

ASSESSMENT OF THE HEALTH AND SAFETY PRACTICES AT FILLING STATIONS IN BLANTYRE CITY, MALAWI

CHISOMO MLENGA

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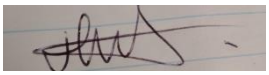
THYOLO, MALAWI

DISSERTATION SUBMITTED TO NDATA SCHOOL OF CLIMATE AND EARTH SCIENCES OF THE MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE IN PETROLEUM GEO-SCIENCES

29 APRIL 2025

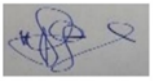
DECLARATION

I Chisomo Mlenga declare that this research project represents my own work and that it has never been submitted to this institution or any other institution for any academic purpose. All sources of information have been appropriately acknowledged

Signature 

DISSERTATION APPROVED BY

SUPERVISOR:

Mr. Wilson Tchongwe Signature: ……  ……

ASSESSOR Signature……

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ABSTRACT

Globally, the effects of human activity on the physical environment have become more pronounced, especially in metropolitan areas, as a result of population growth and the expansion of businesses like petrol stations. In Blantyre, filling stations are being built close to one another in populated locations and some cases, adjacent to residential areas, which is against the law and the recommended health and safety guidelines. The paper sought to assess the health and safety practices in petrol stations in Blantyre County. Primary data was collected from questionnaires and key informant interviews based on purposive sampling, whereas secondary data was obtained from reports. Both quantitative and qualitative analysis of data was done. SPSS was used to code and analyze quantitative data. Relative frequencies were determined through descriptive statistics of data. Utilizing percentages and frequency, data was compared and corroborated. Correlation and regression were used in inferential statistics to determine relationships between connected variables. The results indicate that the majority of employees undergo training and have knowledge of safety awareness measures. Although the majority (90%) of the filling stations provided employees with full protective gear, several station facilities provided their employees with footwear alone, exposing employees to the risk of injury. In addition, the majority of the petrol stations had a minimum of at least a fire extinguisher in readiness to handle fire emergencies. Some employees are not aware of the OSHA policies, fire extinguisher use, safety measures, safety standards and what to do in case of emergencies. This study recommends that MERA should increase the inspections and ensure that filling stations adhere to the recommended level of health and safety standards.

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ABBREVIATIONS

DPR : Department of Petroleum Resources

OSH : Occupational Safety and Health

ILO : International Labour Organization

BTEX : Benzene, Toluene and Xylenes

WHO : Word Health Organisation

NIOSH : National Institute for Occupational Safety and Health

PPE : Personal protective equipment

OHSAS : Occupational Health and Safety Assessment Series

NFPA : National Fire Protection Association

FRSC : Federal Road Safety Commission

SPSS : Statistical Package for the Social Sciences

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Chapter 1: Introduction

1.1. Background

According to Ayodele (2011), petrol filling station is defined as any piece of land, building or equipment used for the sale or dispensing of petrol or oil for motor vehicles. Due to the fact that fuel, a product of petroleum resources, is highly inflammable, petrol station needs to be appropriately located in relation to other activities to avoid its consequent impact on the immediate environment (Agbola, 2004).

The location of petrol filling stations deserves adequate planning, guidance and adherence to the existing location guidelines because of its significance to the health and safety of the people (Victor and Adepiyi, 2022). Despite the importance, the petrol stations bring to the communities, they ought to be appropriately located and sustainably developed to ensure the safety and health of the communities (Victor and Adepiyi, 2022).

1.2. Problem statement

Although research on safety and health of people posed by filling stations surrounding Blantyre or in Malawi ost of the academic literature on Malawi has focused on issues relating to fuel prices and the economic benefits of petrol stations, fuel demand and health impacts (Gamula, et. al., 2013).

Oloko-oba et al (2016) had also observed that most of the petrol filling stations in Ilorin in Kwara State of Nigeria, exhibited clustered pattern distribution which violates guidelines for petrol stations location hence leading to health and safety challenges. Furthermore, Samuel et al (2015) revealed that the petrol filling stations in Obio Akpor LGA in Rivers State of Nigeria have a negative impact on personal health and safety.

Routine inspections conducted by the Malawi energy regulation authority (MERA) between July 2020 and June 2021 had raised an alarm Over the failure by many filling stations in the country to adhere to health and safety standards due to lack of proper information about health and safety practices to fuel

attendants (Kalumbi, L. R. 2023). Therefore, this research I was assessing the health and safety practices in petrol filling stations in Blantyre Malawi.

1.3. Objectives

1.3.1. Main objectives

To assess the health and safety practices posed by falling stations in Blantyre city.

1.3.2. Specific objectives

a. To evaluate the adherence of petrol stations to existing health regulations and safety standards
b. To determine the levels of knowledge regarding occupational health and safety hazards
c. To examine potential sources of occupational health hazards among petrol filling station.

1.3.2. Research questions

i. How do the health and safety practices in fuel service stations in Blantyre align with national regulations and international standards?
ii. What are the levels of knowledge regarding occupational health hazards among petrol stations' workers?
iii. What are potential sources of occupational health hazards in falling stations?

1.3.3. Significances of the study

The petroleum retail industry in Malawi plays a crucial role in the country's economic and transportation sectors, yet there remain lack of knowledge of fuel attendants on safety and health practices. This gap limits the effectiveness of current occupational health and safety (OHS) interventions and policies. The significance of this study lies in its potential to generate empirical evidence that can inform the development and implementation of more targeted, effective, and contextually appropriate safety measures.

By assessing the level of awareness, current practices and training related to occupational health hazards among petrol station workers, this study aims to contribute valuable insights that can guide both governmental and organizational stakeholders in formulating strategic interventions. These may include improved training programs, enforcement of safety regulations, and the provision of adequate personal protective equipment (PPE).

Chapter 2: Literature review

2.1 An overview of Occupational safety and health practice

Occupational injuries are a key source of health complications affecting the working population. Consequently, Occupational Safety and Health (OSH) focus on promoting a hazard-free working environment (Vwila et al., 2015). Occupational Health and Safety is perceived as both proactive and preventive approach that entails hazard identification and mitigation, risk assessment and treatment of workplace in an effort to provide workers with a safe working environment (Edward, 2014). The International Labour Organization (ILO), established in 1919 main aim is promoting a safe, descent and healthy working environment.

