sekondi-Takoradi Metropolis is one of 261 Metropolitan, Municipal and District Assemblies (MMDA) in Ghana. The Sekondi-Takoradi metropolis is located in the southeastern part of the Western Region. This makes it the smallest, but easily the most highly developed. In

fact, it is the third largest metropolis in all of Ghana. The Atlantic Ocean is to the south of the Metropolis, and Wassa East District is to the north. Sekondi-Takoradi is the regional administrative capital and encompasses a land area of 191.7 km^2.

The Metropolis, for the most part, is spared from harsh weather. The Metropolis has an equatorial climate, with an average annaul temperature of about 22°C which is experienced between January and March. Percipitation is bi-modal, with the major season occurring between March and July and the minor season occurring between August and November. The climate offers opportunities for varying agricultural production. According to the 2021 Population and Housing Census, the metropolitan area has a population of 104,837, of which 51,734 are male and 53,103 are female.

The locations of these fuel retail outlets were recorded using a Global Positioning System (GPS) device by selecting their respective coordinates, as shown in the map below.

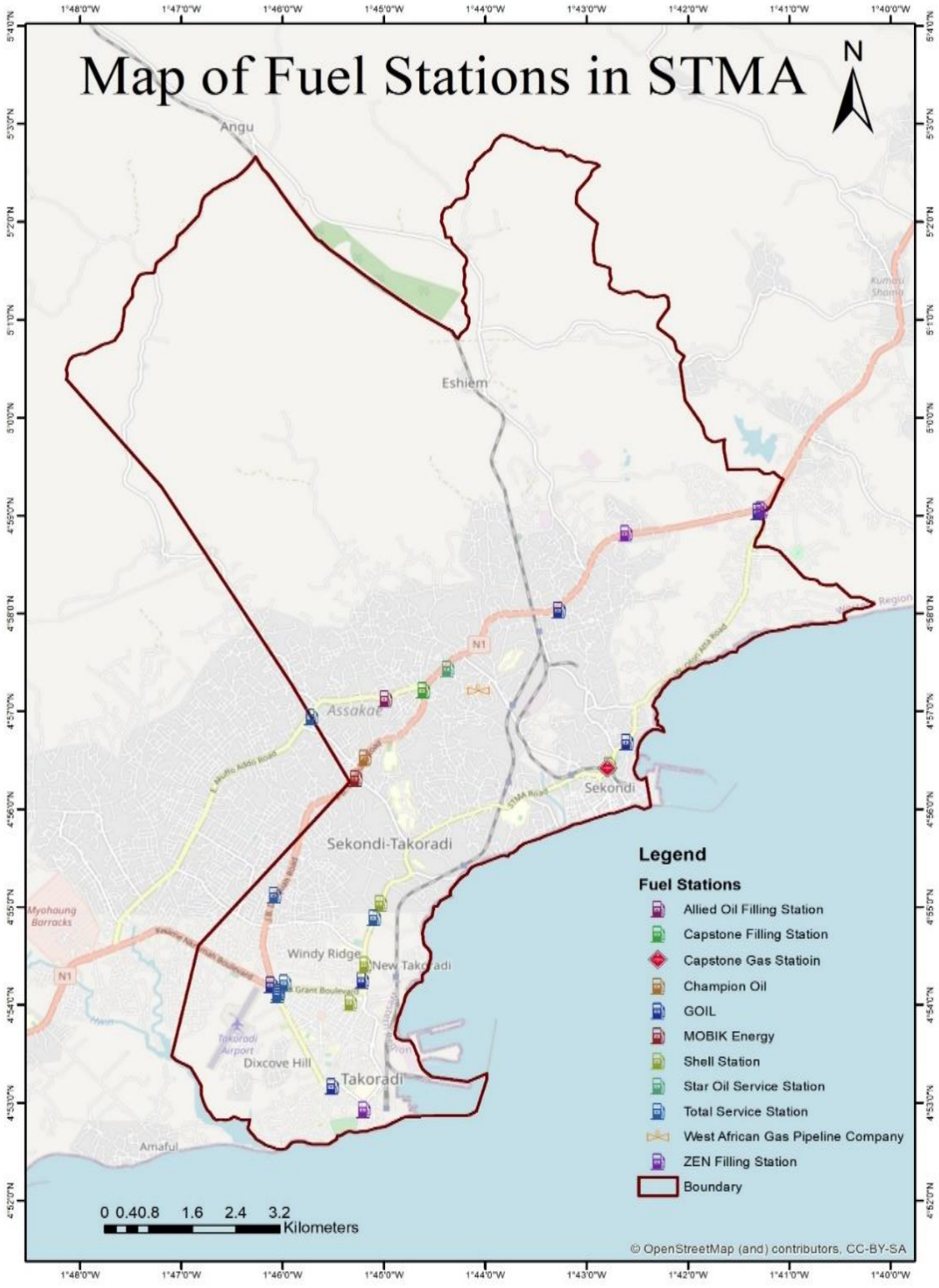


***Figure 2*: Map showing the locations of fuel retail outlets in Sekondi-Takoradi Metropolis**

Source: Author's construct (2021)

Target Population

Goil, Total Oil, Shell, Mobik Energy, Star Oil, Capstone, Frimps, Allied Oil, Champion Oil, Tel Energy, Zen Petroleum, and WAPCO are among the twelve oil marketing companies in the metropolis. All managers and attendants of fuel retail outlets in the metropolis were the target population.

Sample Size

From Table 1 below, there are about 30 fuel retail outlets in STMA. The number of fuel retail attendants within each fuel retail outlet is indicated as well as the location. In total there are about 154 fuel retail attendants in STMA. The sample size was the same as the population.

Table 1: List of Fuel Retail Outlets in STMA

S/N	Name of Fuelling Station	Location	Number of Fuelling Station Attendants
1	Goil	Esikado	4
2	Goil	Bakakyire	4
3	Goil	Sekco Junction	6
4	Goil	Chapel Hill	4
5	Total	Airport Roundabout	12
6	Total	Effia-Sekondi Road	4
7	Total	Market Circle	4
8	Total	Harbour	4
9	Total	Kansawrodo	4
10	Total	West Fijai	6
11	Total	Ahenkofi	4
12	Shell	Airport Roundabout	6
13	Shell	Effia-Sekondi Road	4
14	Shell	Esikado	4

Table 1 Contiuned

15	Shell	Cathedral-Takoradi	4
16	Shell	Mpintsin	6
17	Shell	Axim Road	4
18	Shell	Wireless-Takoradi	4
19	Mobik Energy	Fijai	8
20	Mobik Energy	Kojokrom	6
21	Allied Oil	Nkroful	8
22	Capstone	Nkroful	4
23	Star Oil	Ketan	6
24	Champion Oil	Fijai	5
25	Tel Energy	Kansawrodo	4
26	Zen Petroleum	Secko Junction	6
27	Zen Petroleum	Mpintin	5
28	Zen Petroleum	Harbour	4
29	Wapco	Secko Junction	4
30	Frimps	Nkroful Junction	6
Total			***154***

Source: EPA (Sekondi-Takoradi)

Sampling Procedure

Census was used as the research method for this study. Census was used because it attempt to list all elements in a group and to measure one or more characteristics of those elements (Cantwell, 2020). Census completely count the entire aggregation of items from which samples can be drawn, in which every unit of the entire population is included in the collection of the data. The use of the census was applied to the fuel retail attendants who were 154 in total as well as all managers at the various fuel retail outlets.

A Staff of EPA was purposively sampled and interviewed for the study. The staff was considered a key informants to the study. This method was selected because it is a non-probability sampling which is mostly effective

when one needs to study a certain cultural domain with knowledgeable experts within (Tongco, 2007). Purposive sampling was utilized in this study because subjects were chosen based on the investigation's purpose, with the idea that each participant would give unique and valuable information to the study (Etikan, 2016).

As a result, a total of 185 respondents made up of 154 fuel retail attendants, 30 managers of the various fuel retail outlets and a staff of EPA were used in the research.

Sources of Data and Data Collection Instruments

The study's primary source of information was primary data. Primary research was the most important tool since it entails gathering original or unique data for a given research project using research procedures such as questionnaires or interviews (Gratton & Jones 2009). Questionnaire, interview, and observation were used as research instruments in this study.

The questionnaire included closed-ended questions. Questionnaire was used in the study because they ensured a greater coverage, could be finished at the respondent's convenience and improved the researcher's ability to reach respondents. Only fuel retail attendants were asked to complete the questionnaire. The in-depth interview was utilized to gather qualitative data from managers at each fuel retail outlet as well as a participant from the Environmental Protection Agency (EPA) in the STMA who had a thorough understanding of the research area.

The study also used an observation check list as a data collection tool. In certain ways, the observation aided in knowing or accessing those components of a social context that may not be visible to the general public

(backstage activities that the general public does not see) (Kawulich, 2015). The following were the list of safety measures that the researcher observed:

a. Display of switch off mobile at the forecourt of the pump.
b. Display of fire extinguishers at the forecourt of the pump.
c. Sand box at the forecourt of the pump.
d. Fire alarms closer to the pump.
e. Emergency response plan.
f. Notice for emergency assembly point.
g. Warning signs at the forecourt.

Data Collection Procedure

To obtain authorization to conduct the study in each chosen fuel retail outlet as well as from EPA, an introductory letter was requested from the Institute for Oil and Gas Studies (UCC) to the management of those fuel retail outlets and the management of EPA.

After obtaining clearance, the study was given a time frame. The exercise began with the participants being given an explanation of the items on the questionnaire within the time frame allotted. The questionnaire was handed out to all of the participants available at the various petroleum retail locations after in-depth explanations were given to the participants, and the participants were given time to fill the study questionnaire. The questionnaire was collected on the same day.

Data Processing and Analysis

Descriptive statistics and frequency tables were employed to analyse and draw conclusions on data obtained from the field. The study employed Statistical Package for Social Science version 22 (SPSS 22) for the definition

and coding of the responses which were gathered from the field. The same software aided in the generation of frequency tables, percentages among others which were used for the analysis of the objectives of the study.

The qualitative data collected from the interview were organized in themes and arranged according to the research objective. The audio recordings were transcribed after which the transcripts of the interviews were analysed thematically.

Validity and Reliability

The validity and trustworthiness of the methodology and data are frequently used to determine the quality of research. Validity is defined as "the degree to which grades are free of estimate errors," while reliability is defined as "the degree to which grades are free of estimation errors" (Md Ghazali, 2016).

The validity of the items in the questionnaire was confirmed by the researcher pre-testing it on some fuel retail attendants who shared the same characteristics as the study participants. Fuel retail attendants were given at least 15 printed surveys to fill out and provide their thoughts on the phrasing, suitability, ordering, and understanding of the questions. All of the comments were taken into consideration, and the initial questionnaire was fine-tuned to accurately assess what was expected. In addition, the researcher avoided using double-barreled items, which could prevent respondents from responding appropriately to the items. Again, the researcher avoided using leading questions, which divert the instrument's attention away from the desired measurement.

The researcher was able to determine the best time to administer the questionnaire to the participants by pre-administering the questionnaire. Data was carefully documented and kept under lock and key in order to make the study as credible as possible. For control checks, a standardized questionnaire with a Likert scale was used in large numbers to make the effect of the discoveries trustworthy. This gave several experts a fantastic opportunity to play out this research and come up with comparable results.

Ethical Considerations

According to Akaranga and Makau (2016), ethics is a type of reasoning that governs individual behaviour and aids the standards or guidelines of individual norms and conducts. Research ethics include criteria for daily labour, the safeguarding of individuals' dignity, and the dissemination of research findings (Fouka & Mantzorou, 2011).

