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Evaluating Environmental Health and Safety Practices among Fuel Station Operators in Ghana's Petroleum (Downstream) Sector

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ABSTRACT

The study assesses service operators' role and awareness level in environmental health and safety practices in the petroleum (downstream) sector / Fuel Service Station (FSS) in Adentan Municipality in Ghana. A total of 50 managers and workers were used as the sample size for the study, of which 18 were female and 32 were male. The study was a descriptive survey, with a questionnaire as the instrument for data gathering. The final data were analyzed using descriptive statistics like percentages and frequencies through SPSS IBM 27. The two main objectives of the study were to examine the role of operators in participating in environmental health and safety in fuel service stations and to establish the level of awareness of the operators about environmental health and safety. The study revealed that operators of FSS within the petroleum downstream sector have major roles to play in environmental health and safety by enforcing health and safety policies established by law and regulations for Health, Safety, and Environment (HSE). The findings again showed that the level of awareness of the operators on environmental health and safety is very high and paramount in the FSS, as they showed positive concern about worker Personal Protective Equipment (PPE) provision and standardized procedures for investigating and reporting accidents.

INTRODUCTION

Petroleum products play a significant role in the socio-economic, socio-political, and environmental sectors of every nation (Asare *et al.*, 2021). They are crucial for the economic development of all countries, regardless of whether they are oil producers or not. In countries where oil is not drilled or mined, other sectors of the petroleum industry are present, with the downstream sector being almost ubiquitous. In Ghana, the discovery of oil has led to a significant reliance on oil revenue from all sectors of

the petroleum industry. While the downstream sector in the country is growing rapidly, the operators in the fuel filling station, in particular, have a poor level of awareness regarding safety and the environment.

In 2015, Barclays defined oil and gas as natural resources that are obtained through the degradation of organic matter found in geological deposits on the Earth's surface. These resources are composed of thousands of organic materials that can be processed into a variety of petrochemical products (Barclays, 2015).

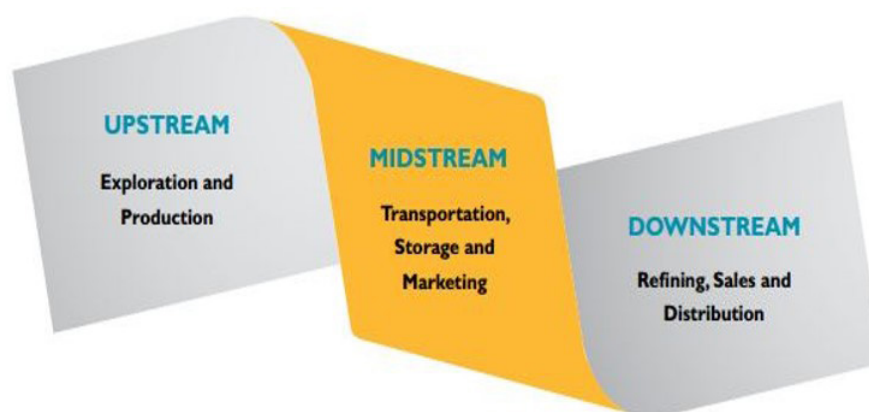


Figure 1: Sectors in the oil and gas industry retrieved from Chauman (2013)

In the diagram presented in Figure 1 above, the downstream sector of the petroleum industry is focused on the production, distribution, and sale of refined hydrocarbon products. According to a report (Barclays, 2015), the refining process, which can be complicated

at times, requires a safe and hazard-free environment to operate effectively. Retail and distribution activities include handling fuel oil, petroleum, liquefied natural gas (LNG) and liquefied petroleum gas (LPG), chemicals, lubricants, and other related products. Given the large

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volume and variety of distribution networks, it is necessary to manage these petroleum products with care and caution to avoid any potential environmental hazards. Therefore, it is crucial to implement careful management practices to minimize environmental impacts.

In 2010, the Ministry of Energy estimated that Ghana's petroleum products account for about 20% of the total energy consumption and that about 70% of Ghana's commercial energy needs this product (Amponsah & Opei, 2014). As the demand for the product keeps increasing, the risks it poses to human safety and the natural environment could also be high through its operations and its usage in the country.