Several years ago, the ILO formulated a policy comprising international instruments and guidance documents to build capacity in constituent nations and major organizations appropriately manage workplace hazards (ILO, 2009). Unfortunately, Nigeria is still facing a series of challenges with functioning bodies that are meant to supervise and deliver sanctions to workplaces that are found to be noncompliant to regulations (Illoh, 2016). Even though the petroleum regulatory agency of Nigeria has given statutory responsibility of ensuring compliance with petroleum laws, regulations, and guidelines in the oil and gas sector, to other departments such as DPR, some petroleum marketers hardly abide by this regulation. Hence the reasons why most pump attendants are at risk of occupational hazards. Some of the guidelines of the DPR which includes, ensuring that the health and safety and environment regulations conform to national and international best oil field practice have hardly been evaluated (Akinwale & Olasunmbo, 2016).

According to the DPR (2010), management at every petrol filling station is required to train and educate their employees on the importance of maintaining workplace safety. DPR (2010) further adds that effective training and education of employees necessitate the identification of training needs through assessment of existing workplace. Furthermore, it is important that the training should incorporate aspects such as emergency procedures and spillage control during

dispensing that involves quick assessment of hazard situations and identification of the appropriate mechanism to deal with the danger (Nnedinma et al., 2014). Nnedinma et al. (2014) in the study found that despite the tremendous growth in number of workplaces, most of them do not conform to the OSH regulations. The situation necessitated a raft of interventions including the Workman's Compensation Act of 2004 that was amended to the Employee's Compensation Act in 2011. Other legal approaches followed include the Safety, Health and Welfare Bill of 2012 that was passed in 2011 but the president has not assented to it yet, a move that will signifying the repeal of the Factories Act of 2004 (Nnedinma, et al., 2014).

2.2 Safety and health hazards in petroleum

Safety is the practice of policies and procedures that ensure that a surrounding environment, including work areas, facilities, is free of danger that could cause harm to people living and working in those areas (Resnik et al, 2008). Therefore, safety practices in locating petrol filling stations are of utmost importance in preventing hazards and reducing potential risks that could affect humans and their environment.

On the other hand, "Health refers to the state or quality of human health that are determined by physical, chemical, biological, social and psychosocial factors in the environment, of which the state of health could be in form of physical or mental diseases or illness (Resnik et al, 2008).

Petrol is the most popular and is used in low and medium-duty vehicles and other systems due to its lowed boiling point and higher combustibility compared to other types of fuel like diesel. The ease of conversion of the fuel to vapour makes it a major source of hazard involving inhalation of the fumes (Awasthi et al., 2016). Ethylbenzene, xylenes and toluene as derivatives for Benzene are the elements produced during production of this fuel (Periago and Prado, 2005). According to Alves, et al., (2017), BTEX is classified as a group I carcinogen by WHO and it is known to cause major Health hazards among petrol pump operator (Abou El-Magd S.A., 2010). Workers inhale gasoline vapors and also expose their hands and arms when they are not properly covered with protective

clothing, thereby increasing contact with BTEX compounds (Alves, et al., 2017). Exposure to these harmful substances may cause an itchy feeling or burning in the eyes, nervous system, throat and skin. (Awasthi et al., 2016). A study involving assessment of BTEX Concentrations in Air Ambient Gas Stations in Brazil discovered that there was high concentration of benzene compound which ranged between 40-378 times above the National Institute for Occupational Safety and Health (NIOSH) recommended limit.

The high concentration of benzene compound in filling stations is attributed to evaporation during handling, storage and distribution and from car exhaust fumes (ElMagd et al., 2010). Other risks that petrochemical workers face are accidents/injuries, fires, explosion and accidents during transit and adverse ergonomic issues like back pain (Eyayo, 2016).

2.3 Compliance with workplace safe practices

It is important that every organizations undertakes and evaluation of the working environment to ensure worker safety and compliance with regulations (Adebola, J. 2014). It is, therefore, necessary to evaluate workplace safe practice to measure the extent to which objectives have been met. (Alves, et al., 2017) posits that there are two dimensions to safety behaviour that is imitativeness and carefulness. Carefulness is concerned with workers complying with safety rules while imitativeness focuses on the actions taken by the workers to improve the safety situation (Vwila et al., 2015). Therefore, it is of paramount importance that every pump attendant works towards securing his/her safety at petrol filling stations.

Vwila et al. (2015) reported that there are numerous difficulties in terms of compliance with regulations in many companies irrespective of its size. Many companies identified inadequate resources, lack of awareness of laws and policies and deficiency in safety management culture within establishment as reasons for noncompliance (Vwila et al.,

2015). In Kenya for example, Edward (2014) reported that management of industries in Thika ensures that employees comply with the OSH measures through strict supervision. Management also ensures employees understand the importance of OSH measures through the education program and ensures this

policy is kept by introducing sanctions on defaulters (Edward, 2014). But there is no documented evidence of such practices in industries in Malawi. Therefore, there is a need to explore the challenges against compliance facing the petroleum industry in Malawi.

According to OSHA (2016), the employer is mandated to establish a reasonable procedure for employees to report work-related injuries and illnesses promptly and accurately. Each employee must be informed of the procedures for reporting work related injuries because this is an important factor in the control of hazards (OSHA, 2016). The use of Personal protective equipment (PPE) such as gloves, special uniforms/ apron, and safety boots are crucial to the safety of pump attendants. Alves (2012) also agrees that PPE puts a barrier between the employer and the hazard and contributes to a safe workplace by protecting workers against health and safety risk at the workplace. The use of PPE is shown to be of great importance in a recent study on gas attendants in Brazil, where the workers highly regard the use of boots and apron as a protective measure against exposure to benzene through skin contact (Alves et al., 2017). In another study in Kenya, James and Irene (2012) found that there is a need for improvement in the use of PPE. This is because most of the pump attendants in the filling stations do not regard the use of PPE as an important preventive measure against exposure to petroleum substances (James and Irene, 2012). This shows that the level of compliance with this safety measure is considerably low.

Chapter 3: Methodology

3.1 Research design

The study employed a quantitative research approach to systematically investigate assessment of safety and health practices at filling stations. A cross-sectional study design was adopted to collect data at a single point in time, providing a snapshot of the existing conditions and practices.

3.2 Materials and methods

Data collection was conducted through a structured questionnaire consisting of close ended questions, which was administered to respondents at various filling stations. This approach facilitated standardized responses, making it easier to quantify and analyze the data. These safety measures are critical in mitigating workplace hazards and ensuring the well-being of employees at the filling stations.