In this regard, ethical considerations were a major concern for the study, and it was made certain that they were not breached. Confidentiality, anonymity, access, betrayal, and informed consent were all crucially addressed in the study. Throughout the inquiry, strong moral standards were maintained to ensure that no harm was done to any of the participants. Steps were also taken to keep the information supplied confidential and anonymous, as well as obtaining the consent of the participants. Participants were informed of the purpose of the information and data provided to them. Participants were informed that the information acquired would be used primarily for academic purposes and would be treated with strict secrecy and anonymity.

The goal of the study and why they should participate were explained to the participants. Participants who agreed to participate were those who did

so voluntarily; no one was forced to participate in the study. The questionnaire's first line included a phrase assuring responders of their privacy and confidentiality. The participants and the researcher agreed on the amount of time it would take to complete the questionnaire. Because they were familiar with these moral difficulties, they were able to prevent a situation where a member would be physically, emotionally, socially, or culturally mistreated.

In addition, all references and academic resources used in the study were properly stated, and the researcher takes full responsibility for the entire project.

Chapter Summary

Interview and questionnaire were the study's primary data collection methods. The study was pragmatic in nature and employed both descriptive and exploratory design. The study faced a lot of limitations like time and resources being a major constrains to the study which is possible to affect the quality of the study.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents and discusses the investigation's findings. The primary goal of the study was "*to assess the health and safety practices among fuel retail outlets in the Sekondi-Takoradi Metropolis*". Out of the main objective, specific objectives were derived in order to achieve the goal of the study. The findings and discussions are given in the order in which the study's objectives were achieved.

Descriptive Results for Socio-Demographic Characteristics

The demographic characteristics of the participants are shown in Table 2. Males made up 66.4% of the respondents, while females made up the remaining 33.6%. Although 66.4% of them are men, this does not imply that the downstream oil and gas sector employs only men because women are fairly represented (33.6%) in the distribution. The disparity, on the other hand, could be linked to the nature of the industry, which tends to employ more men than women.

According to table 2, the majority of employees were between the ages of 18 and 25 (56.8%), followed by those between the ages of 26 and 35 (27.4%), 45 to 55 years (7.5%), and 36 to 45 years (7.5%). (5.5%).The oldest age group, (56years and up) accounted for 4% of the total. The findings in terms of participant age show that the participants were of sufficient age to make important responses to the research questions. Again, the majority of the respondents were between 18 and 25 years, indicating that the industry has a

large pool of young and vibrant individuals who can stay with it for a longer time and contribute to its growth.

According to the responses, majority of the participants (75.3%) were Senior High School graduates, followed by Tertiary graduates (21.2%), and Junior High School graduates (3.4%).

Multinational cocompanies account for 49.3% of these Oil Marketing Companies (OMCs), while individual private owned account for 32.9%. State-owned companies account for the remaining 17.8%. This demonstrates that multinational companies dominate the Sekondi-Takoradi Metropolis' Oil Marketing Companies.

When it comes to experience, which is measured by the number of years a participant has worked, the findings show that those who have worked for more than 2 years are in the majority (39%), followed by those in the 1 year-2 years category (28.1%) and those who have worked for 6 months-1 year (18.5%). Those who have worked between 6 days and 6 months account for 14.4% of the total. In the industry, it can be argued that there is a good mix of workers. The data also demonstrate that the experienced ones are substantial enough to have an impact on the others' skills and experience. Employees who have worked for a single organization for a longer period of time are more likely to engage customers with ease, according to (Song et al., 2018). Employees with more experience are more likely to internalize the company's culture and principles.

Employees with a variety of years of expertise and knowledge in the sector are more imaginative and help to create an environment that fosters strong organizational cohesiveness (Nonaka et al., 2000).

Table 2: Results of Demographic Features of the Respondents

Variable		Frequency	Percentage
Sex	Male	97	66.4
	Female	49	33.6
Age	18-25	83	56.8
	26-35	40	27.4
	36-45	8	5.5
	45-55	11	7.5
	56 and above	4	2.7
Educational Background	Tertiary	31	21.2
	Senior High School	110	75.3
	Junior High School	5	3.4
Number of Years	6days-6months	21	14.4
	6months-1year	27	18.5
	1year-2years	41	28.1
	Above 2years	57	39
Total on each category		146	100

Source: Field Survey, (2021)

Existing Health and Safety Practices among Fuel Retail Outlets in Sekondi-Takoradi Metropolis (STMA).

This section covers the study question: What are the health and safety practices in the Sekondi-Takoradi Metropolis (STMA) among fuel retail outlets? In a bid to examine the views of the respondents, frequencies and percentages were used to interpret their responses base on a five-point Likert scale, thus 'Strongly Agree'[SA], 'Agree'[A], Neutral' [N], 'Disagree'[D] and Strongly Disagree' [SD]. The results are presented in sub sections below.

Table 3 below which looked at adequate safety training at work shows that participants ranked their response to hazards, accidents, or near misses as the greatest with 99 (67.8%) a few of them 23 (15.7%) disagree. Most respondents 97 (66.4%) agreed to provision of well-structured safety manuals at the workplace as the second highest statement. Only a small number 30 (20.5%) did not agree to the same statemen. The use of modern ICT tools 72 (49.3%) and the regular conducts of effective medical training are the third

and fourth ranked statements, 72 (49.3%), (41.1%) of the participants disagree to the same statement. These results supports the research by Ford and Stephens (2018), which shows that employee behavior toward risk exposure and management of risk depends on general awareness of the workplace risks and the mechanisms and processes set up to protect employee health and safety. Behaviours such as having safety conversations at work, possessing self-efficacy, and being willing to respond appropriately to risks ultimately equip employees on how to respond to hazards and manage them when they happen.

Table 3: Adequate Safety Training

Adequate safety training	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
My employer conducts effective medical training regularly.	31(21.2)	29(19.9)	14(9.6)	45(30.8)	27(18.5)	146(100)
My employer provides. well-structured safety manuals.	11(7.5)	19(13.0)	19(13.0)	52(35.6)	45(30.8)	146(100)
I use modern ICT tools at my workplace.	26(17.8)	23(15.8)	25(17.1)	44(30.1)	28(19.2)	146(100)
I am equipped on how to respond to hazards, accidents or near misses.	10(6.8)	13(8.9)	24(16.4)	48(32.9)	51(34.9)	146(100)

Source: Field Survey, (2021)

From Table 4 below which focused on enforcement of safety rules below, participants ranked the measurement and improvement of the rule enforcement process and enforcement of consequences as the same level of agreement with 103 (70.6%) with a few respondents 24.0 (16.4%) and 26 (17.8%) respectively disagreeing to the same statements. Participants ranked clearly defining rules for successful rule enforcement as the third statement,

with 104 (71.3%) while 27 (18.4%) of the respondents disagree. The consistent providing of rule compliance feedback received the lowest rating from participants, with a score of 94 (64.4%). A great percentage of the participants believed that fuel retail outlets measure and enhance the rule enforcement procedure. These findings are consistent with, Anderson et al (2012); Idubor and Osiamoje (2013) opine those regulations without proper enforcement are tantamount to no laws. In that Idubor and Osiamoje (2013) postulate that lack of strict enforcement of OSH regulations enables non-compliance to OSH regulations. It's worth emphasizing that countries with outstanding health and safety regulations and processes can attest to the benefits of appropriate OSH enforcement.

Table 4: Enforcement of Safety Rules

Enforcement of safety rules	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
My employer clearly defines the rules for effective rule enforcement.	10(6.8)	17(11.6)	15(10.3)	61(41.8)	43(29.5)	146(100)
My employer provides consistent rule compliance feedback.	9(6.2)	20(13.7)	23(15.8)	56(38.4)	38(26.0)	146(100)
My employer enforces consequences.	4(2.7)	22(15.1)	17(11.6)	63(43.2)	40(27.4)	146(100)
My employer measure and improve the rule enforcement process.	4(2.7)	20(13.7)	19(13.0)	55(37.7)	48(32.9)	146(100)

Source: Field Survey, (2021)

Furthermore, participants selected training sessions employing a variety of languages, such as English, Twi, or other local dialects, as the most effective in Table 5 on effectiveness of health and safety training, with a frequency of 122 (%83.5) and only 8 (5.4%) participants disagree to the statement. Majority of participants 113 (77.4%) agreed that the health and

safety training to participants was relevant, this was placed as the second highest. Participants 109 (74.6%) placed the declaration that health and safety align with the company's vision and objectives third whereas only 20 (13.7%) did not agree to the same statement and finally, the usage of modern health and safety equipment throughout training 88 (60.3%) whiles 30 (20.5%) of participants disagreed. Findings from the field indicated that most participants agreed that fuel retail outlets should ensure health and safety training courses are conducted in a variety of languages. The field results are consistent with Lauring (2008), according to the study, language disparities are the primary cause of misperception and miscommunication amongst employees. This linguistic disparity has also been considered as ineffective, particularly in communication. When employees do not share or speak the same language, it can be a huge issue because efficient communication is impossible. As a result, it is critical that trainings on health and safety regulations be conducted in a variety of languages for as wide an audience as possible.

Tabe 5: Effectivesness of Health and Safety Training

Effectiveness of health and safety training.	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
Health and safety programs align with the company's vision and objectives.	4(2.7)	16(11.0)	17(11.6)	71(48.6)	38(26.0)	146(100)
Health and safety training are relevant.	5(3.4)	11(7.5)	17(11.6)	65(44.5)	48(32.9)	146(100)
My employer uses modern health and safety equipment/ tools during training.	11(7.5)	19(13.0)	28(19.2)	49(33.6)	39(26.7)	146(100)
My employer ensures that training sessions are conducted in diverse languages such as English, Twi or other relatable language to staff.	4(2.7)	4(2.7)	16(11.0)	62(42.5)	60(41.1)	146(100)

Source: Field Survey, (2021)

Adequate safety communication was examined in Table 6. Majority of the participants 124 (84.9%) ranked educating and using plain language when dealing with health and safety issues as the highest priority. Few participants 11(10.8%) did not agree to the same statement. Ensuring that all vehicles are turned off before filling up with fuel came in second with a frequency of 122 (83.6%). Regarding the use of employee feedback to improve communication 115 (78.8%) agreed only 18 (12.3%) disagreed.

Table 6: Adequate Safety Communication

Adequate Safety communication	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
I ensure that all drivers put off their engines before fuelling at my fuel retail outlet.	10(6.8)	7(4.8)	7(4.8)	48(32.9)	74(50.7)	146(100)
I educate and uses plain language when dealing with matters of health and safety at the workplace	4(2.7)	6(4.1)	12(8.2)	60(41.1)	64(43.8)	146(100)
My employers take feedback from me.	10(6.8)	8(5.5)	13(8.9)	67(45.9)	48(32.9)	146(100)
My employers use the feedback to improve communication.	5(3.4)	14(9.6)	18(12.3)	52(35.6)	57(39.0)	146(100)

Source: Field Survey, (2021)

In table 7, the provision of safety exits in case of explosions or fire outbreak was ranked as the foremost with a frequency 126 (86.3%) and only 9 (6.2%) of the participants did not agree to the statement. This was followed by the fuel retail outlets having the right containers to hold various waste with majority 120 (82.2%), few 10 (6.9%) disagreed to the statement. Respondents 89 (61.0%) agreed that the workplace has infrastructure that supports health and safety while 33 (22.6%) did not agree. The least ranked was the provision

of P.P.Es with a score of 66 (45.2%) and 64 (43.9%) disagreeing to the same statement.