The concept of implementing a health and safety philosophy is not a new idea in the oil and gas industry. In 2012, the Organization of the Petroleum Exporting Countries (OPEC) divided the downstream sector into several sub-sectors, which include refining, product storage, transportation, distribution, and retailing Organisation of the Petroleum Exporting Countries (OPEC) (2012). These sub-sectors present significant health, safety, and environmental risks (Haque *et al.*, 2021). The idea of establishing a downstream sector that prioritizes an effective and dependable health and safety culture has been a topic of discussion for several decades and has progressed steadily over the last few years.

According to a study conducted by Ahmed (2016), oil companies in major countries still face significant challenges in dealing with workplace accidents that employees are exposed to. It is difficult to measure and control health and safety performance in these situations. However, health and safety has become an important topic of discussion in recent times. This is due to the increase in the workload for supervisors, the need to empower employees, and the importance of businesses avoiding actions that can lead to legal consequences (Lowe, 2008).

Furthermore, a study conducted by Baffour *et al.* (2014) indicated that there has been a significant increase in the number of downstream distribution points across the country. However, the filling stations segment is the most dominant and rapidly growing in this sector. Unfortunately, the country seems to prioritize economic outcomes and returns over health and safety management, despite the increasing growth of these stations (Chauhan, 2013).

Also, according to Act 651 of the Ghana Labour Act, 2003, there are significant health and safety issues in Ghana that affect both citizens and workers. However, the act does not provide adequate measures to ensure the safety and health of workers. In particular, workers in the oil and gas industry are exposed to serious safety and health threats. Therefore, it is essential to conduct research to address these issues. Furthermore, a performance review of HSE conducted by Ahmed (2016) revealed that health, safety, and environmental concerns are given importance in the industry's leadership commitment, management, and technical concepts. However, the National Petroleum Authority (NPA) and Environmental Protection Agency (EPA) - mandated to regulate and maintain safety and

health standards - are failing to ensure compliance in the country (Yirenkyi, 2016).

For regulations and best practices in the oil and gas industry, Barclays in their 2015 brief reports pointed out clearly with this assertion, "permits, consents and licenses are likely to be required for oil and gas operations" and for that, it must meet the best industrial practices of international environmental and social standards (Barclays, 2015). For Ghana, the NPA and EPA do this through the issuance of licenses and permits respectively. Operators of FSS are given guidelines and regulations which are meant to ensure that their operations are carried out in a safe and healthy environment. However, there have been several incidences of workplace disasters in the form of fire outbreaks in the country, despite these guidelines and regulations. In June 2015, there was a disaster at the then Kwame Nkrumah Circle, which claimed over 190 lives and also destroyed many properties. A report by Gagugah (2016) indicated that the June 3rd disaster occurred as a result of fuel leakage from the tanks of the filling station which came in contact with a naked fire from a lit cigarette.

In 2016 a fuel tanker exploded near the Trade-fair Centre in the Greater Accra region of Ghana claiming 9 lives and injuring 12 others. Yet in another incident in October 2017, an explosion occurred at Atomic Junction, with the explosion of an LPG tanker while discharging LPG into a stationary vessel. It is not immediately clear what the causes of these accidents are since the fuel-filling stations are expected to operate with workplace safety guidelines. It is against this background that the researchers intended to delve into the operations of fuel service operators regarding their roles and awareness of safety precautions in Ghana. The study assesses the roles and awareness levels of fuel service operators in the environment in which they operate.

The main purpose of the study is intended to evaluate the role and the awareness level of fuel service operators in the environmental health and safety practices in the downstream sector in Ghana. The general objective of the study is to assess the role and the awareness level of fuel service operators in the environmental health and safety practices in the downstream sector. The following are the two main objectives of the study: Examine the role of operators in environmental health and safety in fuel service stations and Establish the level of awareness of the operators on environmental health and safety. The following are the research questions: What is the role of operators in environmental health and safety in fuel service stations? Is there any level of awareness of the operators on environmental health and safety?

LITERATURE REVIEW

Oil Exploration in Ghana

The oil sector is made up of three sectors; the upstream sector, the midstream sector, and the downstream sector (Amponsah & Opei, 2014). However, from Boateng & Buahing (2014) the upstream and the downstream constitute Ghana's Petroleum Sectors.

The Upstream Petroleum Sectors in Ghana

The operations of the upstream sector are being done throughout the world. The Gulf of Mexico, the North Sea, the South China Sea, and the Caspian Sea are regarded as the highest-level areas where the activity of the upstream was mainly started historically (Niven & Mcleod, 2009).