3.3 Data analysis

The collected data was analyzed using the Statistical Package for the Social Sciences (SPSS), a widely recognized software for statistical analysis in research, Chris,O. (2004). Through this analysis, the study aimed to determine the extent to which filling stations have implemented OSH practices to safeguard their employees. The data analyzed included responses from petrol attendants, as well as an assessment of the safety materials and measures available to enhance compliance with occupational health and safety regulations. By examining these factors, the study sought to provide insights into existing gaps and recommend improvements for better workplace safety in filling stations. Descriptive statistics such as frequencies, percentages were be used to summarize data. Knowledge, and Compliance would be graded by using a scoring system. Inferential statistic would be used to determine predators of compliance with safe practices also used to develop model

3.4 Location of the Study

This study will be carried out in Blantyre city, Malawi. According to MERA annual report (2022), Blantyre district has 50 filling stations. That would give the

researcher 20 respondent who would participate in each of the petrol filling stations. This has made this location suitable for study.

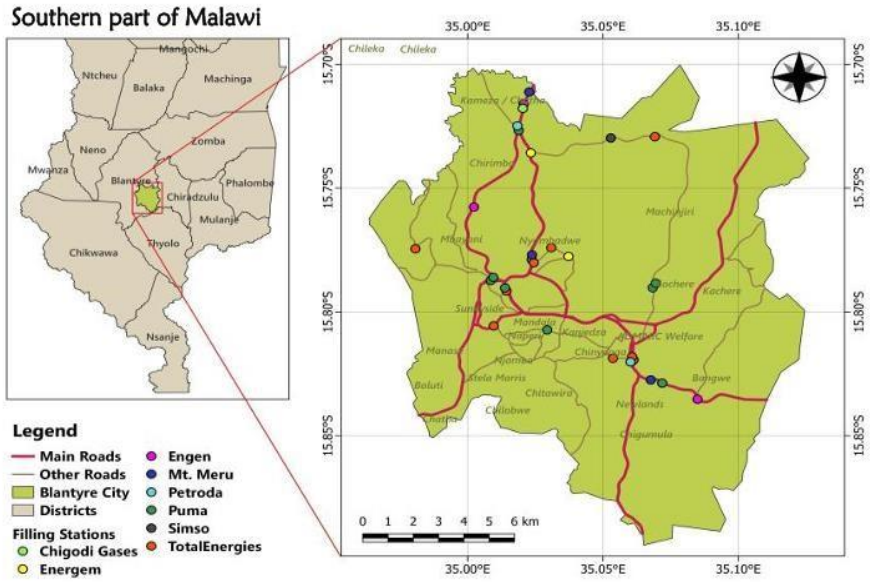


Figure 1: Map showing location of Blantyre.

Chapter 4: Results

4.1 Socio-demographic Characteristics of the Respondents

Out of the 20 respondents that were interviewed, 85 percent of them were males while females were 15 percent. Age of the respondents in this study varied from 35% in age group 20-30 and 50% in age group 31-40 lastly 15% in age group 41-50. respondents (15%) had completed their education up to JCE and 17 respondents (85%) had attended at lease MSCE no respondents say their attended college.

Table 1: Descriptive findings on Gender, level of education and age

Variables		Percentage (%)
Gender	Male	85.0%
	Female	15.0%
Education level	JCE	15.0%
	MSCE	85.0%
	Diploma	.0%
Age	20-30 years	35.0%
	31-40 years	50.0%
	41-50 years	15.0%
	51 + years	.0%

4.2 Compliance of various stations to health and safety practices

4.2.1: Received training related to job

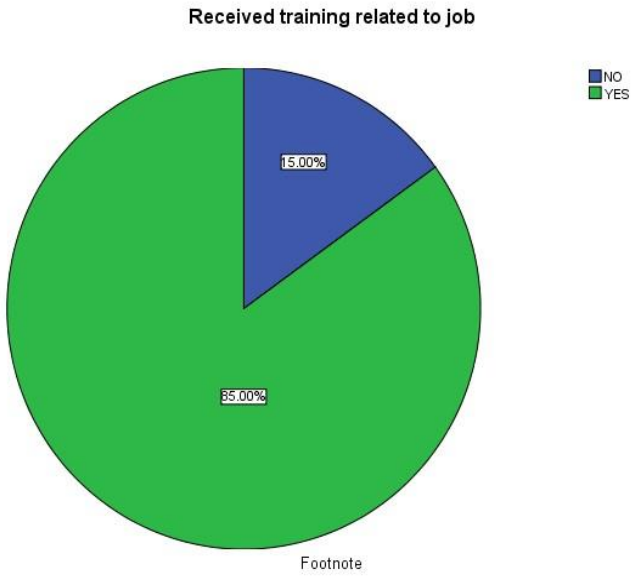


Figure 2: received training

The results from the study indicate that more fuel stations trained their attendants. This represents 85 %, while only (15 %) have not trained their employees. This may indicate specific gaps in training coverage that could warrant further investigation, it could be beneficial to understand why certain employees may have been excluded from training opportunities. This shows that most stations have tried to comply with the rule of training their employees. It indicates that the majority (85%) of the employees of the stations are equipped with the skills to handle any accident that may happen in the station; hence, they are safe. When the fuel attendants are not trained, the safety of other people is at risk.

4.2.2 Length of training received related to the job



Figure 3: Length of training

On average, about 30 % of the stations have trained their employees for two days, while a majority of 35 % have trained for 3 to 4 days, and the least of 20 % for 5-6 1days; however, there were no stations trained their employees for more than 7 days while 15 % represented the stations that did not train their employees. This indicates that the majority of the attendants train for 1-4 days, with a no stations extending to more than 7 days. It is, however, worth noting that there are employees who are not trained regarding safety and, hence, are not aware of the measures to take in case of an incident