Table 7: Adequate Safety Facilities

Adequate safety facilities	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
The workplace has infrastructure that supports health and safety.	10(6.8)	23(15.8)	24(16.4)	47(32.2)	42(28.8)	146(100)
Adequate PPEs are provided at the workplace.	41(28.1)	23(15.8)	16(11.0)	30(20.5)	36(24.7)	146(100)
There are containers to hold variouswastes at the work place.	2(1.4)	8(5.5)	16(11.0)	68(46.6)	52(35.6)	146(100)
There are safety exits at the workplace in case of explosions or fire outbreak.	3(2.1)	6(4.1)	11(7.5)	71(48.6)	55(37.7)	146(100)

Source: Field Survey, (2021)

Again, majority of the participants 123 (84.3%) ranked facility being built in a way that emergency safety officials can readily attend to in case of fire outbreak as the highest in Table 8 under emergency response procedures being efficient. 112 (76.8%) out of a total of 146 agreed that the fuel retail outlet has the ability to successfully deal with adjourning structure that abstracts access to the facility, 14 (9.6%) of respondents disagreed to the same statement. 114 (78.1%) of respondents asserted there are laid down protocol on how personnel are trained in how to handle disasters. This was ranked third with few respondents 14 (9.6%) disagreeing. Also, 106 (72.6%) of the participants asserted that the company organizes regular workshops in partnership with agencies on how to contain and report such accidents. This was ranked fourth. In chaotic environments such as emergency response to catastrophic events, managers of organizations should understand the

dynamics underlining the infrastructure and provide adequate measures for health and safety of employees during such events.

Table 8: Emergency Response Procedure are Efficient

Emergency response procedures are efficient	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
The facility is built in a way that emergency safety officials such as fire service and others can easily attend in case of fire outbreak.	8(5.5)	2(1.4)	13(8.9)	61(41.8)	62(42.5)	146(100)
My company has effectively dealt with adjourning structure that obstructs access to the facility.	6(4.1)	8(5.5)	20(13.7)	63(43.2)	49(33.6)	146(100)
My company has laid down procedures on how employees are trained in how to handle disasters.	7(4.8)	7(4.8)	18(12.3)	69(47.3)	45(30.8)	146(100)
My company organizes regular workshop in collaboration with agencies such as the police and fire service on how to contain and report such accidents.	12(8.2)	10(6.8)	18(12.3)	61(41.8)	45(30.8)	146(100)

Source: Field Survey, (2021)

Summary of Participants' Opinion about Health and Safety Practices at the Fuel Retail Outlets

Based on their responses to questions on six variables presented to them, participants' opinions were ranked using the 5 Likert scale measurement. It can be seen from the abbove discussions that adequate safety communication was ranked the highest among the six variables as most of the participants were in agreement with the adequacy of safety communication at the fuel retail outlets. This is followed closely by emergency response procedures being efficient, the effectiveness of health and safety training,

enforcement of safety rules, adequate safety facilities and adequate safety training in that order.

Level of Awareness of Health and Safety Practices among Fuel Retail Attendants in STMA.

To ascertain the degree of health and safety procedures knowledge among STMA fuel retail attendants, the views of the respondents were sought. Frequencies and percentages were used to interpret their responses based on a five-point Likert scale, thus 'Strongly Agree'[SA], 'Agree'[A], Neutral' [N], 'Disagree'[D] and Strongly Disagree' [SD]. The results are presented in sub sections below.

In relation to Table 9 below which solicited information on awareness of safety measures, participants ranked their attentiveness at the fuel pump when working as the highest with a frequency of 130 (89%) and only 8 (5.5%) did not agree. Having safety measures in place to prevent fire and maintain productivity was the second highest ranked with 124 (84.9%) and 10 (6.9%) disagreeing to the statement. Promotes double check the area and the provision of first aid kits on site followed with 119 (81.5%) and 79 (54.1%) respectively. At least 32.2% of the participants disagreed that first aid kits are being provided on site. These findings are consistent with the study done by Niskanen (2017), which explained that attitudes of workers, their judgement and attentiveness in the working environment statistically had higher significant effect on their performance, feedback and general well-being. Attentiveness to details, early warning signs, and unusual happenings at pump sites can reduce hazards and risk posed to workers.

Table 9: Awareness of Safety Measure

Awareness of safety measures	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
My company enforces double-checking the work area before the commencement of work everyday.	7(4.8)	7(4.8)	13(8.9)	74(50.7)	45(30.8)	146(100)
My employer ensures that workers are attentive when working with the fuel pump.	5(3.4)	3(2.1)	8(5.5)	64(43.8)	66(45.2)	146(100)
There are safety measures in place at the workplace to prevent potential fire outbreak to maintain productivity.	2(1.4)	8(5.5)	12(8.2)	60(41.1)	64(43.8)	146(100)
There are first aid kits at the workplace.	28(19.2)	19(13.0)	20(13.7)	39(26.7)	40(27.4)	146(100)

Source: Field Survey, (2021)

On knowledge of participants on the usage of fire extinguisher from Table 10 beneath, most participants 136 (93.1%) ranked fire extinguishers being in working conditions as the top most, only 5 (3.4%) did not agree to the statement. Fire extinguishers being at vantage points followed with a score of 132 (93.4%) and only 6 (4.2%) participants disagreed. Majority 118 (90.4%) of the participants ranked the conduction of drills on the use of fire extinguisher as the third with a few 13 (8.9%) disagreeing. System being in place to report and replace damaged fire extinguishers was ranked as the least with a score of 122 (83.6%), a few participants 15 (10.3%) disagree.

Table 10: Knowledge on Fire Extinquisher Usage

Knowledge on Fire Extinguisher Usage	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
Fire extinguishers are in working condition.	0(0)	5(3.4)	5(3.4)	52(35.6)	84(57.5)	146(100)
My company conducts safety drills on the use of fire extinguishers.	3(2.1)	10(6.8)	15(10.3)	46(31.5)	72(49.3)	146(100)
There is a timely replacement for expired and faulty/ damaged fire extinguishers.	3(2.1)	12(8.2)	9(6.2)	59(40.4)	63(43.2)	146(100)
Fire extinguishers are at vantage points on site.	3(2.1)	3(2.1)	8(5.5)	52(35.6)	80(54.8)	146(100)

Source: Field Survey, (2021)

The highest ranked under awareness of practices that pose health hazards in Table 11 was participants being educated on activities that pose hazards with a 126 (86.3%) and 13 (8.9%) responding negatively to the same statement. Most participants 125 (85.6%) ranked their supervision of each other's work and with few 17 (11.6%) disagreeing and the shutdown of fuel pumps immediately they are operating poorly attracted a frequency of 114 (77.7%) and 13 (8.9%) of participants not in agreement. Finally, quiet a number of participants 112 (76.7%) asserted that there was availability of laid down policies to deal with complacent workers, with only 9 (6.2%) disagreeing. On the contrary, only a fewer number of disagreements were recorded. The highest disagreement was in relation to the extent to which employers ensure that all employees supervise each other's work to ensure it is done properly. About 11.6% of the participant disagreed.

Table 11: Awareness of Practices that Pose Health Hazards

Awareness of practices that pose health hazard	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
My employers educate employees on activities that pose hazards at the workplace.	5(3.4)	8(5.5)	7(4.8)	69(47.3)	57(39.0)	146(100)
My employers ensure all employees supervise each other's work to ensure it is done properly.	10(6.8)	7(4.8)	4(2.7)	67(45.9)	58(39.7)	146(100)
My employers advocate that when damaged fuel pumps are operating poorly, there are immediately shut down.	4(2.7)	9(6.2)	19(13.0)	55(37.7)	59(40.0)	146(100)
My employers have laid down policy in dealing with complacent workers.	3(2.1)	6(4.1)	25(17.1)	61(41.8)	51(34.9)	146(100)

Source: Field Survey, (2021)

Table 12 beneath elaborates on assembly points awareness. The fuel retail outlet having emergency assembly points in case of hazards or explosions and the assembly points being free from sources of hazards and explosions were ranked highest with a score of 126 (86.3%). The fuel retail outlets having visible markings to direct workers to those assembly points was ranked as the third highest 117 (80.1%) and the organization of drills to practice assessing assembly points was ranked as the fourth with a frequency score of 107 (72.9%). About 15.1% of the participants at least disagreed that the fuel retail outlets organize drills to practice assessing the assembly points. These findings support the research conducted by Hoscan and Centinyokus (2021). Their study indicated that assembly points are very important due to the security risks and financial damages that can be caused by emergency as a result of absence of assembly points. Assembly points must be an integral part of any industrial infrastructure design. Again, the above findings are consistent with Şenik and Uzun (2022) who in their study found out that there

is the need of planning of sufficient and safely open green space which provide emergency assembling and temporary shelter during emergencies.

Table 12: Awareness of Safe Assembly Point During Fire/Disaster Outbreak

Awareness of safe assembly point during fire/disaster outbreak	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
There is an emergency assembly point(s) in case of hazards or explosions.	1(0.7)	2(1.4)	17(11.6)	51(34.9)	75(51.4)	146(100)
There are visible markings to direct workers to those points of assembly.	2(1.4)	8(5.5)	19(13.0)	60(41.1)	57(39.0)	146(100)
Points of assembly is free from sources of hazards and explosion.	2(1.4)	7(4.8)	11(7.5)	67(45.9)	59(40.4)	146(100)
There are frequent drills to practice how best to access the emergency assembly point during an emergency.	9(6.2)	13(8.9)	17(11.6)	59(40.0)	48(32.9)	146(100)

Source: Field Survey, (2021)

To further probe into the awareness on harmful Volatile Organic Compound (VOC) associated with petrol fumes from Table 13 below, participants were asked if the company educates participants on fume hazards. Majority 119 (81.5%) agreed to the statement. Most participants 121 (82.9%) agreed they have been educated on chemical hazards. Finally, the availability of laid down procedures in dealing with workers that have been exposed to such hazards attracted a score of 104 (71.3%). The findings support a study conducted by Okafoagu (2017), which posited that attendants were aware that volatile organic compounds (VOCs) were damaging to their health, and a large proportion were aware of workplace safety procedures such as not smoking cigarettes. Design of ventilation systems and the use of detectors to determine harmful chemicals is recommended to reduce risk.

Table 13: Aware of Harmful VOC Associated with Petrol Fumes

Awareness of harmful VOC* associated with petrol fumes	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
My company educates the workers about fume hazards.	5(3.4)	11(7.5)	11(7.5)	61(41.8)	58(39.7)	146(100)
Workers are educated about chemical hazards.	5(3.4)	12(8.2)	8(5.5)	65(44.5)	56(38.4)	146(100)
My company has laid down procedure in dealing with workers that have been exposed to hazards.	10(6.8)	16(11.0)	16(11.0)	56(38.4)	48(32.9)	146(100)
There is leakage-detecting equipment to detect leaking pumps at the workplace.	32(21.9)	36(24.7)	13(8.9)	25(17.1)	40(27.4)	146(100)

Source: Field Survey, (2021)

From Table 14 most participants 109 (74.6%) agreed they have been educated on health and safety polices in terms of exposure to occupational health and safety policies. Then again, majority of the participants 100 (68.5%) agreed that the company makes provision of health and safety policy to employees. The next was examination of participants understanding of the fuel retail outlets health and safety policy. This was ranked with a score of 96 (65.7%). The least ranked was the amendment of health and safety policy from time to time, which attracted a frequency of 79 (54.2%). On the contrary, 35 (24%) of the participants at least disagreed that health and safety policies are being amended from time to time. This is followed closely by the response on whether or not the fuel retail outlets make available health and safety policy for the participants with 11.0%. The above findings support the study conducted by Lavicoli et al (2011). The research was carried out on occupational health and safety policy and psychosocial risk in Europe and the findings reveal that the level of application of health and safety policy is as equally related to the level of awareness of such policies by employees.

Education about the availability and applicability of health and safety policies lowers risk and hazards in the workplace.