The Downstream Petroleum sector in Ghana

The downstream sector in Ghana, responsible for refining, transportation, retail, and distribution of petroleum products, is functioning effectively. However, authorities and regulators have not shown much interest in assessing the potential health, safety, and environmental risks associated with this sector (Boateng & Buahing, 2014). Although the number of fuel stations is increasing, compliance with environmental and safety regulations has been lacking. The sector is also facing a challenge with the influx of untrained individuals with no industry expertise, who are handling petroleum products without proper checks. This has led to an increase in health, environmental, and safety risks in the country. For safety at the workplace and ensuring accident free downstream, the following will be carefully assessed:

- Health and safety at workplace
- Workplace accidents and emergencies in the petroleum downstream
- Review of environmental health and safety guidelines of the petroleum industry

Health and Safety at the Workplace

Effective management plays a crucial role in ensuring health and safety in the workplace. According to Stranks (2006) and Oluwagbemi (2011), better management practices can lead to lower costs, higher productivity, and improved employee morale. According to Kwadwo and Morkla (2024), workplace dangers to employees' health and safety may cause them to be less productive. Regardless of the size of the worksite, systematic methods can be implemented to protect workers from hazards. To achieve this, the worksite manager needs to conduct regular surveys to identify and update safety and health hazards (Zafar, 2014). This includes examining new facilities, processes, materials, and equipment, as well as analyzing jobs and work processes for potential hazards (WBG, 2016). By continuously monitoring performance using indicators, management systems can effectively mitigate health and safety risks and reduce the number of incidents in the workplace.

1. Worksite analysis
2. Hazard prevention and control
3. Safety and health training

Worksite Analysis

According to the Occupational Safety and Health Administration (OSHA) (2016), worksite analysis comprises a mutual step-to-step assessment of the workplace to find existing or potential hazards that may lead to incidents of workplace violence.

Hazard Prevention and Control

It has been stated by Scott & Kimmel (n.d.) that control in the workplace refers to the procedures that are put in place to reduce injury, minimize adverse health effects, and prevent damage to equipment, the environment, and the worker. This statement reinforces the idea that the best way to control hazards in the workplace is by implementing appropriate procedures, safety and health rules, inspection, training, and conducting follow-up studies to ensure that the hazard controls are sufficient. The guidelines for the petroleum downstream, which includes refineries and distribution centers, recommend that a worksite policy on safe and healthy work and working conditions should be established. This policy should be communicated to all personnel with responsibility at the site and personnel at other locations with responsibility for the site. This ensures that safety and health protection is given priority over other organizational values (Hoivik *et al.*, 2009).

Furthermore, all individuals in the downstream sector should have some responsibility for safety and health. To avoid any confusion in getting the required activities done, a clear assignment of responsibilities is needed. In particular, the manager should ensure that the safety and health "expert" at the worksite is not assigned line responsibility that belongs to line managers and supervisors. Line managers and supervisors should be responsible for supervising and evaluating workers' performance in areas of safety and health, providing on-the-job training in safe work practices and personal protective equipment, and encouraging workers' participation in safety and health activities (Walker, 2007).

Safety and Health Training

Workplace safety and health training is an important component of preventing workplace violence through education and training. Well-trained staff members are aware of potential hazards and follow established policies and procedures to protect themselves and their colleagues (OSHA, 2016)

According to Cohen & Colligan (1998), controlling workplace hazards is a fundamental aspect of occupational safety and health (OS & H) training. Workers should be trained not only to perform their jobs effectively but also to protect themselves and their coworkers from potential hazards (Ali, 2008).

Additionally, developing a clear statement of management policy helps ensure that everyone in the workplace understands the importance of safety and health protection and how it aligns with other organizational values (ILO, 2005).

Workplace Accidents and Emergencies in the Petroleum Downstream

In the downstream sector of the petroleum industry, there have been numerous cases of accidents that have claimed lives and properties. This section talks about workplace accidents and emergencies in the downstream sector.

Workplace Accidents

Accident is defined by Zakaria *et al.* (2012) as an unpleasant and undesired event that leads to death, personal injuries, damage or loss of property, materials, or the environment, and loss of business opportunity. Moreover, Ambisisi (2016) pointed out that downstream transportation and distribution of petroleum products are mainly done using truck tanker and pipeline transport systems which also constitutes too many accidents on human safety and the environment.