4.2.3: Effectiveness of training in handling accidents

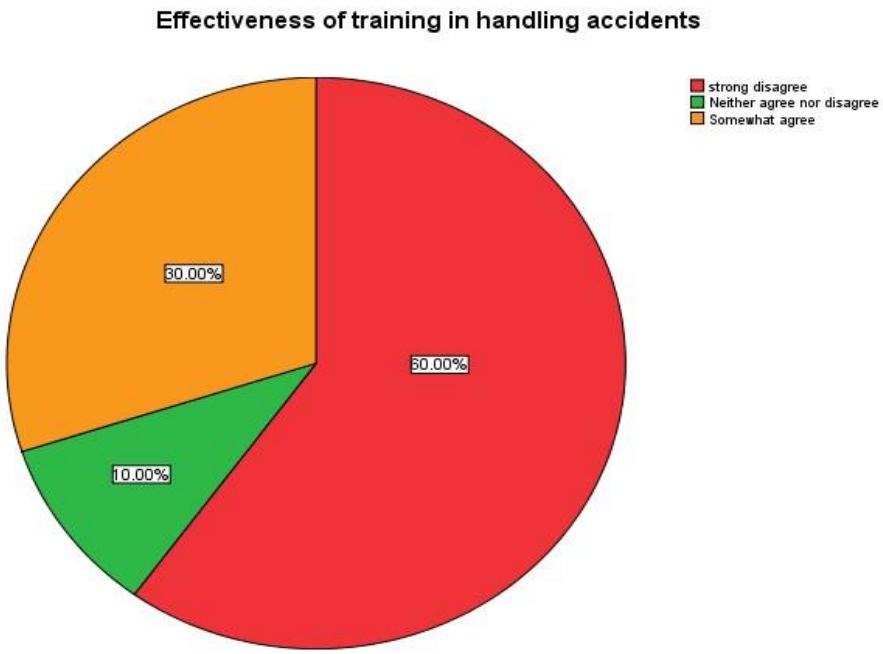


Figure 4: effectiveness of training

The results from the study indicate that 60% fuel station their training were very important to their employer also very effective in their work because. They have more knowledge about safety practices while a minority 25% fuel station in Blantyre show that their fuel attendants were training but their effectiveness were not very good but 15 % of fuel station attendants don't know if their training was effective or not because those people did not undergo training but they managed to work .

4.2.4: Personal protective equipment

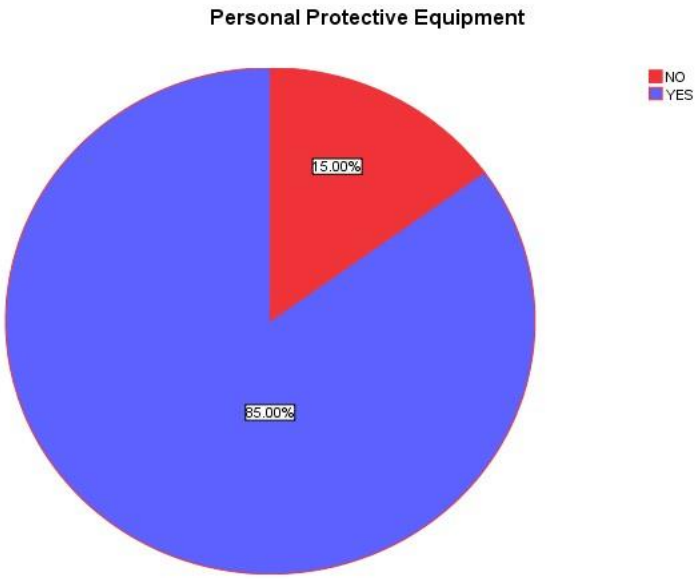


Figure 5: Personal protective equipment

Pie chart provides a of the safety practices regarding the use of Personal Protective Equipment (PPE). Of the 20 respondents surveyed, 85% demonstrated compliance with PPE protocols, reflecting a commendable level of commitment to safety standards. This high percentage of compliance suggests that a significant majority of stations are actively prioritizing worker safety by ensuring proper use of protective gear. However, the remaining 15% were found to be non-compliant, indicating notable gaps in adherence. While this is a minority, it is still a cause for concern as it exposes workers in these stations to preventable risks associated with inadequate safety measures.

4.2.5: frequency of emergency practices

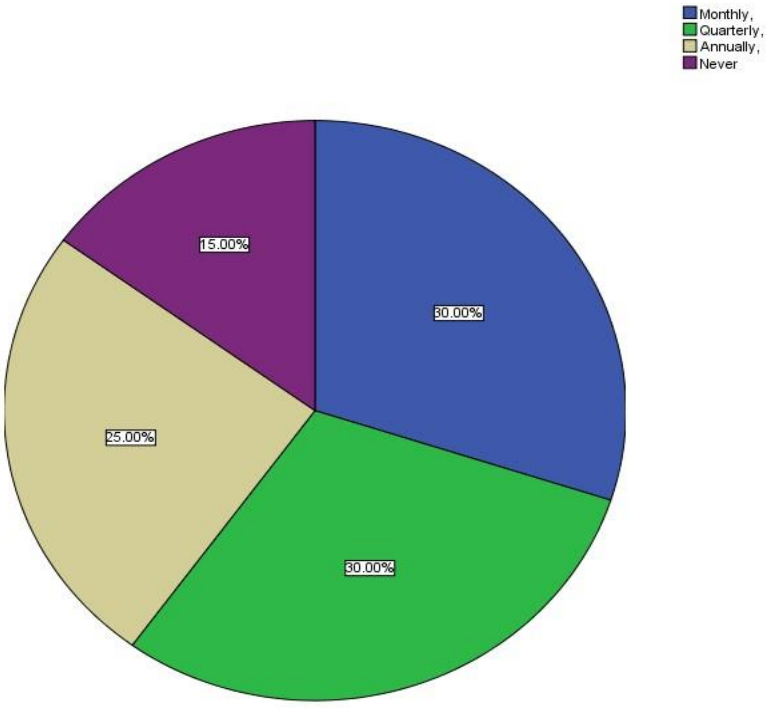


Figure 6: Frequency of emergency practices

The pie chart summarizes the frequency of emergency practices among a sample of 20 respondents, revealing notable patterns in engagement levels. Among the respondents, 30% reported practicing emergency monthly, demonstrating a consistent commitment to preparedness. Similarly, another 30% engage in such practices quarterly, which, when combined with the monthly group, indicates that 60% of the sample conducts emergency practices at least once every three months. Additionally, 25% of the respondents participate in emergency practices annually, suggesting that they address preparedness less frequently but still recognize its importance. On the other hand, 15% reported never engaging in emergency practices, highlighting a portion of the population that may lack readiness for potential emergencies.