Table 14: Exposure to OHS Policies

Exposure to OHS** policies	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
My company provides health and safety policies to its workers.	11(7.5)	19(13.0)	16(11.0)	48(32.9)	52(35.6)	146(100)
My company educates the workers on health and safety policies.	5(3.4)	10(6.8)	22(15.1)	57(39.0)	52(35.6)	146(100)
My company examines workers understanding of the company's health and safety policy.	7(4.8)	26(17.8)	17(11.6)	44(30.1)	52(35.6)	146(100)
The company's health and safety policy is amended from time to time.	14(9.6)	21(14.4)	32(21.9)	43(29.5)	36(24.7)	146(100)

Source: Field Survey, (2021)

Furthermore, Table 15 shows the responses on periodic medical examination. Majority of the participants 97 (66.4%) disagreed with the provision of regular check-ups to check participants health status with respect to exposure to petrol fumes. The provision of health insurance policy for participants attracted 97 (66.4%) of participants disagreement. Most of the participants 103 (70.6%) disagreed to the presence of a medical officer at the fuel retail outlet at all times. Finally, majority of the participants 104 (71.3%) disagreed to the fuel retail outlet having updated records of participants past medical record. Only 23.3% of the participants agreed that the fuel retail outlets provide regular check-ups to check the workers' health status with respect to exposure to the fumes. The results corroborated those of Monney et al (2015), who discovered that attendants' post-employment medical examination habits were poor, presumably due to a lack of awareness of the

health hazards and the fact that the associated expenditures are self-borne. However, periodic medical examination was below average.

Table 15: Periodic Medical Examination

Periodic Medical Examination	Level of Agreement Frequency (%)					
	SD	D	N	A	SA	Total
There are regular check-ups to check the workers' health status with respect to exposure to the fumes.	58(39.7)	39(26.7)	15(10.3)	16(11.0)	18(12.3)	146(100)
The company provides workers with a health insurance policy.	58(39.7)	39(26.7)	17(11.6)	15(10.3)	17(11.6)	146(100)
My company ensures that a medical officer is present at the workplace all the time.	62(42.5)	41(28.1)	11(7.5)	18(12.3)	14(9.6)	146(100)
My company has an updated records of worker's past medical records.	61(41.8)	43(29.5)	14(9.6)	12(8.2)	16(11.0)	146(100)

Source: Field Survey, (2021)

Summary of Participants' Opinion on Level of Awareness of Health and Safety Practices

Table 17 shows the awareness of fuel retail attendants with regards to health and safety practices. It is evident from the Table that most participants agreed they had knowledge of fire extinguisher usage. On the other hand, periodic medical examination was ranked least. Awareness of safe assembly point during fire/disaster outbreak was ranked the second whiles Awareness of practices that pose health hazards and Awareness of safety measures were ranked third and fourth. Raking closely, fifth and sixth were Awareness of harmful Volatile Organic Compounds (VOC) associated with petrol fumes and Exposure to Occupational Health and Safety (OHS) Policies respectively. This suggest that most of the participants agreed that they;

a) had some knowledge of fire extinguisher usage.

b) were aware of safe assembly point during fire/disaster outbreak.

c) were aware of practices that pose health hazards.

Also, in terms of (1) Awareness of safety measures, (2) Awareness of harmful VOC associated with petrol fumes and (3) Awareness of Exposure to OHS Policies, most participants were neutral about it. Majority of the participants disagreed on matters relating to their medical health. More than half of participant disagreed to issues of their health at the workplace.

In conclusion, when favorable, the evaluation of employees' and employers' knowledge, attitudes, and behaviors toward occupational health and safety can reduce workplace accidents by 90% (Nasab et al., 2009). When workers do not have the right knowledge, attitude, training, and behavior toward safety measures in a safe workplace, all efforts for an accident-free workplace will be in vain. Knowledge on use of fire extinguishers, emergency preparedness and responds to disaster, awareness of health and safety policies and awareness to harmful chemicals are major determinants of the level of awareness of health and safety practices at the fuel retail outlets as the study seeks to achieve in this objective.

Measures to Ensure a Functional Health and Safety Management System.

I. Ensuring sustainability at the workplace

Sustainability here tries to balance environmental, social and economic impacts of operations at the workplace. According to Molamohamadi and Ismail (2014), sustainability of the workplace is achieved by cooperation between the employees and employers. The workplace can either be a safer or deadly place for workers. One of the ways in measuring functional health and safety practices at the fuel retail outlets is ensuring sustainable

ways at the fuel retail outlets. Some respondents agreed that indeed health and safety issues are not taken for granted. In this regard, participants responses were that;

> *Workplace health and safety issues are not downplayed. At the pump like this, there are safety signs or warning signs that prompts one not to fuel while the engine is on and avoidance of the use of mobile phones at the forecourt. And there are proof containers being used in fuelling which prevent one from fuelling into plastics. When you fuel into plastic containers it is expected you leave 1meter from the pump. In directing of a car at the forecourt, there are safety procedures which are ensured that is expected to be followed. These procedures help one to be safe in case there is failure in a car brake* (Fuel Retail Manager).

Disaster management is key in ensuring sustainability at the workplace.

The EPA response that;

> *Normally, if there's a disaster, you will realize that the situation may move from just the institution to the judiciary, because it could be a civil suit. In terms of compensation arrangement, it's not strictly under EPA, but we could compel you to deal with the damages that have come. Some mitigation systems may be taken from you. For example, if somebody is leaking into the environment, and we find out, we make sure the person mediate it. The law allows us to compel that person to remediate (*Respondent, EPA*).*

This emphasizes the measures put in place at the fuel retail outlets to ensure safety at all times and in the long run promote sustainability.

Additionally, wearing of protective clothing have also been made mandatory at the workplace. The response below emphasizes that;

> *Wearing of safety boots especially with the attendants and ensuring that once there is a spillage it is cleaned to avoid any fire outbreak* (Fuel Retail Manager).

Environmental sustainability is also a concern for the OMCs. In the interview, the participant responded as follows;

> *In relation to the environment, disposing off waste products like diesel and petrol is not done anyhow. Because when diesel and petrol come into contact with the environment, its devastating effect to the various organisms is really harmful. There is an interceptor which we use to separate water from the fuel. When the interceptor gets full it's being discharged in the right way. Boost meetings are mostly conducted for workers to abreast them on issues which relates to health and safety. Because sometimes as workers discharge their duties there may be spillage at the forecourt. Sand and saw dust are put in place to be used to clean spillage immediately it happens. Saw dust can easily absorb the fuel so the attendants use it to clean any spillage from coming into contacts with the environment to cause any harm* (Fuel Retail Manager).

Indeed, maintaining sustainability at the workplace does not just happen. There are processes to go through first. Below are some responses in relation to that;

> *There are rules and regulations that we ensure at the workplace. For instance, at the forecourt, it is our responsibility that we provide safety boots for attendants. Also, when it comes to the discharge of fuel, some procedures are being followed, before we discharge fuel. There are steps to be followed and it is ensured fire extinguishers are available. In case of fire, the extinguisher can be used to quench it (*Fuel Retail Manager*).*

The above captures the numerous strategies through which managers and fuel retail outlet regulators respectively function to protect staff, facilities and the environment and in the long run ensure sustainability.

II. Dealing with workplace injuries

Another aspect that deals with ensuring workplace safety involves the provision and use of first aid kits in injury reduction. Management attitudes to safety and organization factors are important determinants of injury risks (Smith, 2001). This aids in encouraging practical workplace health and safety issues as well as how injuries are handled. The comments below highlights on few of the ways;

> *There is a first aid box which is being used in case of injury. The first aid box assists to give care to anyone injured at the work place before the person is rushed to the hospital (*Fuel Retail Manager*).*

Another participant also adds that;

> *First aid box is being provided in case of any emergency especially when the injury is a minor one but when it's very serious an ambulance is called and the person is taken to the nearest hospital. There are no health personnel assigned to the fuel retail outlet but there have been an establishment of a repour between the fuel retail outlet and a nearby hospital. The nearby hospital is our emergency unit and first point of call aside the first aid (*Fuel Retail Manager*).*

Also, participant added that;

> *As for first aid box there is some here but there is nothing in the first aid box. It is actually empty. We just keep it for formality's sake and nothing else. When there is injury, the best we can do is to release the person off his/her duties for the person to visit the hospital* (Fuel Retail Manager).

It appears that most of the fuel retail outlets have first aid box available with the necessary items supposed to contain while few have the box for formality's sake.

III. The role of regulators in ensuring that health and safety practices are sustained at the fuel retail outlet.

Maintaining workplace safety is crucial to regulating institutions and agencies. As contained in Principle 11 of the Rio Declaration in 1992, Institutional regulations has become part of monitoring and compliance. To understand the specialized roles of such agencies in Ghana, the Environmental Protection Agency (EPA) was a key stakeholder whose views were sought on workplace safety at the fuel retail outlets. Here are the responses of EPA respondent and some Fuel retail outlet Managers on how regulators such as the EPA have helped ensure workplace safety and among others.

> *When it comes to management of petroleum retail outlets, which is mostly called stations, there are categories of institutions that have certain mandates to do. One cannot decouple fire safety, occupational safety, health safety from the environment because any lapse within any of them can results in fire and cause harm to the environment. When it comes to the health and safety at the various retail outlets, there is what we call guidelines for the establishment of these outlets and it's about several institutions coming together. The guidelines do not necessarily speak so much of health and safety but gives certain arrangements that will lead to proper distribution of fuel retail outlets which in effect will result in having proper compatibility arrangements of fuel retail outlet within the society. We evaluate projects which we call Environmental Impact Assessment (EIA) which helps us identify the risk and put in strategies to help mitigate. After evaluation, we make conclusion and give a permit. Some of the key things we look at is emissions, spills and leakages (*Respondent, EPA).

Additionally, as part of its mandates, EPA provides guidelines and also assessment on where and how fuel retail outlets should be located.

*The location of a fuel retail outlet for now, we have provided an entire institutional guideline that establishes distances from proposed fuel retail outlet to certain facilities. Now, when we say community, it could be enlarged, to include public spaces, open spaces, settlements, and other facilities. Per the new guidelines, it gives some room to establish fuel retail outlet close to certain facilities, which means per the new guidelines, a fuel retail outlet can be sited close to a residential facility. And it should not be a problem. In that regard, the only thing is about the safety systems, or mitigation strategies a person's going to put in place to ensure that the impact of the fuel retail outlet is minimal or curable, when it comes to the communities. That does not necessarily indicate that you can just put up a fuel retail outlet within a community without careful considerations. One of the careful considerations is that the assemblies must have zone that place for a fuel retail outlet. Looking at land use systems or land use planning, there is what we call service, industrial or commercial areas. Within residential, there are certain activities that support residential areas. For example, in residential areas, one may have a market close by, a shopping centre, certain activities or warehouse for general goods that support the community. One of them also includes some service stations like a fuel retail outlet. But how it is sited, will be dependent on the situation at hand. For example, if there's a fuel retail outlet, which is surrounded to the north, east, west and south by all residential areas, and the manoeuvring of activities or tracks within the area could cause a nuisance, a permit could be rejected. Though the law allows for residential areas to be closer to fuel retail outlet or fuel retail outlet to be closer to residential areas, it must be done based on its merits after the environmental assessments, it is not verbatim that fuel retail outlets can be close to residential areas so it can always be sited there. No, there are certain assessment that should be done. After thorough assessment and measures we then conclude on the situation at hand and take a decision on whether to grant a permit or not (*Respondent, EPA).

Additionally, the EPA has a role in issuing permits and also sanctioning those who flouts the regulations of the agency.

> *Most people may presume a permit to be a one sheet document that says that you have been granted certificate. We give you that permit, which states that you have been authorized to do an activity, then we spell out conditions for you to follow in the construction and operation of the fuel retail outlet. Now in the permit condition is clearly stipulated and is related in our environmental assessment laws, that if you do not abide by the conditions of the permit we could revoke the permits, we could also suspend a permit for you to put in place certain measures to mitigate an operational lapse that we might have seen. It could be suspended, or it could be cancelled, which means that if you want to revive that activity, you would need to go through that assessment again. And administrative penalties like fines and the law also allows for a prison sentence in some of the worst-case scenarios. (*Respondent, EPA*).*

In the event of a suspension, the EPA takes steps to insist on the right things to be done.