Causes and Preventions of the Workplace Accidents

Workplace accidents can be caused by several factors including human error, high stress, low level of education, lack of training, absence of safety leadership, poor design of the workplace, lack of top management, and ineffective machinery and complicated technology. However, human error remains the primary cause of all workplace accidents (Alkahaldi *et al.*, 2017). Socially responsible companies must take workplace accidents seriously, regardless of their occurrence. Occupational accidents are acute and visible in the workplace, which can be perceived as more dramatic than occupational disease (Hoivik *et al.*, 2009).

The workers are major stakeholders in the International Labour Standards of the International Labour Organization (ILO), and extensive worker participation is essential for an effective management system (ILO 2015). Natural risks and hazards are inevitable in the handling and bulk storage of petrol stations, which can lead to accidental spills, tank leakage, and ground/water contamination (Haque *et al.*, 2021). Therefore, there must be emergency preparedness for spill prevention plans that regulate equipment, maintenance, integrity testing, and implementation of tank management plans, as stated in the Barclays 2015 brief report (Barclays, 2015).

Emergency at Workplace

An emergency in the workplace (downstream sector) might be considered as a spillage of flammable fuel, explosion, fire or ignitions, injury to a client or worker on site, etc. that requires urgent attention to prevent escalation, loss or injury to individuals or the environment and damage to plant and equipment (H & SA, n.d.).

According to Occupational Health and Safety Management (2001), there must be adequate readiness and preparedness of companies to handle a variety of emergencies about health and safety at the workplace (OH & SM, 2001). This then suggests that emergency services must be part of management's plans to take care of health, safety, and environmental issues in the downstream sector.

Emergency Procedures

In preventing workplace incidents and emergencies, OH & S Management documented in their work that; there must be emergency procedures to help equip employees in emergency-related cases (OH & SM, 2001). Therefore,

the following programs must be known to the worker;

1. Policy on the importance of emergency
2. Emergency outlet procedures and routes
3. Emergency training programs to equip/enhance workers
4. Constants review of emergency plans

Review and Audit of Environmental Health and Safety Guidelines of the Petroleum Industry

Review and Audit are two important tools used in the petroleum industry for management purposes (UNEP, 1997). Guidelines for the petroleum industry are crucial for industrializing countries. The World Bank Group documented in 2016 that "the Environmental, Health, and Safety (EHS) guidelines are technical reference documents with general and industry-specific examples of good international industry practices (GIIP)" (WBG, 2016). Health, Safety, and Environment are three separate concepts that are often combined in the same functional groups within oil companies (HSE, 2018). Therefore, there is a need for HSE guidelines for operators worldwide. In addition, a strong company commitment to environmental protection can help minimize the negative environmental impact of oil and gas development activities.

These guidelines are expected to meet the demands of countries in the oil and gas business. As such, it is best to display company policy and strategic objectives prominently at all operating sites and, if necessary, adapt them to include site-specific requirements (UNEP, 1997). Therefore, the country needs to have guidelines in the downstream sector, which depends on regulation involving the establishment of laws by a public agency (Jilcha & Kitaw, 2016). It has been pointed out that the best way to reduce and minimize negative consequences with regard to safety, health, and the environment is to enact a guideline policy through regulation by establishing laws.

Ghana has experienced several oil and gas disasters in the past ten years, despite having guidelines and regulations in place in the sector. The June 3rd twin disaster shown in figure 1 below cannot be ignored, as its consequences were too significant. A report by Joy News revealed that the committee recommended that the government certify and license filling station attendants (Gadugah, 2016).

The HSE guidelines provide a stakeholder program to recognize and understand all the hazards and potential hazards of the workplace. It also ensures the prevention or control of those hazards and provides training to employees at all levels to understand the potential hazards they may face and how to protect themselves and others (ILO, 2005).

According to United Nations Environment Programme (UNEP) Technical Publication (1997), an environmental audit in the petroleum sector is defined as a management tool that evaluates environmental organization, management, and equipment performance systematically, periodically, and objectively. The purpose of this audit



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Figure 2: Goil Filling Station burnt by fire on June 3, 2015
Source: (adapted from Joy News Online)

is to help safeguard the environment by facilitating management control of environmental practices and assessing compliance with company policies, including meeting regulatory requirements (UNEP, 1997). An audit in the petroleum industry can check environmental health and safety guidelines by ensuring monitoring, compliance, procedures, and sector-required standards are in place and effective (UNEP, 1997).