4.2.6: Fire extinguishers

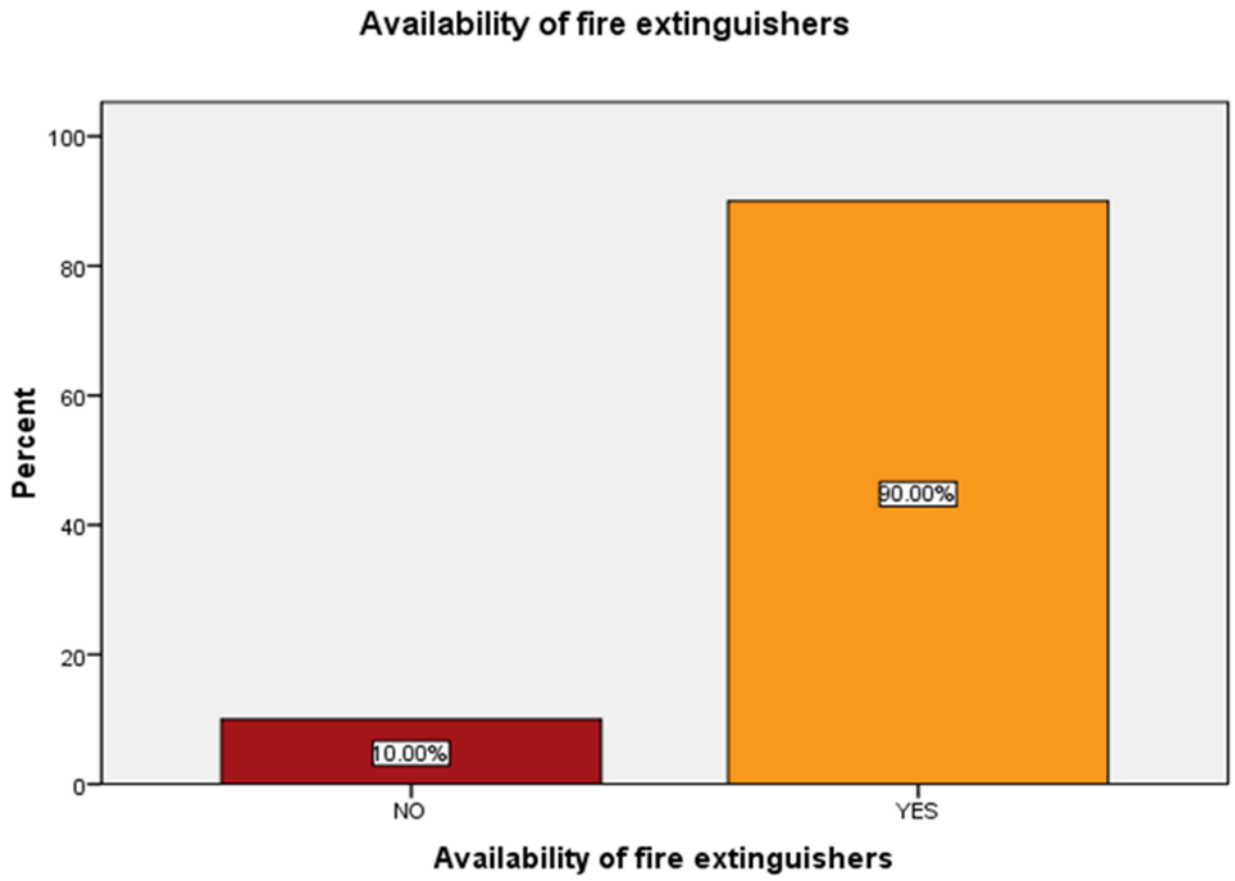


Figure 7: availability of fire extinguisher

The data table highlights the availability of fire extinguishers among a sample of 20 respondents, reflecting a strong prevalence of this essential safety measure. The majority, 90% reported having fire extinguishers readily available, indicating widespread recognition of their importance in mitigating fire-related risks. This high percentage suggests a positive trend in basic fire safety awareness and preparedness

Conversely, a small proportion—10% they have fire extinguisher but they don't know how to use it so consider as they reported not having fire extinguishers

available. While this represents a minority, it underscores a potential safety gap that could increase vulnerability in case of fire emergencies.