> *As long as they have not put in place the rights, for example, if their suspension takes a long time, it means that it will lead to cancellation of the permit or the revocation, so we could issue a permit, then realize that your way of doing things is not in line with the assessment that you brought, we can revoke the permit or cancel it. Though permits have been given, the law allow us to revoke it if the right measures are not put in place to deal with the impact of your operation.* (Respondent, EPA*).*
>
> *The regulatory bodies like the EPA are really helping and very critical about safety. They mostly visit the fuel retail outlets unannounced to make sure all the safety protocols are followed*

and sanction any fuel retail outlet that do not follow the protocols. The regulators organize health and safety training regularly to abreast workers with new technologies and how best one can avoid disasters at the work place. Both the NPA, EPA, Fire Service and STMA. We also have private regulators who comes in regularly without informing anyone and so we don't just do things anyhow (Fuel Retail Manager).

The Fire Service usually come around to check whether training on fire fighting is regularly done to help workers equip themselves on how to fight fire in case there is any and EPA also comes in once a while to check safety and see to it that the environment is suitable for fuel services and also check the renewal of insurance for the work place and the workers. The Police sometimes come around to check how we discharge fuel and dispose waste too (Fuel Retail Manager).

*We have NPA and EPA who come around monthly to check whether we are following the health and safety policies that are given to us and to also check whether the environment is secured enough. So, they come and check our equipment, check for any faulty stuff on our forecourt and in our office to make sure everything is in the right place (*Fuel Retail Manager*).*

They usually come in. I think some of them come monthly and sometimes too quarterly to come and check whether we are working according to the standards that are required from us. Especially with the Standard Board, when they come, they check

> *our nozzles, our pumps and everything. And we also have the NPA and EPA. They come here to check the fuel in the tank whether we are selling the right fuel or not. They also check the pumps and other stuff. And Vivo Energy also come here to check us regularly whether we are working according to the standard* (Fuel Retail Manager).

The above put into perspective the role of key regulators in ensuring workplace sustainability and safety. The fuel retail outlet managers emphasized the various means through which especially state agencies like the EPA, NPA, the Fire Service and others play their respective roles including providing advisory services to maintain safety at the workplace and also. This is consistent with Yirenkyi's (2016) research, which showed that some regulatory organizations, including the EPA, offer professional guidance on health and safety procedures. However, such a finding contracdits that of Monney et al (2015), who found out that regardless of the emerging threat posed by the oil and gas sector, regulating bodies are reluctant in confronting the issues head-on.

IV. Provision of insurance cover

This section highlights the responses participants provided on how both facilities and the fuel retail outlet staff are insured. Below are some of the responses provided by fuel retail managers.

> *If you look at the assessment as you're creating, in assessments of your operations, you must include a valid insurance for your facility, which means that issues that may relate to impact, for example, like fire, you will be able to get a backbone to support*

and mitigate or compensate the situations that may arise as a result of that. So yes, we look at the insurance to know you had a valid insurance to cover your facility and workers. (Respondent, EPA).

The insurance is not specific to the environment, the insurance is supposed to likely do with a car entrance. So, you do a car entrance to cover the various circumstances that could result in damage to the facility or other persons. So that is done and not specifically to the environment. Now the insurance must be renewable every year. We have our permit structured for 18 months. After every 18 months you're supposed to do another assessment which we call annual report. The annual report evaluates your operations over the past 12 months to tell us how your operations have been and you must also attach the insurance, a valid insurance to your operations before a permit is issued again. A permit is not just issued until the end of the project. As we may call it decommission. Until the project is decommissioned, we will continue to assess, evaluate and ensure that lapses are not encountered (Respondent, EPA).

The fuel pumps are all insured and any other thing here is as well insured. The insurance covers myself and the facility. As for the attendants, they are mostly not fully insured because a lot of them do not work here for a longer period. (Fuel Retail Manager).

The insurance is categorized into three, we have one for the structure, the board and everything is insured, and the products in

the tank is also insured. Then we have the third party which is the workers and any other individual who comes here is insured in case of any damages. Both the structure, which is the burden and the product in the tank and the third parties, the workers and the customers who comes here (Fuel Retail Manager).

There are insurance packages for the workplace as well as the workers and they are all posted on the notice board. The EPA and NPA mostly comes around to check all these stuffs especially the insurance for the workplace. And without them you cannot even be allowed to operate and we are also critical about that because anything can happen at any time. It is a comprehensive one that involves everybody here. It is not only for the pumps or the buildings, we have insurance for the facilities and also a comprehensive one for all. So, in an event where there is an injury, the insurance will cover that (Fuel Retail Manager).

According to Alli (2008), employers should, to the extent possible, provide workers with among other benefit schemes, health insurance and workers' compensation. These schemes should fairly and equally be to all employees. From the study, it can be said that indeed insurance covers are provided for especially for the facilities.

Observation

Using observational checklist, it was evident that most fuel retail outlets have adopted the use of mobile phones at the pump for payment of fuel purchased by customers. Also, fire extinguishers, fire blanket, sand in box, fire

alarms emergency assembly point and emergency response plan are made available at the forecourt of the pumps at the various fuel retail outlets.

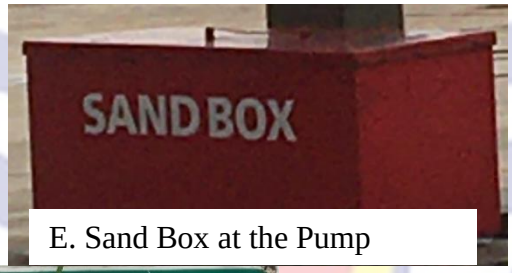
The following are exhibit that shows their availability of safety measures as observed by the researcher and the fuel retail outlets;

A. Fire Alarm

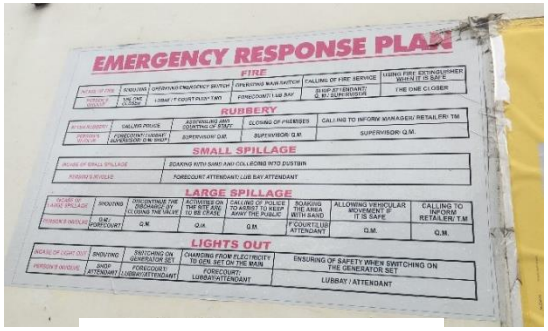
B. Display Of Fire Extinguisher At Pump

C. Fire Blanket

D. Warning Sign

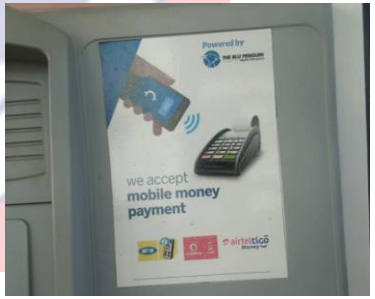


E. Sand Box at the Pump



F. Emergency Response

G. Emergency Assemby Sign



H. Electronic Transaction Notice

***Figure 3*: Exhibit of Safety Measures at the Fuel Retail Outlets**

Chapter Summary

Based on the findings of the research, it was discovered that there were relevant and appropriate safety management practices at the fuel retail outlets in the Sekondi-Takoradi Metropolis. The research showed that a higher percentage of employees have had adequate trainings in health and safety management and standards at the fuel retail outlets and these trainings were conducted in different mix of languages for effective communication purposes and ensuring that all employees understand. Fuel attendants and vehicles complied with instructions and health and safety regulations to a high degree. It was deduced from the study that a significant number of the fuel retail outlets are safety conscious especially with regards to fire outbreaks. This is evident in the fact that a higher percentage of the total fuel retail outlets in the STMA have emergency exits, functional fire extinguishers and early warnings fire detectors and strict rules relating to actions and behaviours that can cause fire outbreaks. Participants agreed that the fuel retail outlets have trained them on harmful chemicals and safe handlings however a significant percentage disagreed that there are early warnings of leakage detectors at the retail outlets. The study conducted showed that 49% of these fuel retail outlets are owned by multinationals and 32% by individuals and remaining by the state.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

A summary of the research methodology, research questions, and research findings are given in this chapter. It also summarizes key findings and gives a brief conclusion from the study. Additionally, this chapter emphasizes suggestions that could significantly help to advance health and safety practices at Ghana's numerous fuel retail outlets.

Summary of the Research Process

The main aim of the study was to assess the health and safety practices at the fuel retail outlets in the Sekondi-Takoradi Metropolis. The study adopted the explorative and descriptive research design. The study, which used both a qualitative and a quantitative method, was primarily pragmatic. One hundred and fifty-four fuel retail attendants were included in the study's sample. The total respondents for the study were one hundred and seventy-seven which included one hundred and fourty-six fuel retail attendants, thirty fuel retail managers and a staff from EPA. Census was used for the selection of the fuel retail attendants and the various managers while purposive sampling was employed for the staff of EPA. The study used questionnaire and interview. The questionnaire was answered by the fuel retail attendants and was made up of items ranked on 5 Likert type scale. The interview was mainly for the fuel retail managers and a staff of EPA. The data from the questionnaire were coded and entered into SPSS (version 22) and were analysed using frequencies and percentages.

Summary of Key Findings

The study's major findings are as follows:

Objective 1: Examine Health and Safety Practices among Fuel Retail Outlets in Sekondi-Takoradi Metropolis (STMA)

From the objective 1, the aim was to examine the health and safety practices among fuel retail outlets in the Sekondi-Takoradi Metropolis. The goal of the study was to learn what procedures the various fuel retail outlets use to make sure that the risk of failure endangering the safety of people, the environment, or infrastructure is as low as is practically possible.

The study revealed that the work place has adequate safety communication measures to aid in their operations. Such measures include drivers putting off their engines before fuelling at the fuel retail outlet, educating employees using plain language when dealing with matters of health and safety and taking feedback to improve communication among others. Accordingly, participants admitted that the organization uses plain language in educating employees and this to a large extent boost work place safety communication.

On the other hand, it was discovered that the least of all health and safety procedures followed in the workplace was adequate safety training. More than one-third (41.1%) of the participants objected to the frequent conduct of medical training as well as its effectiveness at the work place. More than half (58.2%) of the participants are either neutral or consider safety training to be inadequate at the work place.

Objective 2: Determine the Level of Awareness of Health and Safety Practices among Fuel Retail Attendants in STMA

The goal was to ascertain how well-informed fuel retail outlets were about health and safety practices. The purpose to some extent is to appreciate if fuel retail attendants were abreast with health and safety practices. Data analysis revealed that most of the fuel retail attendants were familiar with the use of fire extinguisher. As many as 93.1% of the fuel retail attendants were certain about fire extinguishers being in good working conditions. This is so because they agree that the company conducts safety drills on the usage of fire extinguishers. Also, fire extinguishers are replaced early when faulty or expires and finally fire extinguishers are positioned at vantage points at the various fuel retail outlets. In terms of awareness, most of the participants considered fire extinguisher usage and knowledge as the most familiar health and safety practice at the work place.

Unlike awareness of fire extinguisher usage, participants considered periodic medical examination as the least of the seven variables. About 71.3% of the attendants were not satisfied with how past medical records were updated. Similarly, attendants were not provided with regular check-ups to check their health status with respect to exposure to fumes, and nor were they provided with health insurance policy and medical officer at the workplace at all time.

It is important to note that attendant's displeasure of medical records and health status was mainly influenced by lack of insurance coverage. Throughout the study, not a single fuel retail outlet attendant had an insurance policy paid for by his or her employer.

Objective 3: Identify Measures to Ensure a Functional Health and Safety Management System.