METHODOLOGY

This chapter is mainly about the methods used for the study. It is made of various sections as outlined and discussed below:

Study Area

Adenta Municipal Area in the Greater Accra Region of Ghana was where the study was conducted. According to Ghana Statistical Service 2014, it is situated along the Accra – Aburi Highway after Medina with a total area size of 35.85 sq mi and an inhabitant of 78, 215. There are 53 retail outlets in Adentan municipality but the total number of registered Oil Marketing Companies is 19 under these outlets, with some having more than one branch within the municipal.

Research Design

The study design is a case study purposely designed to find answers and solutions to the research questions and the objective of the study through the views of respondents. In the gathering of the information for the study, the researcher used a questionnaire approach or method. This approach was employed due to preferences, opinions, attitudes, and dispositions as non – observable events.

Sources of Data

The main source of the secondary data was reports, documents, and works done by institutions, researchers,

and academicians in the study area. The primary source was the administration of a questionnaire

Population and Sample

Table 1: Population and Sample Size of FSS

Fss Locations	Population of Workers	Numbers Sampled
Allied Oil – Adenta	13	4
Benab – Housing Down	7	2
Compass Oleum – Frafraha	9	3
Gasoleum – Amanfrom	10	3
Naagamni – Amrahia	9	3
Superior Oil – Ashieyie	12	4
Vivo Energy (Shell) – Adenta Aburi Road	12	4
Glory Oil – Ritz Junction	9	3
Goodness Energy – Amanfrom	10	3
Frimps Oil – Adenta	10	3
Infin – Ashieyie	10	3
Puma – Amrahia	9	3
Goil – Ashieyie	12	4
Engen – Frafraha	10	3
Infin – Adenta	9	3
Galaxy Oil – Frafraha	7	2
Goil – Adenta	10	3
Engen – Adenta Aburi Road	8	2
Puma – Adenta Aburi Road	7	2
Vivo Energy Shell – Adenta	9	3
Total 20	192	60

Source: Field Work, 2023

The total population of workers and managers of all the registered oil marketing companies in Ghana is considered for the study, but those in the Adentan Municipal Area were the target population. As in Table 1, for an effective and precise outcome, a sample size of 60 was used for the study.

Data Collection Procedure

There are two significant modes of data collection; the quantitative data collection and the qualitative data collection and under these two are many methods of data gathering. There are five ways of gathering or collecting data; paper and pencil questionnaires, interviews, direct observations, document analysis, and your own experience, see Block (1981) and Lana (2000). The researcher used the quantitative data collection and the questionnaire method because of their easiness to summarize, compare, and generalize.

The researcher in using the 20 FFS gave many copies of the questionnaire to each of the various FFS as shown in Table 3.1 to be attended by respondents of which 1 was a manager. In all 55 of the 60 copies were received but 50 were well filled and attended by respondents. The copies that were not filled well or correctly were as result of illiteracy.

Instrument

In the process of gathering the primary data for the study, the instrument the researcher used was the questionnaire. The purpose was to measure the research questions and the main objectives of the study. To ensure the validity of the instruments the questionnaire was presented to experts in the field of study for consideration. The Section had questions with each having 2 options or scale points respectively and some had a follow-up question to either explain or give a reason for their preferred option.

Data Analysis Procedures

The final data obtained from the respondents were analyzed using percentages and frequencies for the findings and discussion of the study. This was done using Statistical

Package for the Social Sciences (SPSS) version 27.

Ethical Issues

As documented by Acquah (2017) in his work; the ethical consideration in research and how the researcher goes about the research is an important issue of concern and according to Crandall & Diener (1978), the ethical issues that are considered as the standards and principles can be placed under four areas; harm to participants, invasion of privacy, informed consent and deception.

On the issue of harm to participants, since this is basically about confidentiality, the research questionnaire was designed in a way where the respondent's identity was not revealed. As Bryman (2012) pointed out harm to participants in research is mainly about how to maintain confidentiality records and this practice was adhered to. The research was much concerned about the privacy issue of the respondent; hence the respondent had the right and liberty to take part in the study or withdraw.