4.2.7Adherence to safety protocols and guidelines

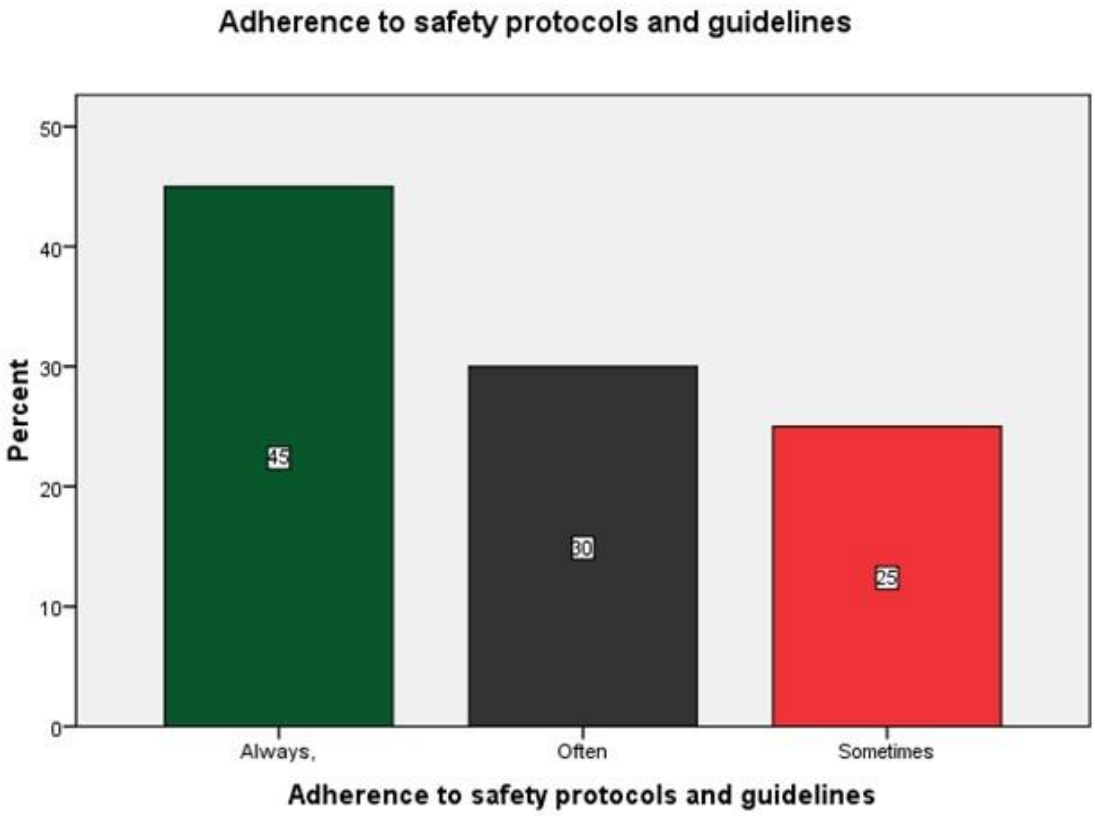


Figure 8: Adherence to safety protocols and guidelines

The data indicate a general positive level of adherences to safety and guidelines among respondents.45% reported that they always follow the safety and guideline protocol. Additionally, 30% stated they often adheres, while 25% do so sometimes. This suggests that while a majority 75% demonstrate consistent or frequent compliance those are no smoking, proper signage, prohibition of mobile phone use and fire extinguishers.

4.3: Levels of knowledge regarding occupational health hazards among petrol stations' workers

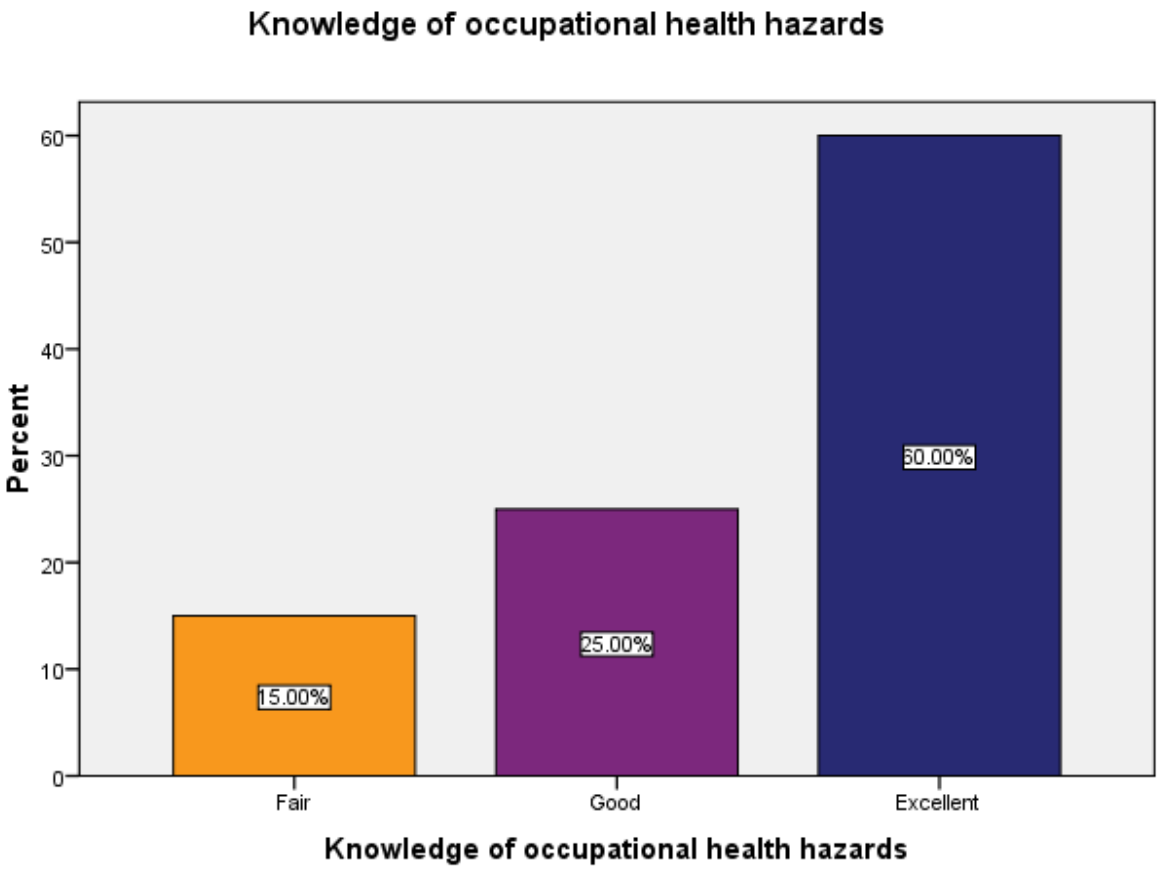


Figure 9: knowledge of level

Results revealed varying levels of knowledge among the participants. A total of 50% of workers demonstrated a high level of knowledge, correctly identifying major occupational hazards such as chemical exposure (e.g., benzene), fire risks and safety practices. These workers also understood the associated preventive measures, including the use of personal protective equipment (PPE) and adherence to safety protocols.

Approximately 25% of the respondents exhibited a moderate level of knowledge, recognizing some common hazards but showing limited awareness of long-term health effects, such as chronic respiratory conditions or carcinogenic risks linked to prolonged chemical exposure. Preventive measures were partially understood by this group, with inconsistent application reported. 15% of the workers displayed a low level of knowledge, with minimal understanding of occupational risks and preventive strategies.

4.3: Potential sources of occupational health hazards among petrol filling station workers