Objective 3 explored measures to ensure functional health and safety management system at the various fuel retail outlets. It is evident from the study that in ensuring sustainability, both regulators and fuel retail outlet managers had a role to play. The display of warning signs, wearing of protective boots, proper disposal of waste, to mention a few are not downplayed at the various retail outlets. Again, the fuel retail outlets had first aid box to deal with potential injuries that were likely to happen. Also, regulators like EPA played their role in sustaining health and safety practices at the various fuel retail outlets. The issuing of permits, sanctions and regular visits to the various fuel retail outlets to check whether the various fuel retail outlets work in by the various health and safety practices is something that is not downplayed. To add up, most fuel retail attendants are not mostly insured and are not usually covered by the insurance package. This, according to the fuel retail managers, is because most of the time, the retail attendants are hired for a short period of time and thus they are not covered.

From the observations made, it can be deduced that indeed electronic and mobile money transactions are gradually becoming acceptable at the various fuel retail outlets as a convenient means of making transactions. However, this violates the fuel retail outlet rules that forbid the use of mobile phones at the pumps.

Conclusion

Based on the key findings of the study, the following conclusion have been drawn:

1. Health and safety practices are not downplayed at the various fuel retail outlets. Effective communication measures plays a vital role at the workplace. Attendants are given safety training before they are employed and are occasionally trained on the job. It was also notable that language is not a barrier in educating employees on issues pertaining to health and safety practices. Little or no room is given to employees to share their challenges on health and safety practices.
2. The awareness of safety measures at the fuel retail outlets to a large extent can be attributed to the safety training and communication strategies imposed by the fuel retail outlets managers and also due to the enforcement of compliance with safety regulations at the various fuel retail outlets. Most fuel retail outlet attendants are aware of the safety measures at the workplace. Satisfying insurance packages for fuel retail attendants and frequent conduct of medical check up needs immediate attention.
3. Adherence to health and safety practices is central to the EPA, NPA as well as the OMCs and other players in the petroleum industry. Ensuring the sustainability of staff, facilities and the environment is also prioritized at the fuel retail outlets.
4. Additionally, the Fire Service, the EPA and NPA among other institution perform their functional roles to ensure adherence to

safety regulations at the fuel retail outlets. Also, there are insurance covers especially for the facility and the environment. However, attendants employed for short-term basis are usually not covered by these insurance policies.

5. It is worth noting from observation that the wave of electronic mode of payment is not eluding these fuel retail outlets. It is fast becoming an acceptable means of making payment for fuel and related products at the fuel retail outlets. This practice, though convenient and fast violates the safety regulation that prohibits the use of mobile and other electronic devices at the workplace. Nonetheless, the relevance of such transactions in boosting sales and promoting the drive for a cashless economy may further increase the frequency of electronic transactions at the fuel retail outlets.

Recommendations

The benefit of maintaining health and safety standards at the fuel retail outlets in Ghana is a subject that must be of a greater priority by the government, industry players and relevant regulatory authorities. Ngeno and Muathe (2014) elaborates on this health promotion programs positively impacts on the welfare of employees and service delivery.

From the conclusions made, it is recommended that:

1. Managers of fuel retail outlets incorporate into their trainings the platform for staff and employees to share their challenges on health and safety practices and find a swift redress mechanism to it.

2. Employees of the fuel retail outlets should ensure their own safety by participating in formal and informal meetings periodically on safety information on notice boards and guiding manuals on safety.
3. In as much as the study observed the existence of regulations and policies regarding health and safety standards, awareness of such policies by staff and employees is low hence minimal utilization of content. It is therefore recommended that all employees are trained and exposed to such policies and regulations as a form of reassurance of health and safety standards by employers.
4. Deliberate effort must be taken by owners of the fuel retail outlets to ensure to provide employees with adequate and satisfying insurance packages.
5. Also, owners of fuel retail outlets can set up a mobile money transaction boot away from the forecourt of the pump at the fuel retail outlet where an electronic transaction can be made in payment of fuel purchased by customers.

Suggestions for Further Research

The study suggest the following two areas for additional study:

1. Subsequent studies in the area of health and safety among fuel retail outlets can focus on the implications of the emerging trends in electronic transactions at the fuel pumps and the risk associated with the practices at the fuel pumps.
2. Additional studies must be carried out in out part of the country to help understand variations and the dynamics of health and safety issues at the fuel retail outlets in different parts of the country.

REFERENCES

Abualrejal, H. (2017). *Occupational Safety and Health Practices In Manufacturing*. *December 2016*.

ACAPS. (2012). Qualitative and Quantitative Research Techniques for Humanitarian Needs Assessment. *ACAPS*, *12*(May), 14. http://reliefweb.int/report/world/qualitative-and-quantitative-research-techniques-humanitarian-needs-assessment.

Achaw, O., & Boateng, E. D. (2012). *Safety practices in the oil and gas industries in Ghana*. *1*(2), 456–465.

Achaw, O., & Boateng, E. D. (2014). Safety practices in the oil and gas industries in Ghana. *International Journal of Development and Sustainability*, *1*, 456–465.

Adeniyi, B. (2014). Pulmonary function and symptoms among petrol pump attendants in Nigeria. *International Journal of Biological and Medical Research*, *5* (1): 3780 – 3784.

Agency, E. P. (2014). *Annual Progress Report*.

Akaranga, S. I., & Makau, B. K. (2016). Ethical Considerations and their Applications to Research: A Case of the University of Nairobi. *Journal of Educational Policy and Entrepreneurial Research*, *3*, 1–9.

Alli, B. O. (2018). *Fundamental Priciples of Occupational Health and Safety* (Second Edi).

Ambituuni, A., Amezaga, J., & Emeseh, E. (2014) Analysis of safety and environmental regulations for downstream petroleum industry operations in Nigeria: Problems and prospects. *Environmental Development*, *9*:43-60.

Amponsah-Tawiah, & Dartey-Baah. (2016). Occupational Health and Safety: Key Issues and Concerns in Ghana. *New Solutions*, *26*(2), 301–313. https://doi.org/10.1177/1048291116652688.

Anderson, J. L., Adams, C. D., Antman, E. M., Bridges, C. R., Califf, R. M., Casey, D. E., Chavey, W. E., Fesmire, F. M., Hochman, J. S., Levin, T. N., Lincoff, A. M., Peterson, E. D., Wenger, N. K., Wright, R. S., Smith, S. C., Alice, K., Adams, C. D., Anderson, J. L., Antman, E. M., … Riegel, B. (2012). *ACC/AHA 2007 Guidelines for the Management of Patients With Unstable Angina/Non–ST-Elevation Myocardial Infarction*. https://doi.org/10.1016/j.jacc.2007.02.013

Ansah, E.W (2017). Psychological Safety Climate As a Predictor of Accra, Ghana. *Occupational Medicine*, *53*(4), 130.

Ansah E.W & Mintah J.K. (2012). Safety Management Practices at Fuel Service Stations in Central and Western Regions of Ghana. *Nigerian Journal of Health Education*, *Vol. 16.1*(June), 78–89.

Apuke, O. D. (2017). Quantitative Research Methods : A Synopsis Approach. *Kuwait Chapter of Arabian Journal of Business and Management Review*, *6*(11), 40–47. https://doi.org/10.12816/0040336.

Ayee, J. R. A. (2019). *The Formulation and Implementation of Environmental Policy in Ghana*. *23*(2), 99–119.

Bajpai, P. (2017). Best Available Techniques. *Pulp and Paper Industry*, 31–35. https://doi.org/10.1016/b978-0-12-811099-7.00003-4

BBC. (2017). Ghana's Capital Rocked by Huge Gas Blasts - BBC News. In *BBC News*. https://www.bbc.co.uk/news/world-africa-41541001

Bhagawati, B. (2015). Basics of occupational safety and health. *Journal of Environment, Science, Toxicology, Food and Technology*, *9*: 91-94

Boru, T. (2018). *Chapter Five Research Design and Methodology 5 . 1 . Introduction*. *December*. https://doi.org/10.13140/RG.2.2.21467.62242

Cantwell, P. J. (2020). In: Encyclopedia of Survey Research Methods. *Encyclopedia of Survey Research Methods*, 885–886.

Chauhan, N. (2013). Safety and Health Management System in Oil and Gas Industry. *WIPRO*.

Chibwe, J. C., & Khan, M. A. (2021). A study of adherence to occupational health and safety standards of fuel service stations in Harare A study of adherence to occupational health and safety standards of fuel service stations in Harare. *GARA's International Conference on Enriching ELearnig Managemant for Global Education: New Norm Viewpoint (ICELMGE 2020}, December 2020*, 201–220.

CitiNewsroom. (2017). Atomic Junction Explosion. *Citi Newsroom*, *October*, 2–5. https://twitter.com/citi973/status/916942818299461632?lang=en

Daniel, E. (2016). The Usefulness of Qualitative and Quantitative Approaches and Methods in Researching Problem-Solving Ability in Science Education Curriculum. *Journal of Education and Practice*, *7*(15), 91–100. https://doi.org/2222-288X

Eddington, I. (2006). An Historical Explanation of the Development of Occupational Health and Safety and the Important Position it now Occupies in Society. *Procedings AEC 2006: Queensland Safety*

Forum, 1–13. https://eprints.usq.edu.au/1556/1/Eddington_USQ_Queensland_Safety_Forum_2006.pdf

EPA (2019), *Functions of the Environmental Protection Agency. Accra*

Etikan, I. (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*, *5*(1), 1. https://doi.org/10.11648/j.ajtas.20160501.11

Ford, J. L., & Stephens, K. K. (2018). *Pairing Organizational and Individual Factors to Improve Employees'Risk Responsiveness*. https://doi.org/10.1177/0893318918774418

Fouka, G., & Mantzorou, M. (2011). What are the Major Ethical Issues in Conducting Research? Is there a Conflict Between the Research Ethics and the Nature of Nursing? *Health Science Journal*, *5*(1), 3–14.

Goldkuhl, G. (2004). *Meanings of Pragmatism : Ways to Conduct Information Systems Research*. 17–18.

Gratton, C. & Jones, I. (2009) Research Methods for Sports Studies, 2nd edition, London: Routledge.

Gyekye, S. A. (2003). Occupational health and safety: Key issues and concern in Ghana. *International Journal of Business and Social Science*, *2* (14): 119 - 126.

Health Management (2018). Brief History Occupational Health. Pdf. Retrieved fromhttps://www.healthmanagement.co.uk/sites/ default/ files/paragraph/image/Health-Management_brief-history-occupational-health.pdf.

Heijnen, J. H., Jussi Hanhimaki, Steiner, A., Abiko, T., Obara, M., Ushioda, A., Hayakawa, T., Hodges, M., Yamaya, T., Amin, S., Snidal, D., Dissertation, B. A., In, S., Of, F., Requirements, T. H. E., The, F. O. R., Of, A. A., Doctor, T. H. E., … Hinsley, F. . (2013). Assesment of Workers' Health and Safety At Workplaces:A case of the Wntworth Resources LTD and OLAM in Mtwara Municipality. *SSRN Electronic Journal*, *1*(2), 99-117.

http://www.eldis.org/vfile/upload/1/document/0708/DOC23587.pdf%0Ahttp://socserv2.socsci.mcmaster.ca/~econ/ugcm/3ll3/michels/polipart.pdf%0Ahttps://www.theatlantic.com/magazine/archive/1994/02/the-coming-anarchy/304670/%0Ahttps://scholar.google.it/scholar?q=Scha

Heinrich, H. W., Petersen, D., & Roos, N. (1980). *Industrial accident prevention: A safety management approach* (5th ed.). New York, NY: McGraw-Hill.

HM Government. (2022). *Integrated Pollution Prevention and Control – The Developing and Setting of Best Available Techniques (BAT) Provisional Framework Outline Agreement and Concordat* (Issue February).