However, before the questionnaire was given out to the individual respondent, permission was sought and the objective of the study was explained to each respondent by taking into account the ethical issue of informed consent. On the deception principle, the researcher made extensive explanations to the respondents by assuring them its confidentiality, the objective of the study, and also been done to add to the knowledge base (academic purpose) but not for monetary benefits.

RESULTS

This section presents the findings and the analyses of the data collected according to the research questions.

What is the Role of Operators in Participating in Environmental Health and Safety in Fuel Service Stations?

The study aims to find out the role of operators in participating in environmental health and safety in the FSS. Under this research question, respondents were given ten (10) statements for them to state Yes or No. The result is shown in Table 2.

Table 2: The role of operators in participating in environmental health and safety in fuel service stations

		Yes		No	
		Yes.	%	No.	%
1	Does the company enforce a health and safety policy?	50	100%	0	0.0%
2	Would the company apply disciplinary measures to correct wrong behaviours?	46	92%	4	8.0%
3	Is there a first aid kit at the outlet?	47	94%	3	6.0%
4	Is there a health and safety performance target and reward scheme to motivate employees who meet targets?	28	56%	21	42%
5	Can you confirm if there is a regular inspection by the company to ensure compliance with regulations?	43	86%	7	14%
6	Does the use of health and safety posters encourage compliance with regulations?	49	98%	1	2%

7	Has the company designated competent safety persons responsible for safety within the premises?	37	74	13	26%
8	Are you aware of environmental health and safety issues related to the recent fire incidents in the country?	41	82%	9	18%
9	Does the company check for leakages in the underground storage tanks?	48	96%	2	4%
10	Is there an Oil interceptor at your facility?	39	78%	11	22%

Source: Fieldwork, 2023

The total number of respondents representing One hundred percent (100%) said yes to the question ‘Does the company enforce health and safety policy? Some respondents explained by backing their responses with the provision of Safety wear and periodic internal inspection. This finding from the study shows that the OMCs are very sensitive to the welfare of the worker and the environment and that enforcing health and safety policies at the workplace will minimize environmental hazards and workplace incidents. This is why Jilcha & Kitaw (2016) pointed out that the only way to reduce and minimize safety, health, and environmental negative consequences is to enact a guideline policy through regulation that is effective and up to details backed by law. Out of the total Fifty (50) respondents surveyed 46 of them representing Ninety- two percent 92% believed the company would apply disciplinary measures to correct wrong behaviors, and the remaining 4(8%) responded no to the question. The overwhelming outcome by the respondents indicates companies in the downstream sector have the willingness to take action by correcting the behaviors of odd workers when they are out of order. It goes to show that disciplinary measures to correct wrong behaviors in the FSS must not be underestimated but must be overemphasized to caution the worker. Respondents explained that companies do that to deter wrongdoers from repeating wrong behaviors.

In response to health and safety performance targets and rewarding schemes to motivate employees who meet targets, fifty-six (56%) of the respondents said yes with forty-two (42%) responding no and one person representing two (2%) percent did not attend to the question.

The study outcome shows that management is of the view that when employees are motivated about performance targets when a reward scheme is in place there is work efficiency and health and safety become

the utmost priority. Respondents’ responses to confirm if there is a regular inspection by the company to ensure compliance with regulations were positive, eighty-six percent (86%) of them stated yes meaning regular inspection is conducted and the remaining fourteen (14%) responded no. About the use of health and safety posters encouraging compliance with regulations, almost the entire respondents that is Ninety-eight percent (98%) agreed to yes, which is an encouraging and positive assertion while the two percent (2%) that is an individual responded no.

Concerning respondents’ awareness of the environmental health and safety issues related to the recent fire incidents in the country, eighty-two (82%) percent said yes to this and eighteen percent (18%) responded no. The 82% yes shows that respondents are aware of the June 3rd twin, a disaster that occurred at the circle and that any negligence on the path of them may cause unwanted incidents. According to respondents, to prevent such future occurrences of fire incidents in the country, there is a frequent check of leakages. About the company check for leakages in the underground storage tanks, Nine-six (96%) percent of the respondents gave fair responses by affirming yes and four percent (4%) of the remaining responded no. Findings as shown from the high percentage indicate that companies are very much concerned with leakages of storage as a victim may cause environmental hazards or incidents to the health and safety of workers.

Level of Awareness of the Operators on Environmental Health and Safety

The study sought to find out the level of awareness of the operators on environmental health and safety in the FSS. Under this research question, respondents were given ten (10) statements for them to state Yes or No. This is shown in Table 3.