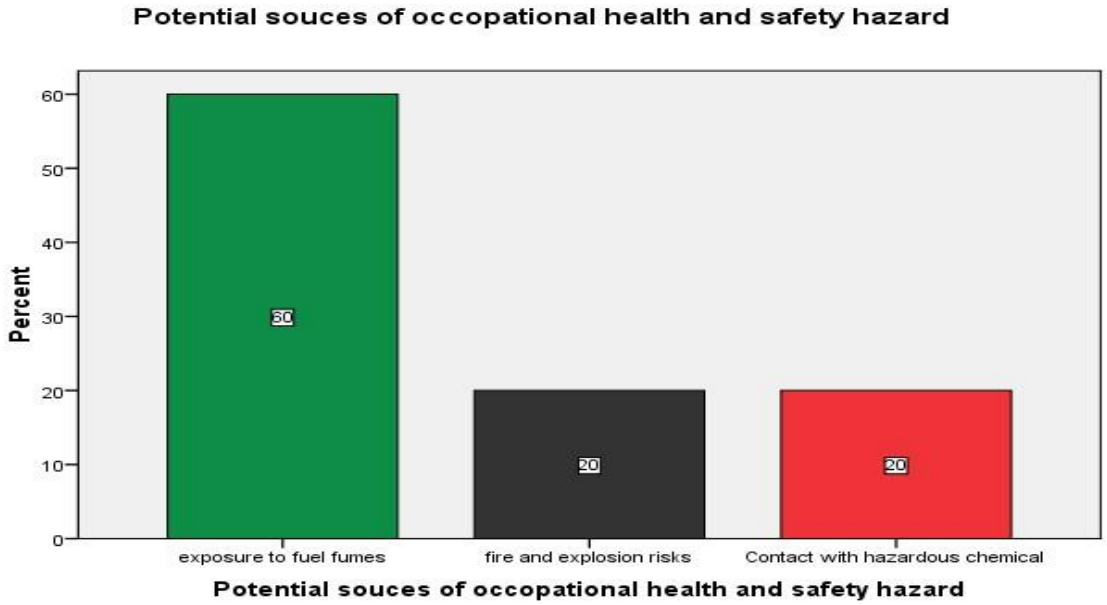


Figure 10: Potential sources of occupational health and safety hazards

The results of the study indicate three primary sources of occupational health and safety hazards in the filling station, with their percentage distribution among respondents. The most commonly reported hazard is exposure to fuel fumes, affecting 60% of respondents. Prolonged inhalation of fuel fumes can result in serious health issues, including respiratory complications, dizziness, headaches, and, in severe cases, long-term organ damage.

Additionally, fire and explosion risks were identified by 20% of respondents. This suggests that flammable materials or improper handling of fuel, chemicals, or electrical

equipment pose significant dangers in the workplace. Such hazards highlight the importance of implementing strict fire safety measures, including proper storage of combustible substances, regular maintenance of equipment, the availability of fire extinguishers, and employee training on emergency response protocols.

Another 20% of respondents reported contact with hazardous chemicals as a major occupational hazard. Exposure to hazardous chemicals can lead to severe health effects such as skin irritation, chemical burns, poisoning, and long-term complications such as cancer or organ damage. This finding indicates that workers may be handling dangerous substances without adequate personal protective equipment (PPE) or proper safety protocols, increasing their risk of exposure.

Chapter 5: Discussion

5.1 social-demographic characterizes of respondents

Regarding the educational level of filling station attendants, 85% have obtained a Malawi School Certificate of Education (MSCE), while 15% hold a Junior Certificate of Education (JCE). Notably, no attendants possess tertiary qualifications such as a diploma or degree due to that MSCE graduates are preferred since the cost of engaging them is relatively lower as compared to tertiary education graduates. This finding may reflect the industry's hiring standards, where formal tertiary education is not a primary requirement for employment. However, the absence of higher academic qualifications could also affect knowledge in specialized areas such as occupational safety and customer service.

The study also assessed the age distribution of filling station employees. It was found that the majority (50%) of attendants are between the ages of 31-40 years, followed by 35% in the 20-30 years category. Only 15% of the respondents are aged 41-50 years. This finding is similar to a study conducted by Afolabi et al. (2011) which shows the median age of respondents to be 30 years. This show that most dominant are younger employees suggests that filling station work demands a level of physical endurance and agility that younger individuals can meet more effectively. Since the job involves considerable physical activity, employers may prefer hiring individuals who can handle the demands of the role without significant health concerns.

5.2 Compliance with Health and Safety Practices

5.2.1: Training on Job-related Safety Measures

The study revealed that 85% of filling station attendants received training related to their jobs, while 15% did not undergo any formal training. This high compliance rate suggests that most filling stations recognize the importance of training in ensuring worker safety and efficiency. However, the fact that some employees remain untrained raises concerns about safety risks in these workplaces.

The duration of training varied among respondents. The most common training duration was 3-4 days (35%), followed by 1-2 days (30%) and 5-6 days (20%). Notably, no stations trained their employees for more than 7 days, and 15% of respondents reported that they did not attend any training. This trend suggests that while training is widely implemented, its duration may not be sufficient to comprehensively cover all aspects of occupational health and safety. A longer and more detailed training program could enhance employees' ability to handle workplace hazards effectively.

When assessing the effectiveness of training, 60% of respondents strongly agreed that their training was effective in handling accidents, while 25% somewhat agreed. However, 15% neither agreed nor disagreed, suggesting uncertainty about the effectiveness of their training. This uncertainty may arise from inadequate training duration or gaps in the content covered during training sessions. Organizations should, therefore, enhance their training programs by incorporating hands-on safety drills and real-life scenario training to improve preparedness.

5.2.2: Use of Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) is provided by employers to help protect workers from different hazards, Chandrasekaran S. (2020). On falling station, PPE is typically provided in the form of eye, ear, hand, and foot protection and flame-resistant clothing.

Figure below show hierarchy of controls hazards in a work place and the PPE also present although it is less effective according to the hierarchy of Control but it is very important Chandrasekaran S. (2020)



Figure 11: hierarchy of control

The study findings indicate that 85% of filling station attendants use personal protective equipment (PPE), while 15% do not. This high level of compliance suggests that most stations prioritize worker safety. However, the existence of a minority that does not adhere to PPE requirements is concerning, as it exposes employees to occupational hazards such as fuel fume inhalation and chemical exposures but none of the filling stations provided hand gloves for hand protection. Non-compliance, even at a relatively low level, can have significant consequences, including increased risks of accidents, injuries, and long-term health issues for workers. Enforcing strict PPE policies and conducting routine safety checks can help ensure 100% compliance.

5.2.3: Frequency of Emergency Practices

Emergency preparedness is a critical aspect of workplace safety. The study found that 30% of respondents practice emergency drills monthly, another 30% quarterly, and 25% annually. However, 15% of employees reported never engaging in emergency

practices. While it is commendable that 85% of respondents participate in emergency drills at least once a year, the 15% who never engage in such practices pose a safety risk to themselves and their colleagues. Regular mandatory emergency training sessions should be implemented to ensure that all employees are prepared for emergencies, It also help familiarize staff with evacuation routes, exist locations and the importance of staying calm during an emergency

5.2.4: Availability of Fire Extinguishers

The availability of fire extinguishers is essential in mitigating fire-related hazards. According to the study, 90% of respondents reported having fire extinguishers readily available. However, 10% reported having fire extinguishers but they were unaware of how to use them. This gap shows a potential safety risk in case of fire emergencies. Station should not only provide fire extinguishers but also train employees on their proper usage to enhance workplace safety. Lack of knowledge on how to operate a fire extinguisher can lead to occupational hazards being not contained before they cause devastating effects such as fire (Marta et al., 2014).