Hoscan, O., & Cetinyokus, S. (2021). Determination of emergency assembly point for industrial accidents with AHP analysis. *Journal of Loss Prevention in the Process Industries*, *69*, 104386.

Hulke, S. M., Patil, P., Thakare, A., & Vaidya, Y. P. (2012). Lung function test in petrol pump workers. *National Journal of Physiology, Pharmacy & Pharmacology*, *2* (1): 71-75.

Idubor, E. E., & Oisamoje, M. D. (2013). *An Exploration of Health and Safety Management Issues in Nigeria's Effort to Industrialize*. *9*(12), 154–169.

ILO. (1955). International Labour Organization. In *International Labour Organization*

Jonathan, G. K. (2016). *Maintaining Health and Safety at Workplace : Employee and Employer ' s Role in Ensuring a Safe Working Environment*. *7*(29), 1–7.

Kakwi, J. D. (2020). *Compliance with Occupational Safety Practices among Petrol Station Pump Attendants in Kaduna State, Nigeria*. *November*.

Kamakura, Y. (2016). *Occupational Safety and Health and Skills in the Oil and Gas Industry Operating in Polar and Subarctic Climate Zones of the Northern Hemisphere* (Issue January).

Kawulich, B. (2015). *Collecting Data through Observation*. *January 2012*.

Lauring, J. (2008). *Rethinking Social Identity Theory in International Encounters. Language Use as a Negotiated Object for Identity Making*. *8*(3), 343–361. https://doi.org/10.1177/1470595808096673

Lavicoli, S., Natali, E., Deitinger, P., Rondinone, B. M., Ertel, M., Jain, A., & Leka, S. (2011). *Occupational Health and Safety Policy and Psychosocial Risks in Europe : The Role of Stakeholders ' Perceptions*. https://doi.org/10.1016/j.healthpol.2010.08.005

Leedy, P. D., & Ormrod, J. E. (2010). *Practical Research Planning and Design* (Ninth Edit).

Liu, S., Nkrumah, E. N. K., Akoto, L. S., Gyabeng, E., & Nkrumah, E. (2020). The State of Occupational Health and Safety Management Frameworks (OHSMF) and Occupational Injuries and Accidents in the Ghanaian Oil and Gas Industry: Assessing the Mediating Role of Safety Knowledge. *BioMed Research International*, *2020*. https://doi.org/10.1155/2020/6354895

McQuiston, T. H., Zakocs, R. C., Loomis, D. (1998). The case for stronger OSHA enforcement:Evidence from evaluation research. *American Journal of Public Health, 88* (7): 1022-1024.

Md Ghazali, N. H. (2016). A Reliability and Validity of an Instrument to Evaluate the School-Based Assessment System: A Pilot Study. *International Journal of Evaluation and Research in Education (IJERE)*, *5*(2), 148. https://doi.org/10.11591/ijere.v5i2.4533

Ministry of Local Government (2019). Population of Sekondi-Takoradi Metropolis. *Ghana Publication Company.*

Molamohamadi, Z., & Ismail, N. (2014). *The Relationship between Occupational Safety , Health , and Environment , and Sustainable Development : A Review and Critique*. *5*(3). https://doi.org/10.7763/IJIMT.2014.V5.513

Monney, I., Dramani, J., Aruna, A., Tenkorang, A., & OseiPoku, F. (2015). Health and safety in high-risk work environments: A study of fuel service stations in Ghana. *Journal of Environmental and Occupational Science*, *4*(3), 132. https://doi.org/10.5455/jeos.20150903100137

Morgan, R. W. (2002). Occupational Health Studies. In *Wireless Phones and Health* (Issue August). https://doi.org/10.1007/0-306-46899-9_17

Moturi, W. K. N., & Makindi, S. M. (2019). *Occupational Safety and Health Management Systems and Their Compliance among Petrol Stations in Kenya : A Case Study in Nakuru County Occupational Safety and Health Management Systems and Their Compliance among Petrol Stations in Kenya : A Case Study in N*. *August*. https://doi.org/10. 9734/ jast/2019/v37i230275

Muijs, D. (2004). Doing Quantitative Research in Education With SPSS. In *SAGE Publications*. https://doi.org/10.7748/ns.29.31.44.e8681

Mutungi, J. K. (2020). *Occupational Hazards Awareness and Safety Practices Among Petrol Service Station Workers in Nakuru County, Kenya*.

Nasab, H. S., Ghofranipour, F., Kazemnejad, A., Khavanin, A., & Tavakoli, R. (2009). *Evaluation of Knowledge , Attitude and Behavior of Workers towards Occupational Health and Safety*. *38*(2), 125–129.

Ngeno, W. K., & Muathe, S. (2014). Critical Review of Literature on Employee Wellness Programs in Kenya. *International Journal of Research In Social Sciences*, *4*(8), 32–41. https://pdfs.semantic scholar.org/d338/604ca563e 56b4c554c523558a8 5f2db03ef9.pdf

Nieminen P. M. (2005). Environmental Protection Standards at Petrol Stations: A comparative Study between Finland and selected European countries. Finland: Tampere University of Technology, Publication

Niskanen, T. (2017). *Assessing the Safety Environment in Work Organization of Road Maintenance Jobs*. *4575*(March 1994). https://doi.org/10.1016/0001-4575(94)90066-3

Nonaka, I., Toyama, R., & Konno, N. (2000). SECI, Ba and leadership: a unified model of dynamic knowledge creation. *Long range planning*, *33*(1), 5-34.

Nutbeam, D. (1990). Health Promotions Glossary, *Health Promotion 1*, 113-127.

Nwagbaraocha, J. (2011). *Africa: strengthening EHS regulatory framework*. In Dabup, L.N., (2012), Health, Safety and Environmental Implications in Nigeria's Oil and Gas Industry.Thesis Submitted to Nelson Mandela Metropolitan University, Port Elizabeth, South Africa. 3 – 26

Obese, E. (2010). *Occupational Health and Safety Practices of University of Cape Coast*.

Oe, J., & Qm, U. (2018). Assessment of Occupational Hazards, Health Problems and Safety Practices of Petrol Station Attendants in Uyo, Nigeria. *Journal of Community Medicine and Primary Health Care*, *30*(1), 47-57–57.

Olusegun, A. T., Folakemi, O. O., & Omotayo, S. K. (2011). Assessment of Safety Practices inFilling Stations in Ile – Ife, South Western Nigeria. *Journal of Community Medicine and Primary Health Care.*Vol. 23.N 1 and 2. 9 – 15.

Palmer, C., & Bolderston, A. (2006). A Brief Introduction to Qualitative Research. *Canadian Journal of Medical Radiation Technology*, *37*(1), 16–19. https://doi.org/10.1016/s0820-5930(09)60112-2

Petrolplaza. (2018, July 27). *NPA - National Petroleum Authority of Ghana*. Retrieved from petrolplaza.com: https://www.petrolplaza.com/organisations/1661

Punch, K. F. (2013). *Introduction to social research: Quantitative and qualitative approaches*. sage.

Razali, N. A. (2018). A study on Safety Management Practices and Safety Performance. *The European Proceedings of Social & Behavioural Sciences, July*. https://doi.org/10.15405/epsbs.2018.07.02.27.

SAGE. (2009). Quantitative Research Methods. *SAGE Publications*, 1–37.

Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research Methods for Business Studies* (P. E. Limited (Ed.); Fourth Edi). Prentice Hall.

Şenik, B., & Uzun, O. (2022). A Process Approach to the Open Green SSpace ystem Planning. *Landscape and Ecological Engineering*, *18*(2), 203–219. https://doi.org/10.1007/s11355-021-00492-5

Service, G. S. (2021). Population of Regions and Districts. In *Ghana Statistical Servive* (Vol. 3A, Issue November).

Shaban, A. R. A. (2015). Ghana Mourns "Fire and Flood" Victims of June 3, 2015 Tragedy | Africanews. In *Africanews*. https://www.africaews.com/2016/06/03/ghana-mourns-fire-and-flood-victims-of-june-3-2015-tragedy//

Sholihah, Q., Satria, A., Alim, A., & Fauzia, R. (2016). Ergonomics Awareness as Efforts to Increase Knowledge and Prevention of Musculoskeletal Disorders on Fishermen. *Aquatic Procedia*, *7*, 187–194. https://doi.org/ 10.1016/j.aqpro.2016.07.026

Silverstein, M. (2008). Getting home safe and sound: Occupational safety and health administration at 38. *American Journal of Public Health., 98* (3): 416–423.

Singhal, M., Khaliq, F., Singhal, S., & Tandon, O. P. (2007) Pulmonary function in petrol pump workers: A preliminary study. *Indian Journal of Physiology and Pharmacology, 51* (3):244 - 248

Smith, G. S. (2001). *Public health approaches to occupational injury prevention : do they work ? 7*(Suppl I), 3–10.

Song, J. H., Chai, D. S., Kim, J., & Bae, S. H. (2018). Job performance in the learning organization: The mediating impacts of self- efficacy and work engagement. *Performance Improvement Quarterly*, *30*(4), 249-271.

Stiglitz, J. (2001). Employment, Social Justice and Societal Well-being. Presentation at ILO Global Employment Forum, Geneva, Switzerland.

Tongco, M. D. C. (2007). Purposive sampling as a Tool for Informant Selection. *Ethnobotany Research and Applications*, *5*, 147–158. https://doi.org/1 0.17348/era.5.0.147-158

Tran, T. (2017). *Research Choice : Pragmatism in Conducting Research About University- Enterprise Collaboration in the Vietnamese Context*. https://doi.org/10.24140/issn.1645-7250.rle36.05

Tu, R. H., Mitchell, C. S., Kay, G. G., & Risby, T. H. (2004). Human exposure to 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. Journal of Environmental and Public Health. . *In*: Ansah, E.W., and Mintah, J.K., (2012). Safety Management Practices at Fuel Service Stations in Central and Western Regions of Ghana. *Nigerian Journal of Health Education.*Vol. 16.1, 2012. 78 – 89.

Umugwaneza, C., Nkechi, I. E., & Mugabe, J. B. (2019). Effect of Workplace Safety and Health Practices on Employee Commitment and Performance in Steel Manufacturing Companies in Rwanda. *European Journal of Business and Management Research*, *4*(5), 1–11. https://doi.org/10.2 4018/ejbmr.2019.4.5.84

UNCT. (2015). Ghana Flood Situation Report. *Biomass Chem Eng*, *49*(23–6), 1–15.

Vinodkumar, M. N. (2010). Safety Management Practices and Safety Behavior: Assessing the Mediating Role of Safety Knowledge and Motivation. Accident Analysis and Prevention. *Accident Analysis & Prevention*, 2082-2093.

WHO, (1994). Global strategy on Occupational Health for all: The way to Health at Work. 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

Xue, C., & Tang, L. (2019). *Organisational Support and Safety Management: A Study of Shipboard Safety Supervision*. https://doi.org/10.1177/1035304619869575

Yee, L. H., & AL-Rejal, H. M. E. A. (2006). *Occupational Safety and Health Practices in Manufacturing Industry*. 782–792.

Yirenkyi, G. (2016). *Occupational Health and Safety Audit of Fuel Filling Stations in the Agona Nkwanta, Inchaban and Sekondi-Takoradi Metropolis in Ghana.* Kwame Nkrumah University of Science and Technology.

Zwi, A., Fonn, S., & Steinberg, M. (1988). Occupational health and safety in South Africa: The perspectives of capital, state and unions. *Social Science and Medicine, 27*(7), 691–702. https://doi.org/10.1016/0277-9536(87) 90329-7

APPENDICES

APPENDIX A: QUESTIONNAIRE

RESEARCH INSTRUMENT (1).