Table 3: Level of awareness of the operators on environmental health and safety

		Yes		No	
		Yes.	%	No.	%
1	Does the company have a standardized procedure for investigating accidents?	40	80%	10	20%
2	Does the company have a standardized procedure for reporting accidents?	44	88%	6	12%
3	Does the company have Personal Protective Equipment, PPE for Staff?	42	84%	8	16%
4	Do workers participate in hazard identification at the outlet?	46	92%	4	8%
5	Does the company have a reward system from top management for workers who demonstrate exemplary safe behavior at the outlet?	32	64%	18	36%

6	Does the company have periodic training on health and safety for workers?	41	82%	9	18%
7	Does management conduct periodic health and safety inspections?	44	88%	6	12%
8	Do the workers demonstrate knowledge of environmental health and safety?	44	88%	6	12%
9	Does the company have an efficient health and safety communication channel?	43	86%	7	14%

Source: Fieldwork, 2023

According to the data obtained, eighty percent (80%) of the respondents said yes, that for investigating accidents the companies have a standardized procedure while the remaining twenty percent (20%) responded no, which indicates the absence of a standardized procedure for looking into accidents. The findings indicate that the procedure available is of high standard hence even if fear exists the probability is very small as workers are of the view that the standard way as accepted everywhere is used in accident cases.

Now for the company having PPE for staff, it was only sixteen percent (16%) of the total respondents who responded no but the remaining eighty-four percent (84%) said yes, their companies have PPE for staff. This affirms the notion of Walker (2007) and Kelloway & Day (2005) that hazard prevention control can be a program designed through safe work practices with enforcement and the provision of PPE.

An overwhelming percentage (92%) of the respondents affirmed that workers participating in hazard identification at the outlet while the remaining eight percent (8%) responded no. The outcome of this rating suggests that workers are allowed to take part in hazard identification. Therefore, as pointed out by Mishra & Sahoo (2012),

there is a better understanding, improvement, and organizational performance at the workplace and minimization of incidents if employees are engaged and involved in the organizations.

Eighty-two percent (82%) of respondents from the survey said yes their company has periodic training on health and safety for workers and the remaining eighteen (18%) said no. The finding supports the views of OSHA (2016) that one key element of workplace violence prevention is safety and health training, and this implies when members are well trained there is a high level of awareness of potential hazards. Regarding workers demonstrating knowledge of environmental health and safety, a higher number of respondents (88%) believe that they have the requisite knowledge in dealing with and handling environmental health and safety in the FSS, and (12%) twelve percent responded no.

The outcome of the findings is clearly in line with ILO (2005), that when workers in the FSS are knowledgeable in the HSE per the guidelines, they demonstrate an understanding of hazards and potential hazards in the workplace and the ability to prevent and control those hazards and how to protect themselves and others and workplace protection.

Number of Respondents

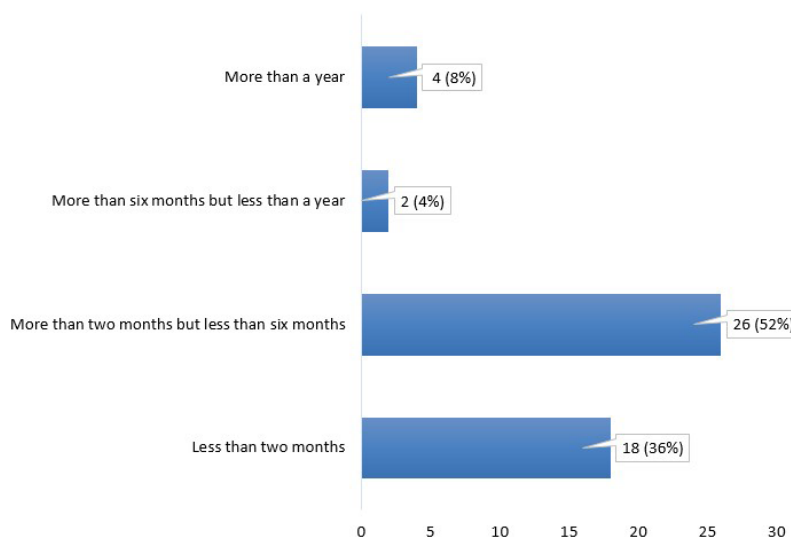


Figure 3: The last time periodic training was done at the FSS

This particular question ‘The last time this was done’, was a follow-up to a previous question, fifty-two percent (52%) of the respondents said they had done it more than two months but less than six months, thirty-six percent (36%) said less than a month, eight percent (8%)

responded for more than a month and finally four percent (4%) said more than six months but less than a year as shown in figure 3 above. This reveals how often periodic trainings are done in these institutions. Although a higher percentage said they had done training more than two

months but less than six months, there is still some form of training being undertaken by these facilities which will help in protecting operators and facilities from the risk of accidents and also to aid in emergency response in case of an accident at the facility.