5.2: Potential sources of occupational health hazards among petrol filling station workers

The study identified three primary sources of occupational health hazard:

a) Exposure to fuel fumes (60%) – This was the most commonly reported hazard, causes significant respiratory health risks. Employers should provide face masks to minimize exposure.

b) Fire and explosion risks (20%) – Handling of flammable substances without proper safety measures can lead to accidents. Strict fire safety protocols should be implemented.

c) Contact with hazardous chemicals (20%) – Exposure to chemicals can lead to skin irritation and poisoning. Employees should be equipped with PPE and trained in chemical safety.

5.3: Adherences of filling station on the safety standards and health regulation

The study's findings indicate that adherence to safety standards and health regulations is generally high among fuel stations. Fuel stations generally comply with safety standards and health regulations, with high levels of adherence in areas such as safety training and equipment availability. The majority (90%) of fuel stations have functional fire extinguishers, and 85% of employees use personal protective equipment (PPE), such as work suit and safety boots. Additionally, 85% of stations conduct emergency response drills at least once per year, ensuring preparedness for potential hazards. However, gaps exist, particularly in PPE availability, emergency preparedness, and employee awareness of safety guidelines, as 15% of employees lack proper protective gear and 20% are unfamiliar with key health and safety protocols.

Regulatory compliance remains a concern, as inspections revealed that 25% of fuel stations fail to meet all safety and health standards, mainly due to deficiencies in PPE and emergency preparedness. While most employees (85%) receive safety training, the duration is often short, with 60% trained for only one or two days, which may not be sufficient for comprehensive safety education. Despite the fact that 60% of employees find their training highly effective, continued enforcement of stricter regulations, routine safety inspections, and enhanced training programs are necessary to bridge existing gaps. Strengthening these measures will improve overall safety conditions for both employees and customers.

Chapter 6: Conclusion and Recommendations

The objective of the study was to assess the health and safety practices in filling stations. The parameters that were explored to measure the level of health and safety practices are awareness of safety and safety standards. Results from the study indicated that the majority (85%) of fuel attendant undergo training and the effectiveness of it show that most fuel attendants have well knowledge about safety in their filling station. Several attendants were not aware of the OSHA policies, fire extinguisher use, safety control measures, safety standards, and emergency evacuation plans or attended any kind of training. This is a worrying trend since people who work in high-risk environments should be fully aware of safety measures to safeguard the environment, health and safety of fellow staff and the public. Although the majority (85%) of the petrol station management provided employees with full protective gear, several teams were provided with footwear alone, exposing employees to the risk of injury to other body parts. Also, the majority (90%) of the facilities were provided with fire extinguishers. Regardless of this, the majority of the filling stations had, at the bare minimum, at least a fire extinguisher in readiness to handle fire emergencies. The results further indicate that there is a positive significant relationship between the training and the level knowledge among the fuel attendants.

From finding the common primary potential sources of occupational health and safety hazards identified present in filling station include exposure to fuel fumes (60%), fire and explosion risks (20%) and contact with hazardous chemical (20%) were those most fuel attendant face

According to the findings of this study, the health and safety practices of the some filling stations that were sampled did not match the acceptable threshold set by MERA. In light of the findings of this study, the regulatory body is urged to increase the rigour of its inspections and compliance enforcement and ensure that the offending stations are brought up to the recommended level of health and safety procedures. Apart from having the fire extinguishers, all the emergency equipment should be located strategically and within the reach of all the staff. All operations and emergency procedures should be reviewed regularly. In addition, the managers should also amend

and take into account any modifications and any practical experience arising from accidents.

Limitation, With regards to information bias, some respondents might have had a preconceived idea about the study topic and did not want to respond honestly. Qualitative data such as focus group discussions was not employed in this study. Even though most of the respondents have had some sort of education, language barrier might have affect information gathered because some respondents found it easier to communicate in chichewa language.

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APPENDICES

Thank you for participating in this research study. The purpose of this questionnaire is to gather information about health and safety practices in your filling station and circle the right answer. Your responses will help us better understand the current practices and identify areas for improvement. Please answer the questions honestly and to the best of your ability.

Contact Information:

If you have any questions or concerns, please contact CHISOMO MLENGA at pre015-20@must.ac.mw or 0991965608/0882527500.

1. Have you received training related to your job?

A - Yes

B - No

2. How long did your training last?

1- 1-2 days

2 - 3-4 days

3 - 5-6 days

4 - More than 7 days

5 - Did not attend

3. Do you believe that your training has equipped you to handle accidents effectively?

1 - Strongly agree

2 - Somewhat agree

3 - Neither agree nor disagree

4 - Somewhat disagree

5 - Strongly disagree

4. Are fire extinguishers available at your station?

1 - Yes

0 - No

5. How often do you conduct safety drills?

1- Monthly

2- Quarterly

3- Annually

4- Never

6. Do you follow safety protocols and guidelines(proper signage and no smoking) at work?

1 - Always

2 - Often

3 - Sometimes

4 - Rarely

5 - Never

7. How would you rate your knowledge of occupational health hazards?

1. Excellent

2.Good

3. Fair

4. Poor

8. Do you believe that your station complies with environmental regulations and safety standards? 1.Strongly agree,

2.Somewhat agree,

3.Neither agree nor disagree,

4.Somewhat disagree,

5.Strongly disagree

9.Do you use personal protective equipment (PPE) at work?

1. NO

2.YES

10. Do you station conduct regular maintenance and inspections of their equipment and facilities? 1 never

2. sometimes

3.always

11. Gender/ Sex

1.Male

2. Female

12. Indicate your highest level of education

1. Primary school [ ]

2.Secondary [ ]

3.Diploma

13. Age?

1: 20-30years [ ]

2:31-40years [ ]

3:40-50years [ ]

4 :51+years [ ]

14.Potential souces of occopational health and safety hazard

1: Exposure to fuel fumes [ ]

2:Fire and explosion risks [ ]

3: Contract with hazardous chemical [ ]

Thank You:

Thank you for your participation in this research study. Your input is greatly appreciated