UNIVERSITY OF CAPE COAST

HEALTH AND SAFETY PRACTICES IN THE DOWNSTREAM PETROLEUM SECTOR: A CASE STUDY OF FUEL RETAIL OUTLETS IN THE SEKONDI-TAKORADI METROPOLIS

QUESTIONNAIRE FOR FUEL RETAIL OUTLETS ATTENDANTS

Ms. Irene Baaba Asankomah Arthur is a Master of Philosophy (Mphil) student in Oil and Gas Resource Management with the Institute for Oil and Gas Studies, University of Cape Coast (UCC).

As part of the academic requirement for Mphil degree in Oil and Gas Resource Management, Irene is required to undertake an independent field research. When completed, the research, among other outcomes, is predicted to determine the level of awareness with regards to health and safety and their existing health and safety practices that are currently adhered to. By extension, it will help ensure sustainability in the long run.

This research questionnaire is, therefore, to solicit for relevant empirical data for the completion of this academic exercise on the subject **"Health and Safety Practices Among Fuel Retail Outlets in the Sekondi-Takoradi Metropolis"**. Please be assured that this study is **strictly** for academic purposes and you are therefore assured of **anonymity** and **confidentiality** of the information you will provide.

Kindly **[✓]** and write your answers where applicable.

Thank you. `

SECTION A: Socio-Demography Characteristics

1. **Name of Fuel Retail outlet**……

2. **Sex of respondent:**

   Male [ ] Female [ ]

3. **Age of respondents (years):**

   18-25 [ ] 45-55 [ ]

   26-35 [ ] 36-45 [ ]

   56+ [ ]

4. **Educational background**

   a) Tertiary [ ]

   b) Senior High School [ ]

   c) Junior High School [ ]

   d) Basic [ ]

   e) None [ ]

   f) Others (please specify) …….

5. **Ownership**

   a) Multinational company [ ]

   b) Individual private owned [ ]

   c) State owned [ ]

6. **How long have you worked with this Fuel Retail Outlet?**

   a. 6day – 6 months [ ] d) Above 2years [ ]

   b. 6months – 1year [ ]

   c. 1year – 2years [ ]

SECTION B: Health and safety practices among fuel retail outlets in Sekondi-Takoradi Metropolis (STMA).

Kindly rate the following prevailing safety management practices at your work place using 1= Strongly Disagree, 2= Disagree, 3=Neutral, 4= Agree, 5=Strongly Agree (tick ✓ as appropriate).

Variable	Scale				
1. Adequate safety training.	**1**	**2**	**3**	**4**	**5**
a) My employer conducts effective medical training regularly.	**1**	**2**	**3**	**4**	**5**
b) My employer provides well-structured safety manuals.	**1**	**2**	**3**	**4**	**5**
c) I use modern ICT tools at my workplace.	**1**	**2**	**3**	**4**	**5**
d) I am equipped on how to respond to hazards, accidents or near misses.	**1**	**2**	**3**	**4**	**5**
2. Enforcement of safety rules.					
a) My employer clearly defines the rules for effective rule enforcement	**1**	**2**	**3**	**4**	**5**
b) My employer provides consistent rule compliance feedback	**1**	**2**	**3**	**4**	**5**
c) My employer enforce consequences	**1**	**2**	**3**	**4**	**5**
d) My employer measure and improve the rule enforcement process	**1**	**2**	**3**	**4**	**5**
3. Effectiveness of health and safety training.					
a) Health and safety programs align with the company's vision and objectives.	**1**	**2**	**3**	**4**	**5**
b) Health and safety training are relevant.	**1**	**2**	**3**	**4**	**5**
c) My employer uses modern health and safety equipment/ tools during training.	**1**	**2**	**3**	**4**	**5**
d) My employer ensures that training sessions are conducted in diverse languages such as English, Twi or other relatable language to staff.	**1**	**2**	**3**	**4**	**5**
4. Adequate Safety communication					
a) I ensure that all drivers put off their engines before fuelling at my fuel retail outlet.	**1**	**2**	**3**	**4**	**5**
b) I educate and uses plain language when dealing with matters of health and safety at the workplace	**1**	**2**	**3**	**4**	**5**
c) My employers take feedback from me	**1**	**2**	**3**	**4**	**5**
d) My employers use the feedback to improve communication	**1**	**2**	**3**	**4**	**5**

5. Adequate safety facilities					
a) The workplace has infrastructure that supports health and safety	**1**	**2**	**3**	**4**	**5**
b) Adequate PPEs are provided at the workplace	**1**	**2**	**3**	**4**	**5**
c) There are containers to hold various wastes at the work place.	**1**	**2**	**3**	**4**	**5**
d) There are safety exits at the workplace in case of explosions or fire outbreak	**1**	**2**	**3**	**4**	**5**
6. Emergency response procedures are efficient					
a) The facility is built in a way that emergency safety officials such as fire service and others can easily attend to in case of fire outbreak	**1**	**2**	**3**	**4**	**5**
b) My company has effectively dealt with adjourning structure that obstructs access to the facility	**1**	**2**	**3**	**4**	**5**
c) My company has laid down procedures on how employees are trained in how to handle disasters	**1**	**2**	**3**	**4**	**5**
d) My company organizes regular workshop in collaboration with agencies such as the police and fire service on how to contain and report such accidents.	**1**	**2**	**3**	**4**	**5**

SECTION C: Level of awareness of health and safety practices among fuel retail attendants in STMA.

Kindly rate the following prevailing safety management practices at your work place using 1= Strongly Disagree, 2= Disagree, 3=Neutral, 4= Agree, 5=Strongly Agree (tick ✓ as appropriate).

Variable	Scales				
1. Awareness of safety measures	**1**	**2**	**3**	**4**	**5**
a) My company enforces double-checking the work area before the commencement of work every day.	**1**	**2**	**3**	**4**	**5**
b) My employer ensures that workers are attentive when working with the fuel pump.	**1**	**2**	**3**	**4**	**5**
c) There are safety measures in place at the workplace to prevent potential fire outbreak to maintain productivity	**1**	**2**	**3**	**4**	**5**
d) There are first aid kits at the workplace.	**1**	**2**	**3**	**4**	**5**
2. Knowledge of Fire Extinguisher Usage					
a) Fire extinguishers are in working condition.	**1**	**2**	**3**	**4**	**5**
b) My company conducts safety drills on the use of fire extinguishers.	**1**	**2**	**3**	**4**	**5**
c) There is a timely replacement for expired and faulty/damaged fire extinguishers	**1**	**2**	**3**	**4**	**5**
d) Fire extinguishers are at vantage points on site	**1**	**2**	**3**	**4**	**5**
3. Awareness of practices that pose health hazard					
a) My employers educate employees on activities that pose hazards at the workplace	**1**	**2**	**3**	**4**	**5**
b) My employers ensure all employees supervise each other's work to ensure it is done properly	**1**	**2**	**3**	**4**	**5**
c) My employers advocate that when damaged fuel pumps are operating poorly, there are immediately shut down.	**1**	**2**	**3**	**4**	**5**
d) My employers have laid down policy in dealing with complacent workers	**1**	**2**	**3**	**4**	**5**
4. Awareness of safe assembly point during fire/disaster outbreak					
a) There is an emergency assembly point(s) in case of hazards or explosions	**1**	**2**	**3**	**4**	**5**
b) There are visible markings to direct workers to those points of assembly	**1**	**2**	**3**	**4**	**5**

c)	Points of assembly is free from sources of hazards and explosion	**1**	**2**	**3**	**4**	**5**
d)	There are frequent drills to practice how best to access the emergency assembly point during an emergency.	**1**	**2**	**3**	**4**	**5**
5.	**Awareness of harmful VOC* associated with petrol fumes**					
a)	My company Educates the workers about fume hazards	**1**	**2**	**3**	**4**	**5**
b)	Workers are educated about chemical hazards.	**1**	**2**	**3**	**4**	**5**
c)	My company has laid down procedure in dealing with workers that have been exposed to hazards.	**1**	**2**	**3**	**4**	**5**
d)	There are leakage-detecting equipment to detect leaking pumps at the workplace.	**1**	**2**	**3**	**4**	**5**
6.	**Exposure to OHS** policies**					
a)	My company provides health and safety policies to its workers	**1**	**2**	**3**	**4**	**5**
b)	My company educates the workers on health and safety policies	**1**	**2**	**3**	**4**	**5**
c)	My company examines workers understanding of the company's health and safety policy	**1**	**2**	**3**	**4**	**5**
d)	The Company's health and safety policy is amended from time to time	**1**	**2**	**3**	**4**	**5**
7.	**Periodic Medical Examination**					
a)	There are regular check-ups to check the workers' health status with respect to exposure to the fumes	**1**	**2**	**3**	**4**	**5**
b)	The company provides workers with a health insurance policy	**1**	**2**	**3**	**4**	**5**
c)	My company ensures that a medical officer is present at the workplace all the time	**1**	**2**	**3**	**4**	**5**
d)	My company has an updated records of worker's past medical records	**1**	**2**	**3**	**4**	**5**

APPENDIX B: INTERVIEW GUIDE
RESEARCH INSTRUMENT (2).

UNIVERSITY OF CAPE COAST

HEALTH AND SAFETY PRACTICES IN THE DOWNSTREAM PETROLEUM SECTOR: A CASE STUDY OF FUEL RETAIL OUTLETS IN THE SEKONDI-TAKORADI METROPOLIS

QUESTIONS FOR MANAGERS OF FUEL RETAIL OUTLETS

1. In what ways have sustainable Health and Safety practices been ensured in your workplace?
2. Are there insurance cover for the staff, workplace and facilities?
3. What are some of the mitigation strategies in place in case of injuries and disasters at the workplace?
4. What is the role of regulators in ensuring that health and safety practices are sustained at the fuel retail outlet?

QUESTIONS FOR THE ENVIROMENTAL PROTECTION AGENCY (EPA)

1. In what ways have sustainable Health and Safety practices been ensured for the fuel retail outlet?
2. Are there insurance cover for the staff, workplace and facilities of the fuel retail outlet?
3. What are some of the mitigation strategies in place in case of injuries and disasters to a staff, facility or the workplace of the fuel retail outlet?
4. What is the role of EPA in ensuring that health and safety practices are sustained at the fuel retail outlet?

APPENDIX C: ETHICAL CLEARANCE

UNIVERSITY OF CAPE COAST
INSTITUTIONAL REVIEW BOARD SECRETARIAT
TEL: 0558093143 / 0508878309
E-MAIL: irb@ucc.edu.gh
OUR REF: UCCIRB/A/2016/1202
YOUR REF:
OMB NO: 0990-0279
IORG #: IORG0009096

12TH JANUARY, 2022

Ms. Irene Baaba Asankomah Arthur
Institute for oil and Gas Studies
University of Cape Coast

Dear Ms. Arthur

ETHICAL CLEARANCE – ID (UCCIRB/CHLS/2021/43)

The University of Cape Coast Institutional Review Board (UCCIRB) has granted Provisional Approval for the implementation of your research titled **Health and Safety Practices in the Downstream Petroleum Sector: A Case Study of Fuel Retail Outlets in the Sekondi-Metropolis.** This approval is valid from 12th January, 2022 to 11th January, 2023. You may apply for a renewal subject to submission of all the required documents that will be prescribed by the UCCIRB.

Please note that any modification to the project must be submitted to the UCCIRB for review and approval before its implementation. You are required to submit periodic review of the protocol to the Board and a final full review to the UCCIRB on completion of the research. The UCCIRB may observe or cause to be observed procedures and records of the research during and after implementation.

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

Always quote the protocol identification number in all future correspondence with us in relation to this protocol.

Yours faithfully,

Samuel Asiedu Owusu, PhD
UCCIRB Administrator

ADMINISTRATOR
INSTITUTIONAL REVIEW BOARD
UNIVERSITY OF CAPE COAST