CONCLUSION

The chapter presents the summary of findings from the study and presents some concluding remarks intertwined with recommendations.

Summary of Findings

From the outcome of Table 4.6 which is about research question 1 'The role of operators in participating in environmental health and safety in a fuel service station (FSS)', respondents showed positive responses through the data obtained by asserting the fact that operators in the various companies showed a high level of involvement as they were up to the task in playing their respective roles by ensuring that the good practices in the downstream sector are adhered to in the workplace environment for good health and safety in FSS.

The following percentages are 100%, 98%, 96%, etc. which are; Does the company enforce health and safety policy, Does the use of health and safety posters encourage compliance with regulations, and Does the company check for leakages in the underground storage tanks respectively are clear indications that the role of the operators in various FSS on health, safety, and environment were positive and the best.

Also, analysis under this area of study; 'Is there any level of awareness of the operators on environmental health and safety', and the data obtained shows that the level of awareness of the operators on environmental health and safety is paramount to the OMCs. Responses from the company's standardized procedure for investigating (80%) and reporting (88%) of accidents affirm that the level of awareness is very high in the FSS by the operators on environmental health and safety. Again, companies allowing workers to participate in hazard identification (92%) and the provision of PPE (84%) are all signs and indications of awareness creation. Moreover, Hughes and Ferret in 2013 also assert that for appropriate control of hazards, a combination of work practices and PPE is the best choice or should be used where feasible, see Hughes & Ferrett (2013).

Moreover, the survey shows that periodic training, periodic inspections, and effective communication channels (86%) of the OMCs create a very positive and high level of awareness of operators on environmental health and safety.

CONCLUSIONS

The study focuses on the role of operators in environmental health and safety in fuel service stations (FSS). Operators within the downstream sector have major roles in enforcing health and safety policies, which must contain guidelines

established by law and regulations for HSE. They are responsible for protecting employee health and safety and ensuring compliance with rules and regulations in the working environment (Oluwagbemi, 2011).

The study's second objective was to, "establish the level of awareness of operators on environmental health and safety". Operators in the downstream sector are highly aware of standard procedures for investigating and reporting workplace accidents. This indicates there is a need for continued investment in reducing and potentially eliminating workplace accidents. They are also aware of the provision of Personal Protective Equipment (PPE) and the importance of worker participation in hazard identification (ILO, 2015; OH & SM, 2001).

The study concludes that operators in various OMCs shows

1. High levels of involvement in good practices in the downstream sector as in
 - a. Enforcing health and safety policies
 - b. Applying disciplinary measures
 - c. Conduct regular inspections to ensure compliance with regulations.
2. Operators know the environmental health and safety standard procedures for investigating and reporting accidents in the workplace
3. That operators know the environmental health and safety consequences in the downstream sector
4. Operators know the importance of PPE and worker participation in hazard identification.

RECOMMENDATIONS

From the findings of the study, it is recommended that operators' involvement by participating in environmental health and safety should be encouraged and be done continuously as they keep attending to their duties in ensuring good practices in the FSS within the downstream sectors. It is also recommended that operators' role in participating in environmental health and safety by enforcing health and safety policy should continuously be done as they involve the three main stakeholders; government, employers, and employees for HSE.

Furthermore, the operators' role in disciplinary measures in correcting wrong behaviors in FSS and the regular inspection should be done constantly, for the workers in the FSS within the downstream sector to become conscious, efficient, and disciplined.

Additionally, it is recommended that the level of awareness of the operator in the downstream sector in the standardized procedures for investigating and reporting accidents must not stop but be done continuously to help reduce/minimize workplace incidents. Workers' participation in hazard identification and provision of needed equipment must be done constantly to help workers protect themselves and their co-workers.

Data Availability

Upon genuine request data for the study may be available.

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